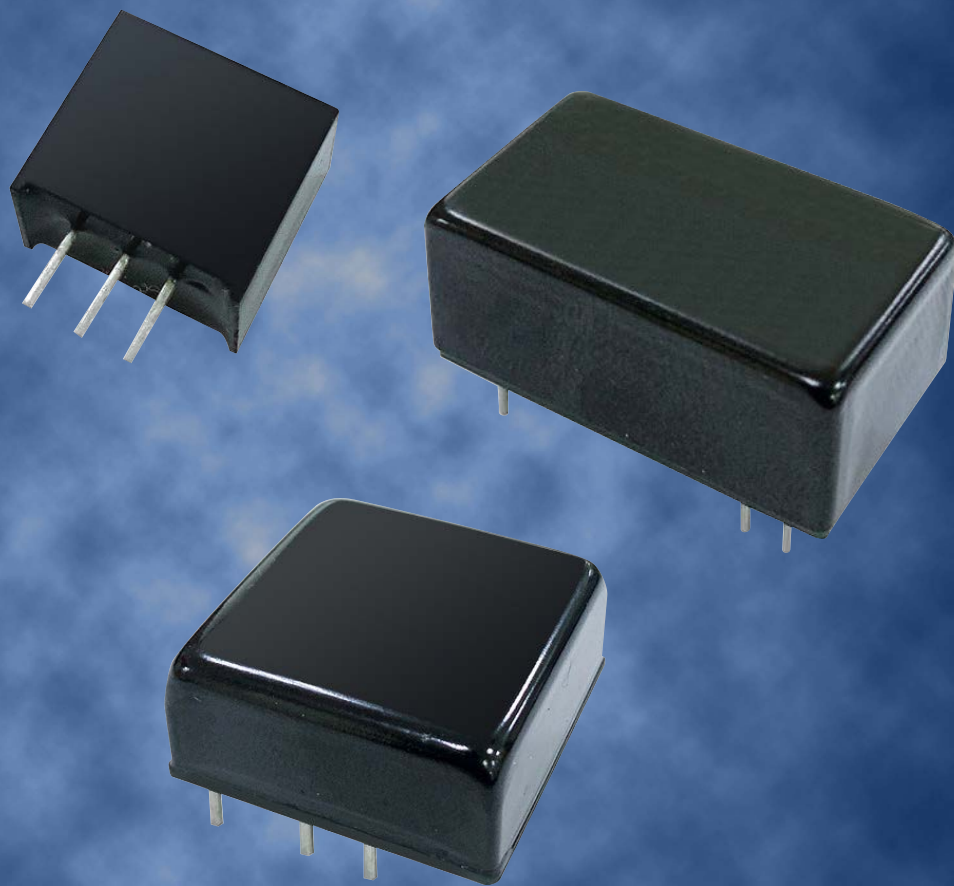


# ADAME TECH



DC-DC CONVERTERS

Adam Tech boasts an expansive line of DC-DC Converters. These devices are designed to effectively convert direct current (DC) from one voltage level to another. This makes them ideal for applications that utilize the cooperation of different voltage levels. Adam Tech's offering is equipped to accommodate these various applications, thanks to its support of a wide range of watts, voltages, and currents. In addition, Adam Tech possesses the ability to manufacture custom converters to meet every customer's needs.

## FEATURES AND BENEFITS:

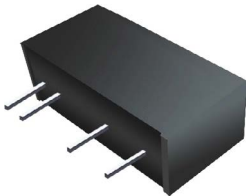
- Efficiently convert DC voltage levels
- Single and dual output
- Power ranging from 1 to 30 W
- Input voltages ranging from 2.97 to 75 VDC
- Output voltages ranging from 3.3 to 24 VDC
- Input currents ranging from 7 to 10 mA no-load, and 255 to 1420 mA full-load
- Output currents ranging from 21 to 6500 mA
- Various packaging options
- Burned-in
- Low ripple and noise

## APPLICATIONS:

- Automatic control equipment
- Industrial computers
- Communications and telecommunications equipment
- Traffic signal control systems
- Smart home appliances and security systems
- Video and image processing equipment (car tag recognition, traffic technology, facial recognition)
- Energy conversion (solar energy and electric vehicles)

### EC2 Series

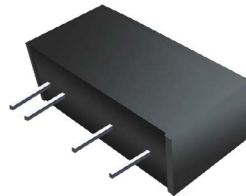
1 Watt  
1.5KV ~ 6KV Isolated  
Single & Dual Output  
SIP7



[View Datasheet](#)

### EC2-2W Series

2 Watt  
1.5KV ~ 6KV Isolated  
Single & Dual Output  
SIP7



[View Datasheet](#)

### EC2-3W Series

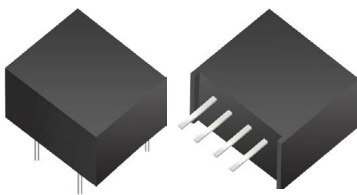
3 Watt  
1.5KV ~ 6KV Isolated  
Single & Dual Output  
SIP7



[View Datasheet](#)

### EC3 Series

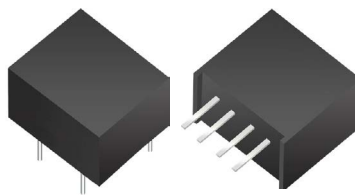
1 Watt  
1.5KV ~ 3KV Isolated  
Single & Dual Output  
SIP4 & DIL8



[View Datasheet](#)

### EC3-2W Series

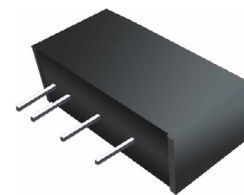
2 Watt  
1.5KV ~ 3KV Isolated  
Single & Dual Output  
SIP4 & DIL8



[View Datasheet](#)

### EC4 Series

1 Watt  
1.5KV ~ 3KV Isolated  
Single & Dual Output  
SIP7



[View Datasheet](#)

## ES3 Series

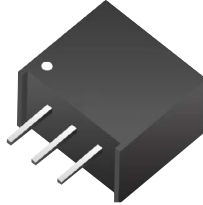
1 Watt  
1.5KV ~ 3KV Isolated  
Single Output  
SMD14



[View Datasheet](#)

## NL1-1A Series

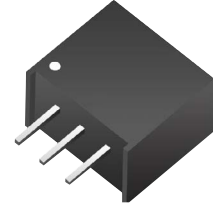
Non-Isolated  
Single Output  
SIP3



[View Datasheet](#)

## NL1-P5 Series

Non-Isolated  
Single Output  
SIP3



[View Datasheet](#)

## RD7 Dual Series

2 Watt  
1KV & 3KV Isolated  
2:1 Input Voltage Range  
Dual Output  
SIP7



[View Datasheet](#)

## RD7 Single Series

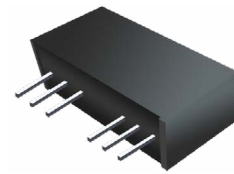
2 Watt  
1KV & 3KV Isolated  
2:1 Input Voltage Range  
Single Output  
SIP7



[View Datasheet](#)

## RD7-3W Dual Series

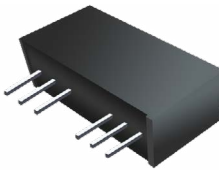
3 Watt  
1.5KV ~ 3KV Isolated  
2:1 Input Voltage Range  
Dual Output  
SIP8



[View Datasheet](#)

## RD7-3W Single Series

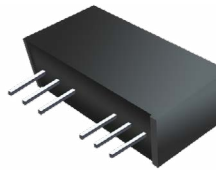
3 Watt  
1.5KV ~ 3KV Isolated  
2:1 Input Voltage Range  
Single Output  
SIP8



[View Datasheet](#)

## RD7-6W Series

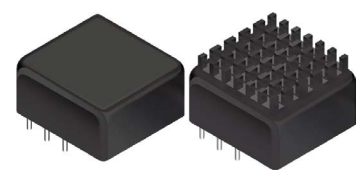
6 Watt  
1.5KV Isolated  
2:1 Input Voltage Range  
Single & Dual Output  
SIP8



[View Datasheet](#)

## RQ9S Series

30 Watt  
1.5KV Isolated  
4:1 Input Voltage Range  
Single & Dual Output  
1" x 1" DIL



[View Datasheet](#)

## KR15 Series

15 Watt  
1600VDC Isolated  
4:1 Input Voltage Range  
Single & Dual Output  
DIP24



[View Datasheet](#)

## UC10 Series

10 Watt  
1600VDC Isolated  
4:1 Input Voltage Range  
Single & Dual Output  
DIP16



[View Datasheet](#)

## UC15 Series

15 Watt  
1600VDC Isolated  
4:1 Input Voltage Range  
Single & Dual Output  
DIP16



[View Datasheet](#)

## FEATURES:

- 7 pin SIP package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 87%
- Unregulated Output Types
- 1.5KVDC ~ 6KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	Capacitive Load $\mu$ F
	Vdc	Vdc	mA	%TYP	$\mu$ F
EC2-05S03P3	4.5~5.5	3.3	303	76	2400
EC2-05S05P3	4.5~5.5	5	200	82	2400
EC2-12S05P3	9.6~14.4	5	200	82	2400
EC2-15S15P3	12~18	15	67	87	330
EC2-24S15P3	19.2~28.8	15	67	87	330
EC2-05D12P3	4.5~5.5	$\pm$ 12	$\pm$ 42	84	$\pm$ 220
EC2-12D24P3	9.6~14.4	$\pm$ 24	$\pm$ 21	85	$\pm$ 100
EC2-24D12P3	19.2~28.8	$\pm$ 12	$\pm$ 42	85	$\pm$ 330

### Note:

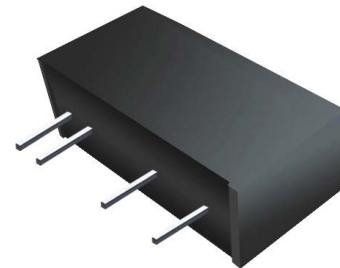
1: No suffix is standard isolation (1.5KVDC) e.g., EC2-05S05  
 \*add suffix "3" for 3KVDC isolation, \*add suffix "4" for 4KVDC isolation,  
 \*add suffix "5" for 5.2KVDC isolation, \*add suffix "6" for 6KVDC isolation

2: No "P" suffix = no short circuit protection, e.g., EC2-05S05  
 \*add suffix "P" for short circuit protection  
 e.g., EC2-05S05P, EC2-05S12P3

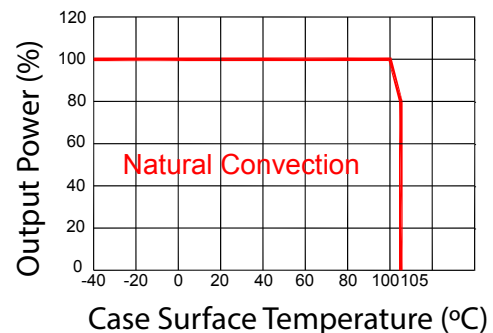
3: Character after "-" is Input Voltage: 12=12Vdc, 15=15Vdc, 24=24Vdc  
 e.g., EC2-12S05P, EC2-15S12P3, EC2-24S15P.



DC-DC Converter  
**EC2 Series**  
 1 Watt  
 1.5KV ~ 6KV Isolated  
 Single & Dual Output  
 SIP7



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo,Io Nom @Vin:5V		±10		%
	Vo,Io Nom@ Vin:12V,15V,24V		±20		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	without suffix "P"			1	Sec
	With Suffix "P"			Continuous	
Line Regulation	For 1.0% OF Vin		1.2		%
	3.3V (10% To 100% F.L)		15	20	%
Load Regulation	5V (10% To 100% F.L)		10	15	%
	9V (10% To 100% F.L)		8	10	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
	24V (10% To 100% F.L)		5	10	%
Ripple & Noise	BW=DC To 20MHz @Vo:3.3V,5V,9V,12V,15V		30	75	mVp-p
	BW=DC To 20MHz @ Vo:24V		50	100	mVp-p

## General Specifications

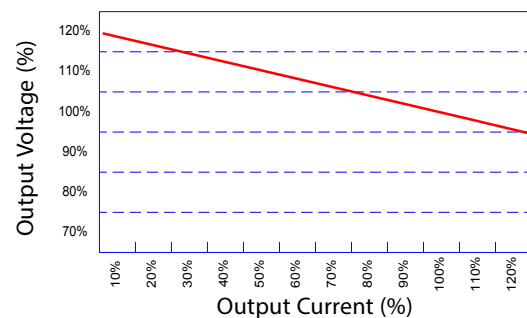
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input @5V Vin		370		KHz
	Full load, nominal input @other Vin		250		KHz
Operating Temperature		-40		+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight			2.1		g
Dimensions			19.5x6.0x10.0		mm

## Part Number

EC2 - XX X XX X X  
A B C D E F

A: Series  
B: Input Voltage  
C: Single (S) / Dual Output (D)  
D: Output Voltage  
E: Protection (P)  
F: Isolation Voltage

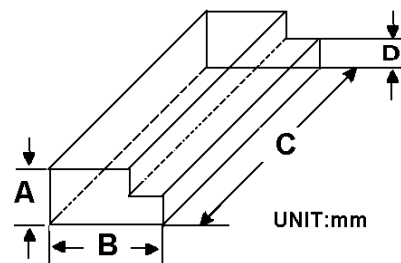
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

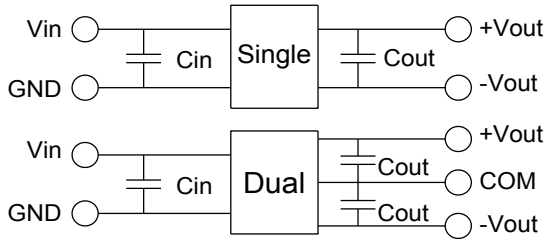
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Packaging



Size (mm)			
A	B	C	D
9.5	16.5	522	5.0

### Recommended Test Circuit



Vin	Cin	Single Vout	Cout	Dual Vout	Cout
5Vdc	4.7μF/25V	3.3Vdc	10μF/16V	±3.3Vdc	±4.7μF/16V
12Vdc	2.2μF/25V	5Vdc	10μF/16V	±5Vdc	±4.7μF/16V
15Vdc	2.2μF/25V	9Vdc	2.2μF/16V	±9Vdc	±1μF/16V
24Vdc	1μF/50V	12Vdc	2.2μF/25V	±12Vdc	±1μF/25V
--	--	15Vdc	1μF/50V	±15Vdc	±1μF/25V

### EMC (CLASS B) Compliance Circuit

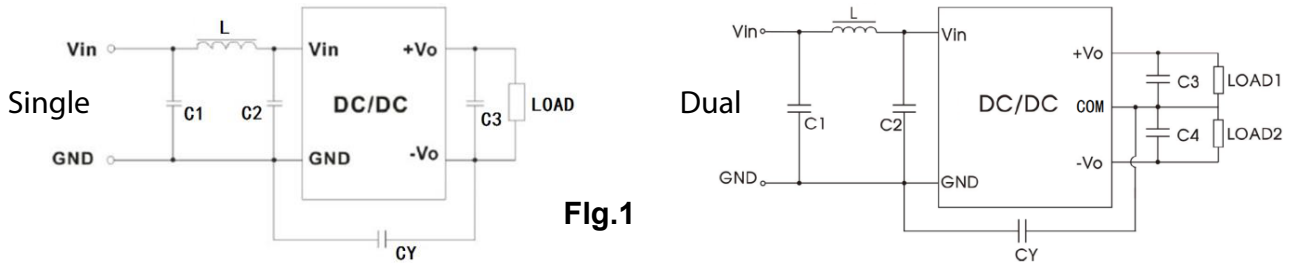
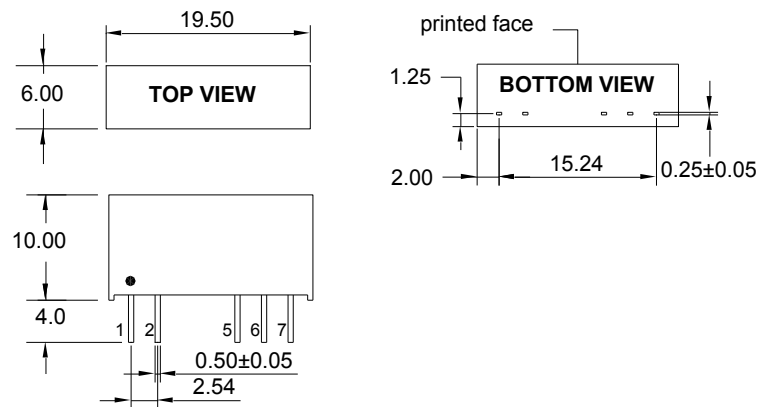


Fig.1

### EMC Recommended Circuit Value Table

EMC Recommended Circuit Value Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3, C4	Recommended Test Circuit
	L	6.8μH

### Markings and Dimensions



UNIT: mm unless otherwise specified, all tolerances are ±0.25

### PIN Connection

PIN	1	2	5	6	7
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout

## FEATURES:

- 7 pin SIP package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 89%
- Unregulated Output Types
- 1.5KVDC ~ 6KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

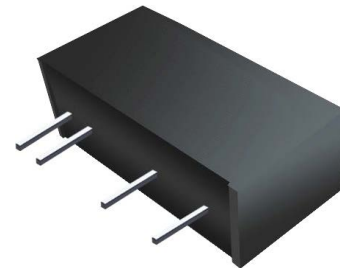
Part Number	Input Voltage	Output Voltage	Output Current	Efficiency	Capacitive Load $\mu$ F
	Range	Vdc	mA	%TYP	$\mu$ F
	Vdc	Vdc	mA	%TYP	$\mu$ F
EC2-05S052P3	4.5~5.5	5	400	84	2400
EC2-24S152P6	19.2~28.8	15	133	88	220
EC2-05D052P3	4.5~5.5	$\pm$ 5	$\pm$ 200	82	$\pm$ 1200

### Note:

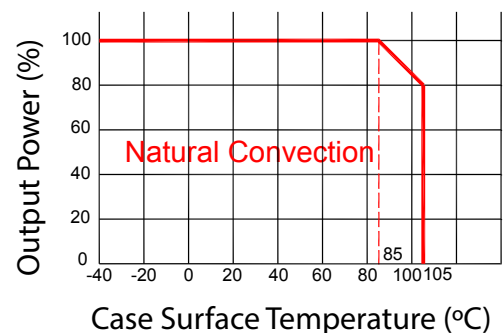
- 1: No suffix is standard isolation (1.5KVDC) e.g., EC2-05S052P  
 \*add suffix "3" for 3KVDC isolation, \*add suffix "4" for 4KVDC isolation,  
 \*add suffix "5" for 5.2KVDC isolation, \*add suffix "6" for 6KVDC isolation
- 2: Character after "-" is Input Voltage: 12=12Vdc, 15=15Vdc, 24=24Vdc  
 e.g., EC2-12S052P, EC2-15S122P3, EC2-24S152P6.



DC-DC Converter  
**EC2-2W Series**  
2 Watt  
1.5KV ~ 6KV Isolated  
Single & Dual Output  
SIP7



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo,lo Nom		±10		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	Continuous				
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	5V (10% To 100% F.L)		8	15	%
	9V (10% To 100% F.L)		6	10	%
	12V (10% To 100% F.L)		5	10	%
	15V (10% To 100% F.L)		4	10	%
	24V (10% To 100% F.L)		3	10	%
Ripple & Noise	BW=DC To 20MHz		75	150	mVp-p

## General Specifications

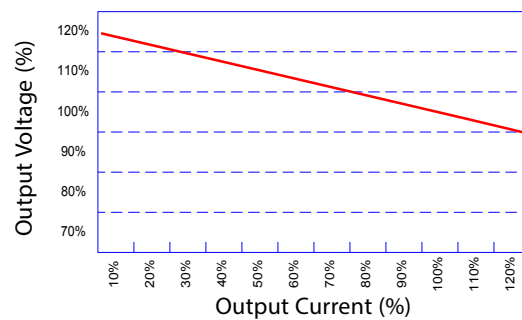
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input @5V Vin		215		KHz
	Full load, nominal input @other Vin		250		KHz
Operating Temperature		-40		+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight			2.1		g
Dimensions			19.5x6.0x10.0		mm

## Part Number

EC2 - XX X XX X X X  
A B C D E F G

A: Series  
B: Input Voltage  
C: Single (S) / Dual Output (D)  
D: Output Voltage  
E: Output Power  
F: Protection (P)  
G: Isolation Voltage

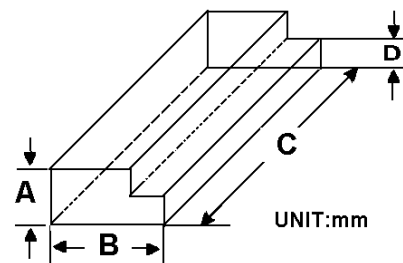
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

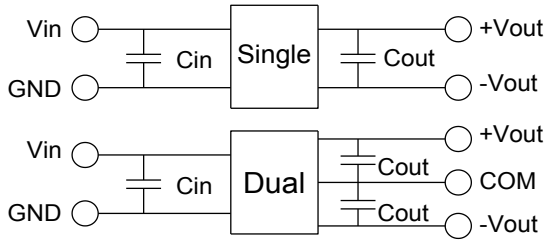
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Packaging



Size (mm)			
A	B	C	D
9.5	16.5	522	5.0

### Recommended Test Circuit



Vin	Cin	Single Vout	Cout	Dual Vout	Cout
5Vdc	4.7μF/25V	5Vdc	10μF/16V	±5Vdc	±4.7μF/16V
12Vdc	2.2μF/25V	9Vdc	2.2μF/16V	±9Vdc	±1μF/16V
15Vdc	2.2μF/25V	12Vdc	2.2μF/25V	±12Vdc	±1μF/25V
24Vdc	1μF/50V	15Vdc	1μF/25V	±15Vdc	±1μF/25V
--	--	24Vdc	1μF/50V	±24Vdc	±1μF/50V

### EMC (CLASS B) Compliance Circuit

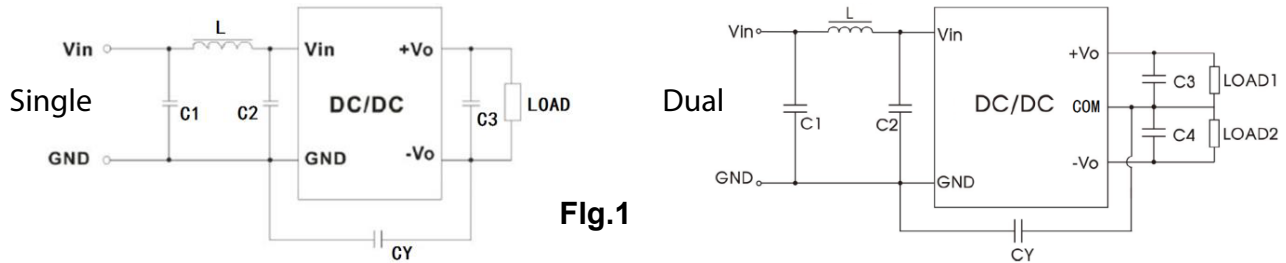
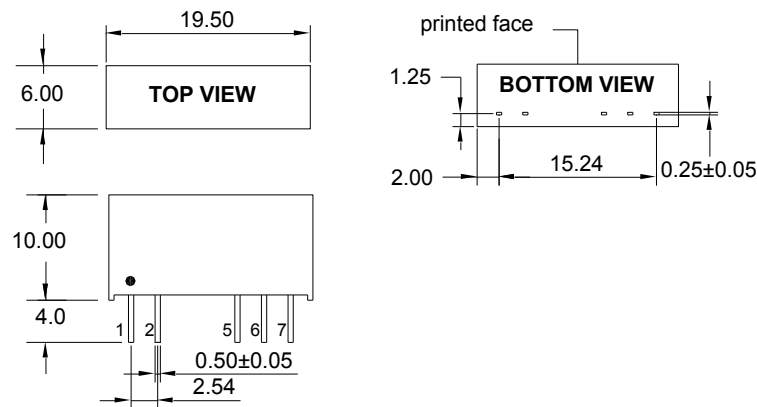


Fig.1

### EMC Recommended Circuit Value Table

EMC Recommended Circuit Value Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8μH

### Markings and Dimensions



UNIT: mm unless otherwise specified, all tolerances are ±0.25

### PIN Connection

PIN	1	2	5	6	7
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout

## FEATURES:

- 7 pin SIP package
- No-load input current as low as 8mA
- Continuous short-circuit protection
- High Efficiency up to 88%
- Unregulated Output Types
- 1.5KVDC ~ 6KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

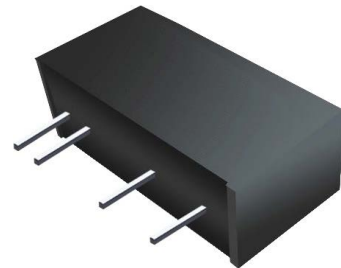
Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	Capacitive Load $\mu$ F
	Vdc	Vdc	mA	%TYP	$\mu$ F
EC2-12S123P	10.8~13.2	12	250	87	220
EC2-12S053P3	10.8~13.2	5	600	85	1000

### Note:

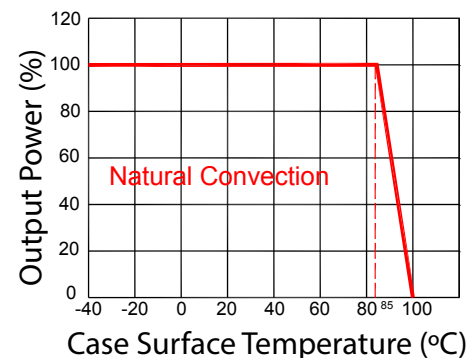
1: No suffix is standard isolation (1.5KVDC) e.g., EC2-05S053P  
 \*add suffix "3" for 3KVDC isolation, \*add suffix "4" for 4KVDC isolation,  
 \*add suffix "5" for 5.2KVDC isolation, \*add suffix "6" for 6KVDC isolation  
 e.g., EC2-12S053P3, EC2-24D243P6



DC-DC Converter  
**EC2-3W Series**  
 3 Watt  
 1.5KV ~ 6KV Isolated  
 Single & Dual Output  
 SIP7



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo,lo Nom		±10		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	Continuous				
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	5V (10% To 100% F.L)		9	15	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
	24V (10% To 100% F.L)		5	10	%
Ripple & Noise	BW=DC To 20MHz		100	150	mVp-p

## General Specifications

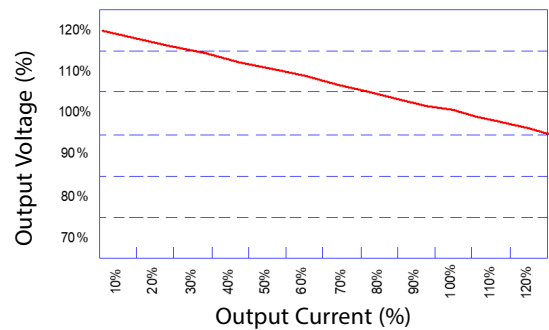
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input		250		KHz
Operating Temperature		-40		+85	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight			2.7		g
Dimensions			19.5x7.1x10.0		mm

## Part Number

EC2 - XX X XX X X X  
A B C D E F G

A: Series  
B: Input Voltage  
C: Single (S) / Dual Output (D)  
D: Output Voltage  
E: Output Power  
F: Protection (P)  
G: Isolation Voltage

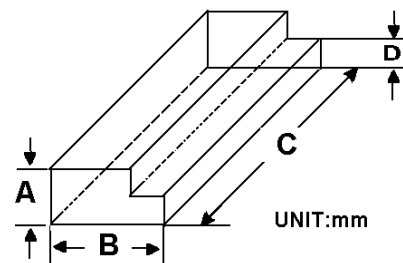
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

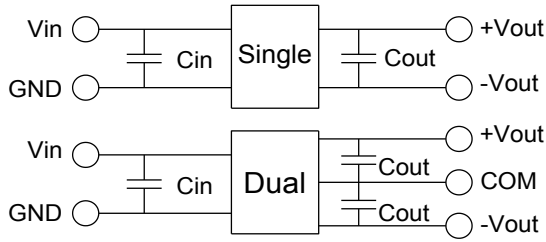
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Packaging



Size (mm)			
A	B	C	D
9.5	16.5	522	5.0

## Recommended Test Circuit



Vin	Cin	Single Vout	Cout	Dual Vout	Cout
12Vdc	2.2μF/25V	5Vdc	10μF/16V	±5Vdc	±4.7μF/16V
15Vdc	2.2μF/25V	9Vdc	2.2μF/16V	±9Vdc	±1μF/16V
24Vdc	1μF/50V	12Vdc	2.2μF/25V	±12Vdc	±1μF/25V
--	--	15Vdc	1μF/25V	±15Vdc	±1μF/25V
--	--	24Vdc	1μF/50V	±24Vdc	±1μF/50V

## EMC (CLASS B) Compliance Circuit

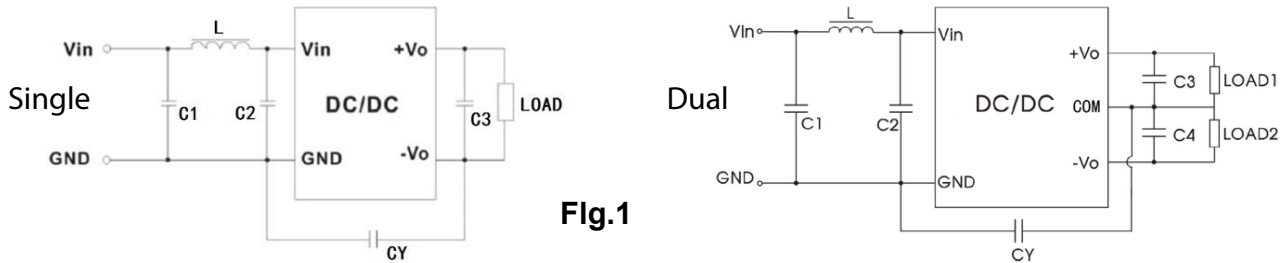
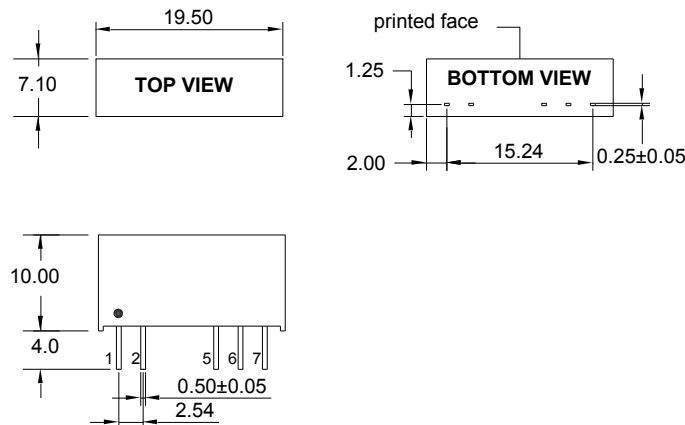


Fig.1

### EMC Recommended Circuit Value Table

EMC Recommended Circuit Value Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3, C4	Recommended Test Circuit
	L	6.8μH

## Markings and Dimensions



UNIT: mm unless otherwise specified, all tolerances are ±0.25

## PIN Connection

PIN	1	2	5	6	7
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout

## FEATURES:

- 4 pin SIP and 8 pin DIL package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 87%
- Unregulated Output Types
- 1.5KVDC ~ 3KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	Capacitive Load(μF)	Package Style
	Vdc	Vdc	mA	%TYP	Max.	
EC3T-05S03P	4.5~5.5	3.3	303	76	2400	T
EC3T-05S05	4.5~5.5	5	200	82	2400	T
EC3T-05S05P	4.5~5.5	5	200	82	2400	T
EC3T-05S09P	4.5~5.5	9	112	83	1000	T
EC3T-05S12P	4.5~5.5	12	84	84	470	T
EC3T-12S05P	9.6~14.4	5	200	82	2400	T
EC3T-12S12P	9.6~14.4	12	84	85	680	T
EC3T-24S12P	19.2~28.8	12	84	85	680	T
EC3T-05S05P3	4.5~5.5	5	200	82	2400	T
EC3R-05S05P3	4.5~5.5	5	200	82	2400	R
EC3T-12S12P3	9.6~14.4	12	84	85	680	T
EC3-24S03P3	19.2~28.8	3.3	303	78	2400	blank

### Note:

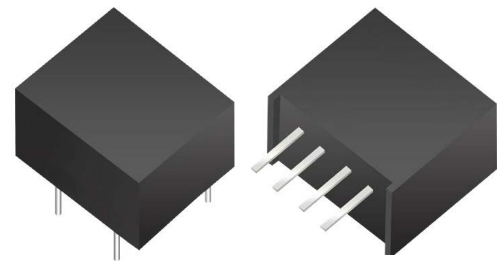
1: No suffix is standard isolation (1.5KVDC) e.g., EC3-15S05P  
 \*add suffix "3" for 3KVDC isolation, e.g., EC3-12S05P3, EC3-15S12P3  
 Package style: no suffix = package 1, T = package 2, R = package 3  
 e.g., EC3T-12S05P, EC3R-24S12P3

2: No "P" suffix = no short circuit protection, e.g., EC3-05S05  
 \*add suffix "P" for short circuit protection, e.g., EC3T-05S05P, EC3R-05S12P3

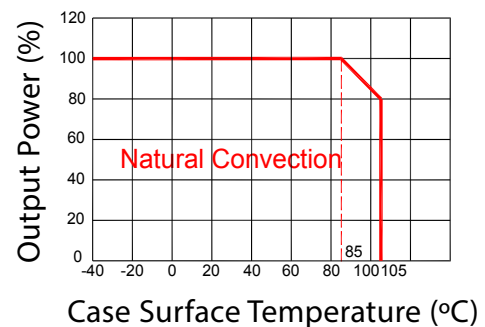
3: Character after "-" is Input Voltage: 12=12Vdc, 15=15Vdc, 24=24Vdc  
 e.g., EC3R-12S05P, EC3-15S12P3, EC3T-24S15P.



DC-DC Converter  
**EC3 Series**  
 1 Watt  
 1.5KV ~ 3KV Isolated  
 Single & Dual Output  
 SIP4 & DIL8



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo, Io Nom @ Vin: 5V		±10		%
	Vo, Io Nom @ Vin: 12V, 15V, 24V		±20		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	without suffix "P"			1	Sec
	With Suffix "P"			Continuous	
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	3.3V (10% To 100% F.L)		15	20	%
	5V (10% To 100% F.L)		10	15	%
	9V (10% To 100% F.L)		8	10	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
Ripple & Noise	BW=DC To 20MHz @Vo: 3.3V, 5V, 9V, 12V, 15V		30	75	mVp-p
	BW=DC To 20MHz @ Vo: 24V		50	100	mVp-p

## General Specifications

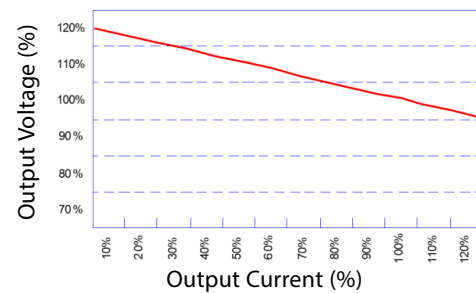
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input @5V Vin		370		KHz
	Full load, nominal input @other Vin		250		KHz
Operating Temperature		-40		+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight	Package 1/2/3		1.1/1.5/1.5		g
Dimensions	Package 1		11.5x6.0x7.5		mm
	Package 2		11.5x6.0x10.0		mm
	Package 3		12.7x10.16x6.8		mm

## Part Number

EC3 X - XX X XX X X  
A B C D E F G

A: Series  
B: Package  
C: Input Voltage  
D: Single (S) / Dual Output (D)  
E: Output Voltage  
F: Protection (P)  
G: Isolation Voltage

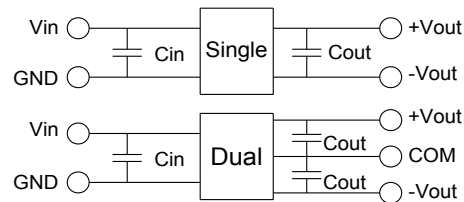
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

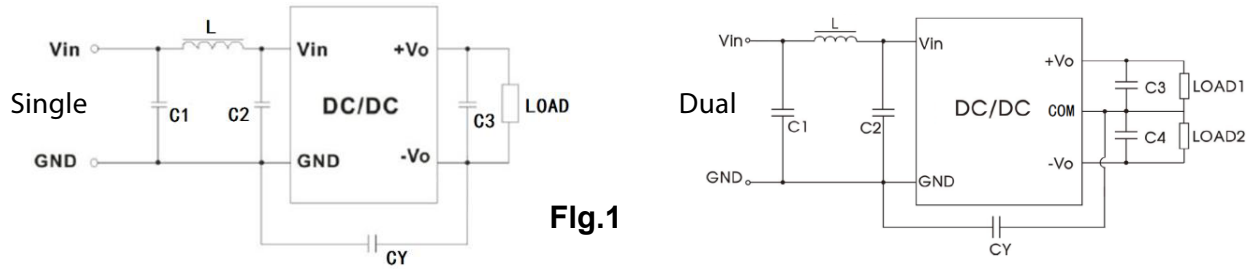
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Recommended Test Circuit



Vin	Cin	Single Vout	Cout	Dual Vout	Cout
5Vdc	4.7µF/25V	3.3Vdc	10µF/16V	±3.3Vdc	±4.7µF/16V
12Vdc	2.2µF/25V	5Vdc	10µF/16V	±5Vdc	±4.7µF/16V
15Vdc	2.2µF/25V	9Vdc	2.2µF/16V	±9Vdc	±1µF/16V
24Vdc	1µF/50V	12Vdc	2.2µF/25V	±12Vdc	±1µF/25V
--	--	15Vdc	1µF/25V	±15Vdc	±1µF/25V
--	--	24Vdc	1µF/50V	±24Vdc	±1µF/50V

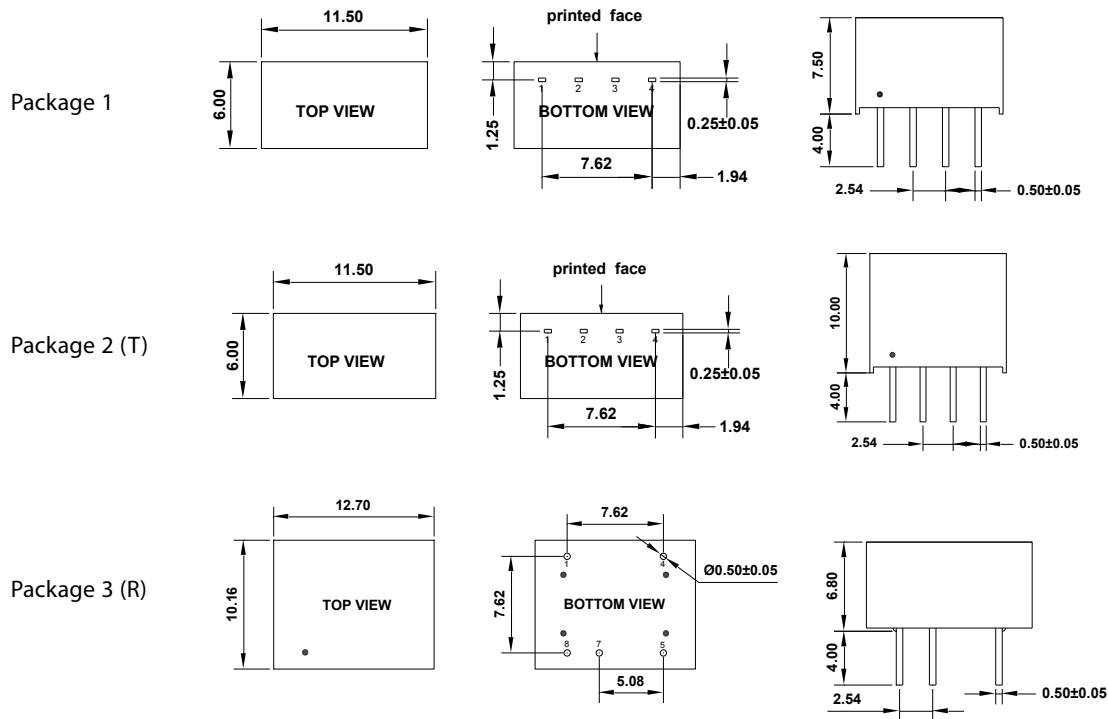
**EMC (CLASS B) Compliance Circuit**



**Fig.1**

EMC Recommended Circuit Value Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8μH

**Markings and Dimensions**



UNIT: mm unless otherwise specified, all tolerances are ±0.25

**PIN Connection**

PIN	1	2	3	4	5	7	8
4Pin	-Vin	+Vin	-Vout	+Vout			
8Pin-S	-Vin			+Vin	+Vout	-Vout	
8Pin-D	-Vin			+Vin	+Vout	Com	-Vout

## FEATURES:

- 4 pin SIP and 8 pin DIL package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 89%
- Unregulated Output Types
- 1.5KVDC ~ 3KVDC Isolation
- Industry Standard Pinout
- Design refer to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

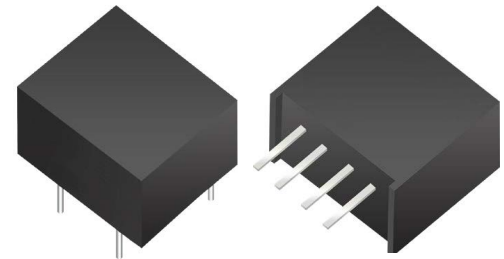
Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	Capacitive Load(μF)	Package Style
	Vdc	Vdc	mA	%TYP	Max.	
EC3T-12S122P	10.8~13.2	12	167	87	470	T
EC3T-24S242P	21.6~26.4	24	84	89	100	T

### Note:

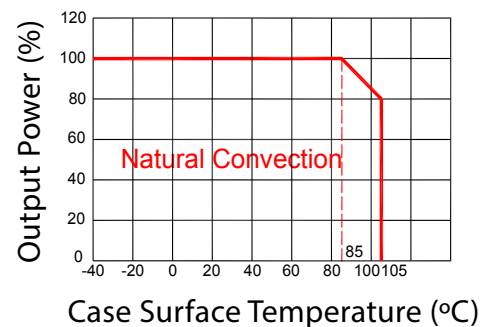
1: No suffix is standard isolation (1.5KVDC) e.g., EC3-15S052P  
 \*add suffix "3" for 3KVDC isolation, e.g., EC3T-12S052P3, EC3R-15S122P3  
 Package style: T = package 2, R = package 3  
 e.g., EC3T-12S052P, EC3R-24D122P3



DC-DC Converter  
**EC3-2W Series**  
 2 Watt  
 1.5KV ~ 3KV Isolated  
 Single & Dual Output  
 SIP4 & DIL8



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo,lo Nom		±10		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	Continuous				
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	5V (10% To 100% F.L)		8	15	%
	9V (10% To 100% F.L)		6	10	%
	12V (10% To 100% F.L)		5	10	%
	15V (10% To 100% F.L)		4	10	%
	24V (10% To 100% F.L)		3	10	%
Ripple & Noise	BW=DC To 20MHz		75	150	mVp-p

## General Specifications

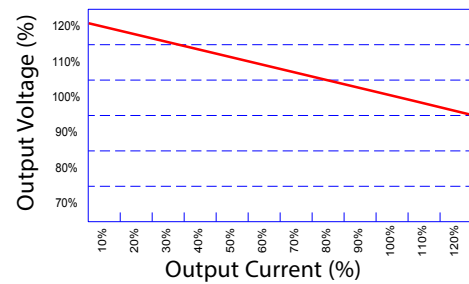
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input		250		KHz
Operating Temperature		-40		+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight	Package 2/3		1.5/1.5		g
Dimensions	Package 2		11.5x6.0x10.0		mm
	Package 3		12.7x10.16x6.8		mm

## Part Number

EC3 X - XX X XX X X X  
A B C D E F G H

A: Series  
B: Package  
C: Input Voltage  
D: Single (S) / Dual Output (D)  
E: Output Voltage  
F: Output Power  
G: Protection (P)  
H: Isolation Voltage

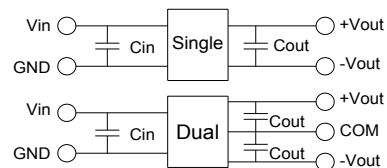
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

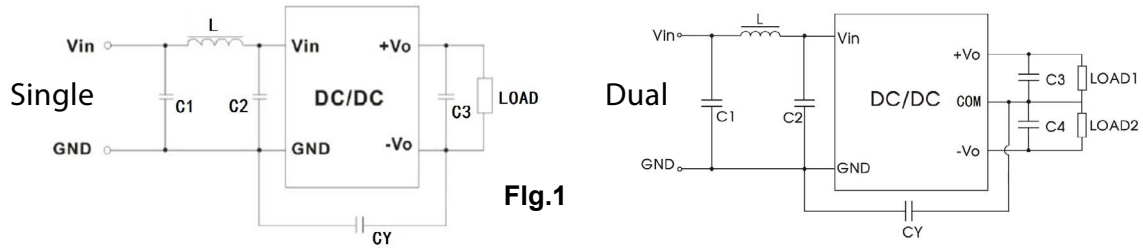
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Recommended Test Circuit



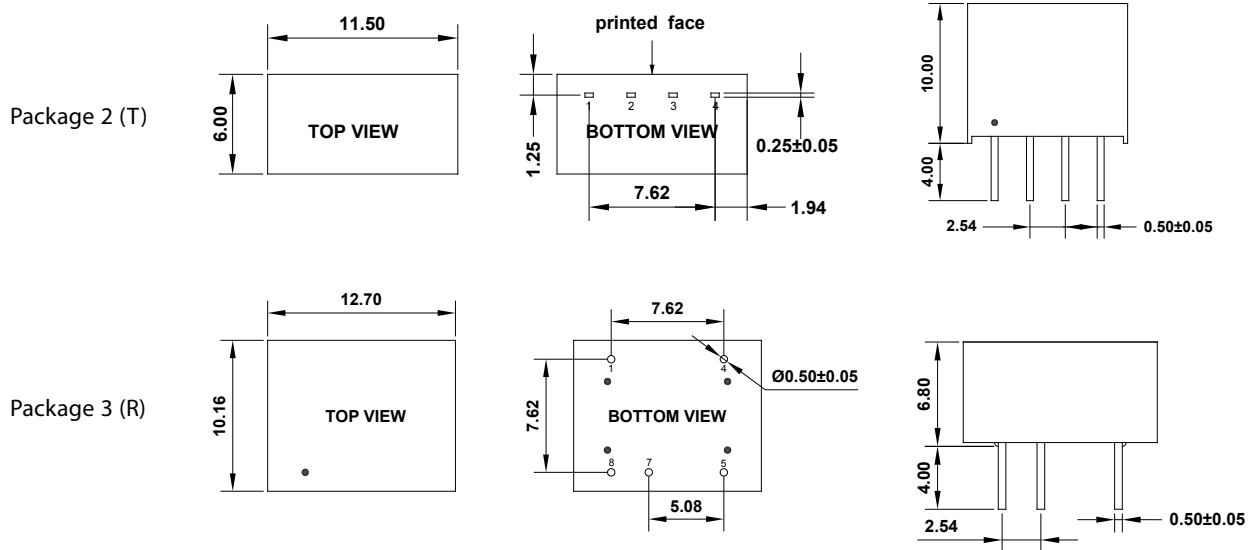
Vin	Cin	Single Vout	Cout	Dual Vout	Cout
12Vdc	2.2µF/25V	5Vdc	10µF/16V	±5Vdc	±4.7µF/16V
15Vdc	2.2µF/25V	9Vdc	2.2µF/16V	±9Vdc	±1µF/16V
24Vdc	1µF/50V	12Vdc	2.2µF/25V	±12Vdc	±1µF/25V
--	--	15Vdc	1µF/25V	±15Vdc	±1µF/25V
--	--	24Vdc	1µF/50V	±24Vdc	±1µF/50V

## EMC (CLASS B) Compliance Circuit



EMC Recommended Circuit Value Table		
EMI	C1	4.7 $\mu$ F /50V
	C2	4.7 $\mu$ F /50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8 $\mu$ H

## Markings and Dimensions



UNIT: mm unless otherwise specified, all tolerances are  $\pm 0.25$

## PIN Connection

PIN	1	2	3	4	5	7	8
4Pin	-Vin	+Vin	-Vout	+Vout			
8Pin-S	-Vin			+Vin	+Vout	-Vout	
8Pin-D	-Vin			+Vin	+Vout	Com	-Vout

## FEATURES:

- 7 pin SMD package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 87%
- Unregulated Output Types
- 1.5KVDC ~ 3KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	Capacitive Load(μF)
	Vdc	Vdc	mA	%TYP	Max.
EC4-05S05	4.5~5.5	5	200	82	2400
EC4-05S05P	4.5~5.5	5	200	82	2400
EC4-12S05P	9.6~14.4	5	200	82	2400
EC4-12S12P	9.6~14.4	12	84	85	680
EC4-12D05P	9.6~14.4	±5	±100	82	±1200
EC4-15D12P	12~18	±12	±42	85	±330

### Note:

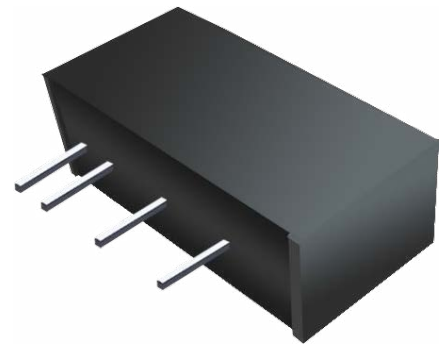
1: No suffix is standard isolation (1.5KVDC) e.g., EC4-05S05  
\*add suffix "3" for 3KVDC isolation

2: No "P" suffix = no short circuit protection, e.g., EC4-05S05  
\*add suffix "P" for short circuit protection, e.g., EC4-05S05P, EC4-05S12P3

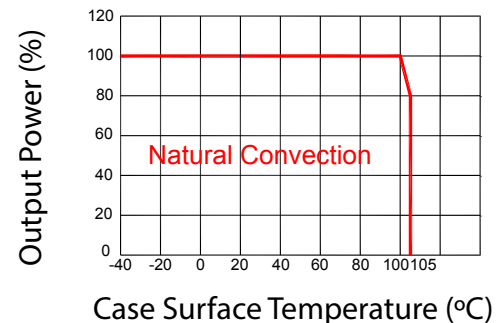
3: Character after "-" is Input Voltage: 12=12Vdc, 15=15Vdc, 24=24Vdc  
e.g., EC4-12S05P, EC4-15S12P3, EC4-24S15P.

# ADAM TECH

DC-DC Converter  
**EC4 Series**  
1 Watt  
1.5KV ~ 3KV Isolated  
Single & Dual Output  
SIP7



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo,Io Nom@Vin:5V		±10		%
	Vo,Io Nom@ Vin:12V,15V,24V		±20		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	without suffix "P"			1	Sec
	With Suffix "P"		Continuous		
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	3.3V (10% To 100% F.L)		15	20	%
	5V (10% To 100% F.L)		10	15	%
	9V (10% To 100% F.L)		8	10	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
Ripple & Noise	24V (10% To 100% F.L)		5	10	%
	BW=DC To 20MHz @Vo:3.3V,5V,9V,12V,15V		30	75	mVp-p
	BW=DC To 20MHz @ Vo:24V		50	100	mVp-p

## General Specifications

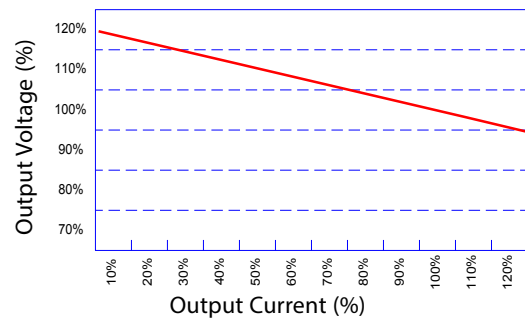
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input @5V Vin		370		KHz
	Full load, nominal input @other Vin		250		KHz
Operating Temperature		-40		+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight			2.1		g
Dimensions			19.5x6.0x10.0		mm

## Part Number

EC4 - XX X XX X X X  
A B C D E F G

A: Series  
B: Input Voltage  
C: Single (S) / Dual Output (D)  
D: Output Voltage  
E: Regulated (R)  
F: Protection (P)  
G: Isolation Voltage

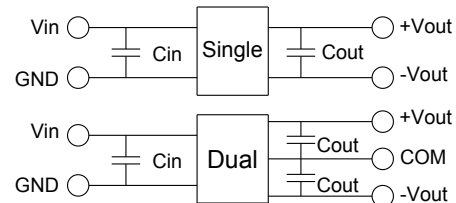
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

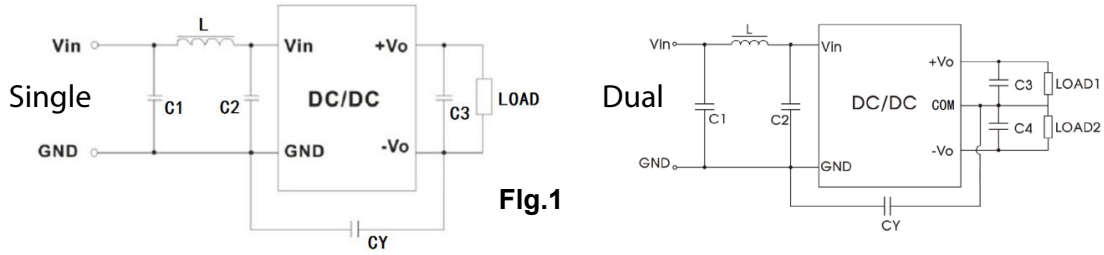
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Recommended Test Circuit



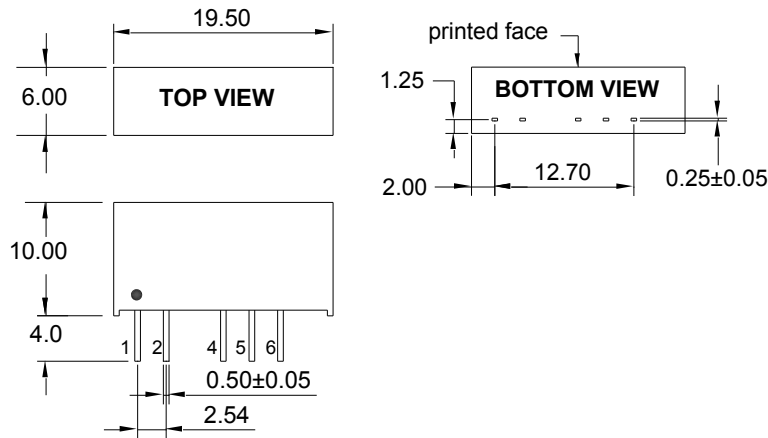
Vin	Cin	Single Vout	Cout	Dual Vout	Cout
5Vdc	4.7µF/25V	3.3Vdc	10µF/16V	±3.3Vdc	±4.7µF/16V
12Vdc	2.2µF/25V	5Vdc	10µF/16V	±5Vdc	±4.7µF/16V
15Vdc	2.2µF/25V	9Vdc	2.2µF/16V	±9Vdc	±1µF/16V
24Vdc	1µF/50V	12Vdc	2.2µF/25V	±12Vdc	±1µF/25V
--	--	15Vdc	1µF/25V	±15Vdc	±1µF/25V
--	--	24Vdc	1µF/50V	±24Vdc	±1µF/50V

**EMC (CLASS B) Compliance Circuit**



EMC Recommended Circuit Value Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8μH

**Markings and Dimensions**

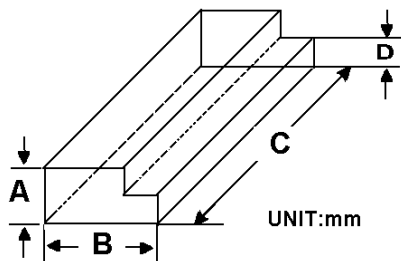


UNIT: mm unless otherwise specified, all tolerances are ±0.25

**PIN Connection**

PIN	1	2	4	5	6
Single	+Vin	-Vin	-Vout	No Pin	+Vout
Dual	+Vin	-Vin	-Vout	Com	+Vout

**Packaging**



Size (mm)			
A	B	C	D
9.5	16.5	522	5.0

## FEATURES:

- 14 pin SMD package
- No-load input current as low as 5mA
- Continuous short-circuit protection
- High Efficiency up to 87%
- Unregulated Output Types
- 1.5KVDC ~ 3KVDC Isolation
- Industry Standard Pinout
- Designed to IEC62368, UL62368, EN62368
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage Vdc	Output Current mA	Efficiency %TYP	Capacitive Load(μF) Max.	Package Style
	Vdc	Vdc	mA	%TYP	Max.	
ES3R-05S05P3	4.5~5.5	5	200	82	2400	R
ES3-05S05P3	4.5~5.5	5	200	82	2400	blank'
ES3R-24S09P3	19.2~28.8	9	112	85	1000	R

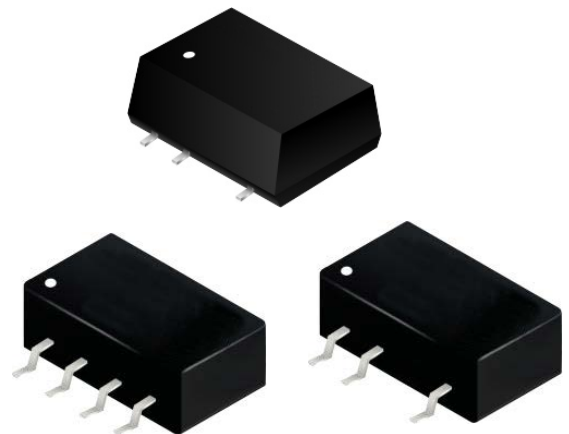
### Note:

- 1: No suffix is standard isolation (1.5KVDC) e.g., ES3-12S05P  
 \*add suffix "3" for 3KVDC isolation, e.g., ES3-12S05P3, ES3-15S12P3,  
 Package style: no suffix = package 1, T = package 2, R = package 3  
 e.g., ES3T-15S05P, ES3R-24S12P3  
 When the I / O is equal to 24V, package 1 and 2 are not available
- 2: No "P" suffix = no short circuit protection, e.g., ES3-05S05  
 \*add suffix "P" for short circuit protection, e.g., ES3T-05S05P, ES3R-05S12P3
- 3: Character after "-" is Input Voltage: 12=12Vdc, 15=15Vdc, 24=24Vdc  
 e.g., ES3R-12S05P, ES3-15S12P3, ES3T-24S15P.

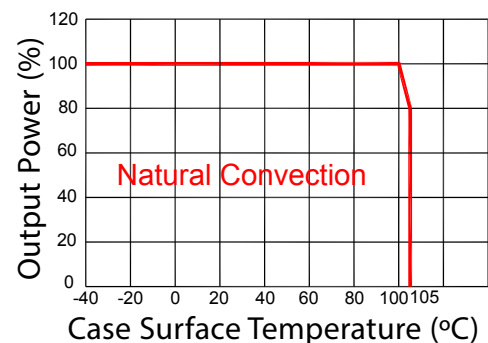


## DC-DC Converter ES3 Series

1 Watt  
1.5KV ~ 3KV Isolated  
Single Output  
SMD14



### Temperature Derating Graph



## Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Range	Vo, Io Nom@Vin:5V		±10		%
	Vo, Io Nom@ Vin:12V,15V,24V		±20		%
Filter	Capacitor				

## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±5	%
Short Circuit Protection	without suffix "P"			1	Sec
	With Suffix "P"		Continuous		
Line Regulation	For 1.0% OF Vin		1.2		%
Load Regulation	3.3V (10% To 100% F.L)		15	20	%
	5V (10% To 100% F.L)		10	15	%
	9V (10% To 100% F.L)		8	10	%
	12V (10% To 100% F.L)		7	10	%
	15V (10% To 100% F.L)		6	10	%
Ripple & Noise	24V (10% To 100% F.L)		5	10	%
	BW=DC To 20MHz @Vo:3.3V,5V,9V,12V,15V		30	75	mVp-p
	BW=DC To 20MHz @ Vo:24V		50	100	mVp-p

## General Specifications

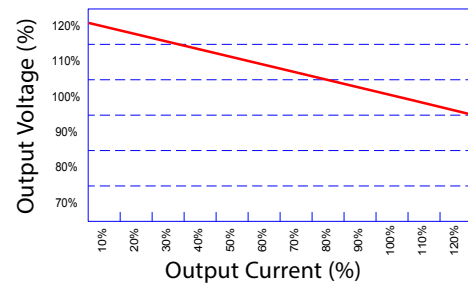
Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		20		pF
Switching Frequency	Full load, nominal input @5V Vin		370		KHz
	Full load, nominal input @other Vin		250		KHz
Operating Temperature		-40		+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	3,500,000			Hours
Weight	Package 1/2/3		1.2/1.2/1.28		g
	Package 1		12.7x7.6x6.25		mm
	Package 2		12.7x7.6x6.25		mm
Dimensions	Package 3		12.8x10.8x6.9		mm

## Part Number

ES3 X - XX X XX X X  
A B C D E F G

A: Series  
B: Package  
C: Input Voltage  
D: Single (S) / Dual Output (D)  
E: Output Voltage  
F: Protection (P)  
G: Isolation Voltage

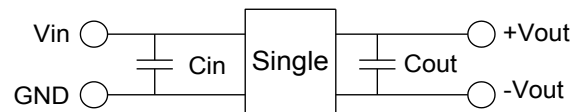
## Tolerance Envelope Graph



## Electromagnetic Compatibility (EMC)

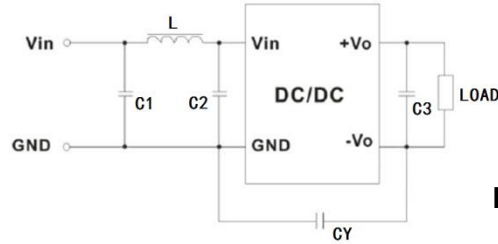
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

## Recommended Test Circuit



Vin	Cin	Single Vout	Cout
5Vdc	4.7μF/25V	3.3Vdc	10μF/16V
12Vdc	2.2μF/25V	5Vdc	10μF/16V
15Vdc	2.2μF/25V	9Vdc	2.2μF/16V
24Vdc	1μF/50V	12Vdc	2.2μF/25V
--	--	15Vdc	1μF/25V
--	--	24Vdc	1μF/50V

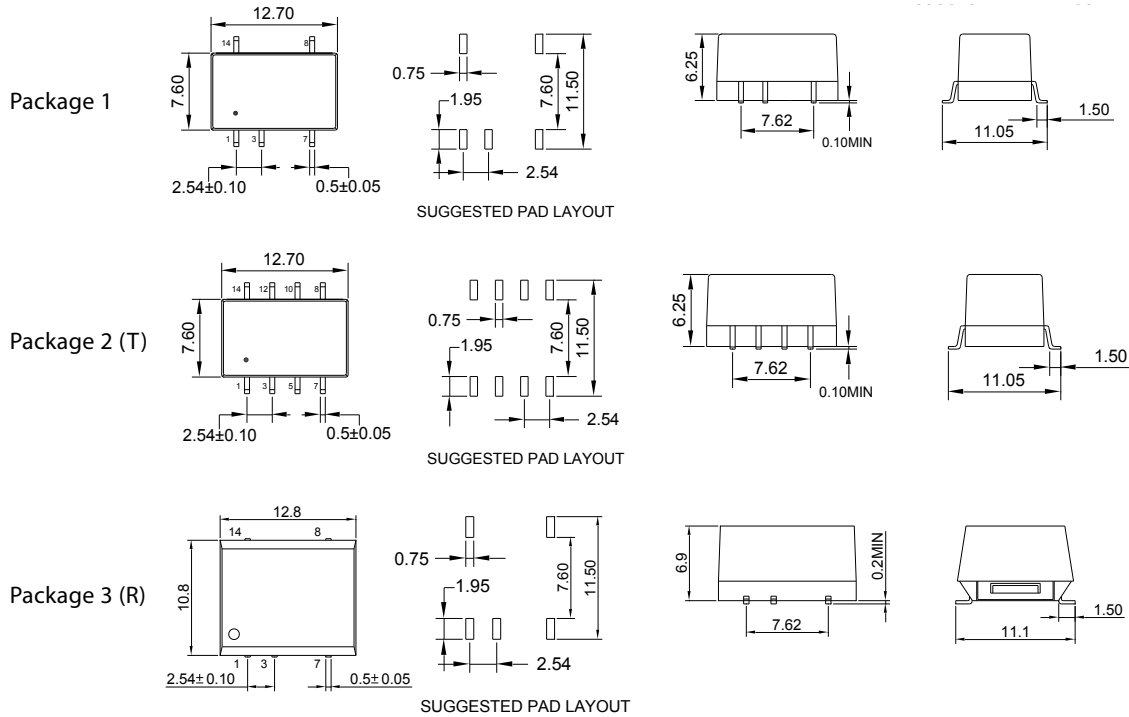
**EMC (CLASS B) Compliance Circuit**



**Fig.1**

EMC Recommended Circuit Value Table		
EMI	C1	4.7 $\mu$ F /50V
	C2	4.7 $\mu$ F /50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8 $\mu$ H

**Markings and Dimensions**



UNIT: mm unless otherwise specified, all tolerances are  $\pm 0.25$

**PIN Connection**

PIN	1	3	7	8	14	Other
Package 1/3	-Vin	+Vin	-Vout	+Vout	NC	NO PIN
Package 2	-Vin	+Vin	-Vout	+Vout	NC	NC

## FEATURES:

- 3 pin SIP package
- Pin-out compatible with LM78XX Linear
- Efficiency up to 96%, Non isolated, no need for heatsink
- Customized Solutions Available
- UL94V-0 Package Material
- Short circuit protection
- UL Recognized

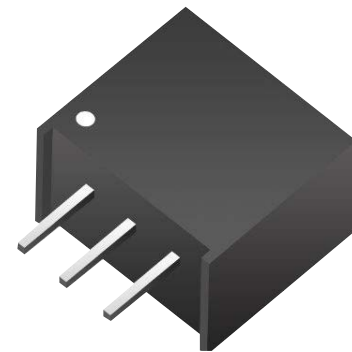


## DC-DC Converter NL1-1A Series

Non-Isolated  
Single Output  
0.45"\*0.3"\*0.4"

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	
	Vdc	Vdc	mA	Min.Vin(%)	Max.Vin(%)
NL1-3P3-1A	4.75~36	3.3	1000	90	78
NL1-05-1A	6.5~36	5	1000	92	85
NL1-6P5-1A	9.0~36	6.5	1000	93	88
NL1-09-1A	12~36	9	1000	95	90
NL1-12-1A	15~36	12	1000	95	92
NL1-15-1A	18~36	15	1000	96	94

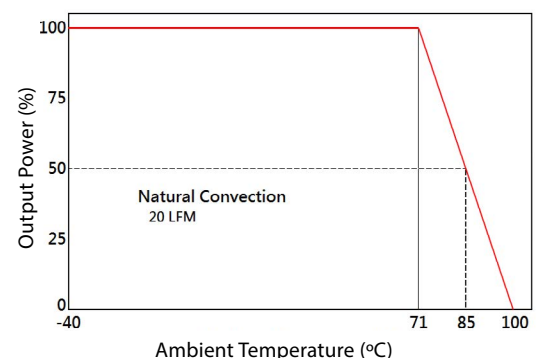


### Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance				±2	%
Short Circuit Protection	Hiccup, automatic recovery				
Line Regulation	1.2V to 1.5V			0.3	%
	1.8V to 15V			0.3	%
Load Regulation	1.2V to 1.5V (10% To 100% F.L)			0.6	%
	1.8V to 15V (10% To 100% F.L)			0.4	%
Ripple & Noise (Without Output Capacitor)	1.2V to 6.5V (BW=DC To 20MHz)			50	mVp-p
	9V to 15V (BW=DC To 20MHz)			75	mVp-p
Transient Response Setting Time	25% load step change		250		us
Capacitive Load				470	uF



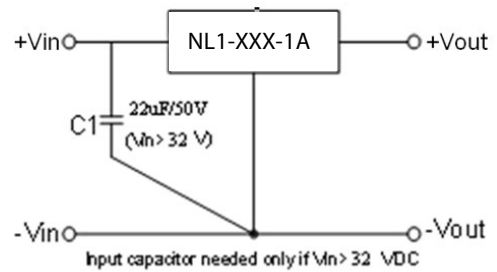
### Temperature Derating Graph



## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Switching Frequency			500		KHz
Operation Temperature	With derating	-40		+85	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Natural Convection (20LFM)				
Case Material	Non-Conductive Black Plastic				
Weight			2.0		g
Dimensions			11.6x7.6x10.4		mm
MTBF (+25°C)	using MIL-HDBK 217F		5000x10 <sup>3</sup>		hours
MTBF (+71°C)	using MIL-HDBK 217F		1000x10 <sup>3</sup>		hours

## Application Examples

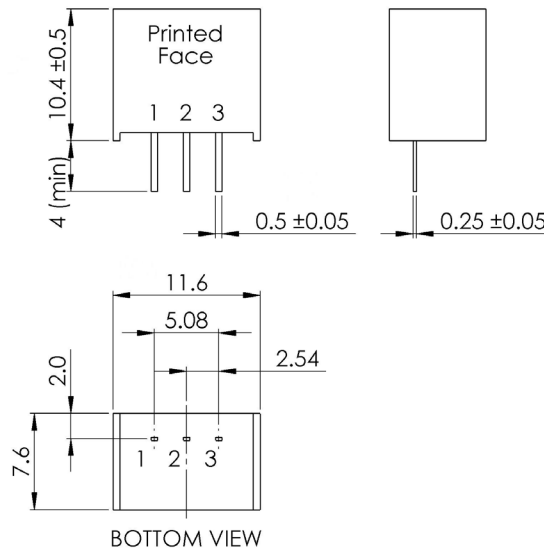


## Part Number

$$\frac{NL1}{A} - \frac{XXX}{B} - \frac{1A}{C}$$

A: Series  
B: Output Voltage  
C: Output Current

## Markings and Dimensions



UNIT: mm  
Tolerance: XX.X ± 0.5, XX.XX ± 0.25,

## PIN Connection

PIN	1	2	3
Function	+Vin	GND	+Vout

## FEATURES:

- 3 pin SIP package
- Pin-out compatible with LM78XX Linear
- Efficiency up to 97%, Non isolated, no need for heatsink
- Customized Solutions Available
- UL94V-0 Package Material
- Short circuit protection, thermal shutdown
- UL Recognized

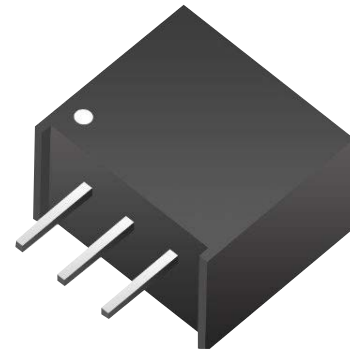


## DC-DC Converter NL1-P5 Series

Non-Isolated  
Single Output  
0.45" \* 0.3" \* 0.4"

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency	
	Vdc	Vdc	mA	Min.Vin(%)	Max.Vin(%)
NL1-3P3-P5	4.75~34	3.3	500	91	81
NL1-05-P5	6.5~34	5	500	94	86

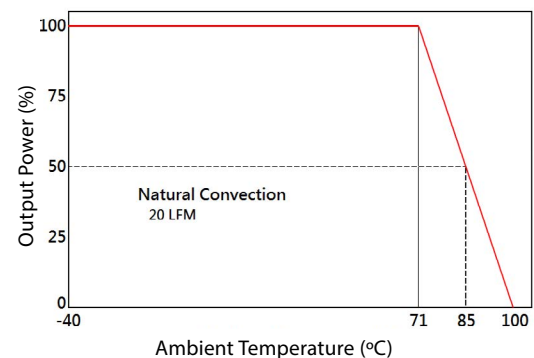


### Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance				±3	%
Short Circuit Protection	Hiccup, automatic recovery				
Line Regulation	1.5V to 6.5V			0.4	%
	9V to 15.5V			0.2	%
Load Regulation	1.5V to 6.5V (10% To 100% F.L)			0.6	%
	9V to 15.5V (10% To 100% F.L)			0.4	%
Ripple & Noise (Without Output Capacitor)	1.5V to 6.5V (BW=DC To 20MHz)			30	mVp-p
	9V to 15.5V (BW=DC To 20MHz)			40	mVp-p
Transient Response Setting Time	25% load step change		350		us



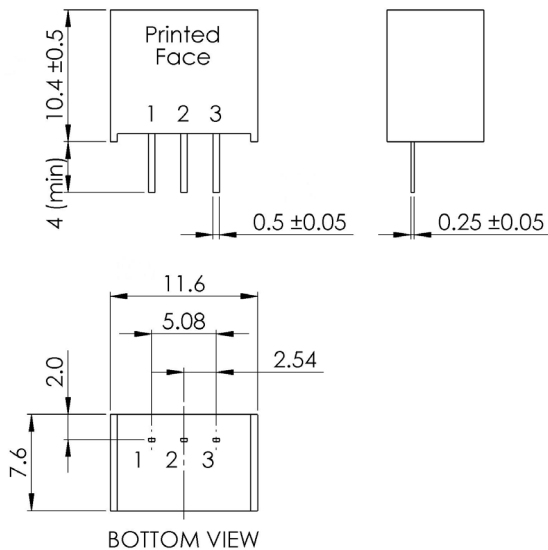
### Temperature Derating Graph



## General Specifications

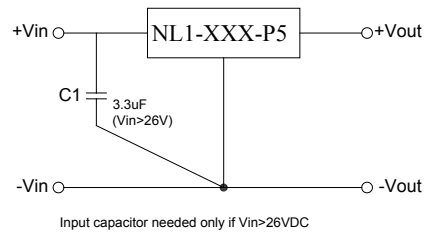
Parameters	Conditions	Min	Typ	Max	Units
Switching Frequency			330		KHz
Operation Temperature	With derating	-40		+85	°C
Humidity	Non Condensing			95	%
Cooling	Natural Convection (20LFM)				
Case material	Non-Conductive Black Plastic				
Weight			2.0		g
Dimensions			11.6x7.6x10.4		mm
MTBF(+25°C)	using MIL-HDBK 217F		21098x10 <sup>3</sup>		hours
MTBF(+71°C)	using MIL-HDBK 217F		4212x10 <sup>3</sup>		hours

## Markings and Dimensions



UNIT: mm  
Tolerance: XX.X ± 0.5, XX.XX ± 0.25,

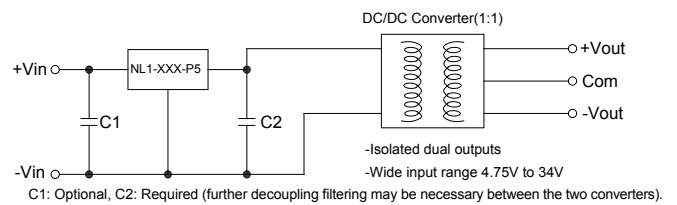
## Application Examples



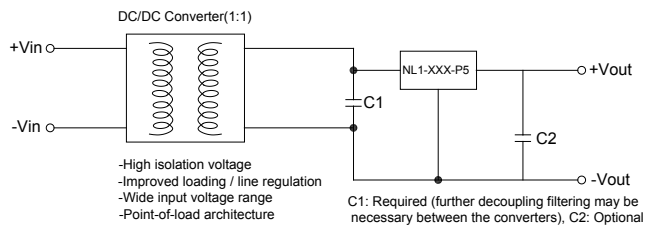
Add a blocking diode to Vout if current can flow backwards into the output, as this can damage the converter when it is powered down. See Application Examples for details.

## Application Examples

High efficiency, isolated, dual unregulated outputs



Isolated (up to 6KV), wide input range regulated output



## Part Number

$\frac{NL1}{A} - \frac{XXX}{B} - \frac{P5}{C}$

A: Series  
B: Output Voltage  
C: Output Current

## PIN Connection

PIN	1	2	3
Function	+Vin	GND	+Vout

## FEATURES:

- 2:1 Wide Input Voltages Range
- High Efficiency up to 85%
- Regulated Output Types
- Low Ripple and Noise
- Internal SMD Construction
- 1KVDC & 3KVDC Isolation
- Industry Standard Pinout
- Continuous Short-Circuit Protection With Current Foldback
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

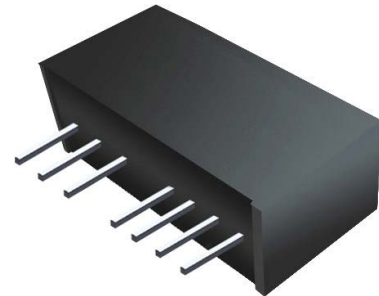
Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency
	Vdc	Vdc	mA	%TYP
RD7-12D12R	9~18	±12	±84	80
RD7-24D12R	18~36	±12	±84	80

### Note:

1: No suffix is standard isolation (1KVDC) e.g., RD7-12D05R  
\*add suffix "3" for 3KVDC isolation, e.g., RD7-12D05R3

# ADAM TECH

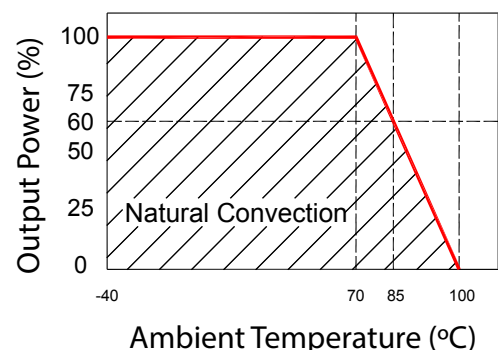
DC-DC Converter  
**RD7 Dual Series**  
2 Watt 1KV & 3KV Isolated  
2:1 Input Voltage Range  
Dual Output  
SIP7



### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types	Vo, Io Nom			2:1	
Filter	Capacitor				

### Temperature Derating Graph



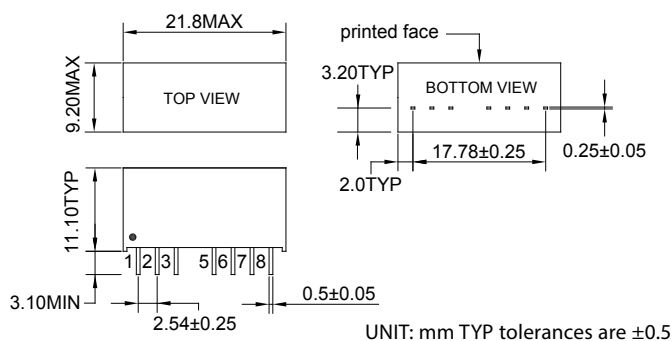
## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±3	%
Short Circuit Protection	Continuous				
Line Regulation	Regulated			±0.5	%
Load Regulation	Regulated			±0.8	%
Ripple & Noise	Output:5-9V TYPES BW=DC To 20MHz			100	mVp-p
	Output:12-24V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient Response Setting Time	50% load step change		350		us

## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Full load, nominal input		100		KHz
Operating Temperature		-40		+85	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	1,500,000			Hours
Weight			4.5		g
Dimensions			21.8x9.2x11.1		mm

## Markings and Dimensions

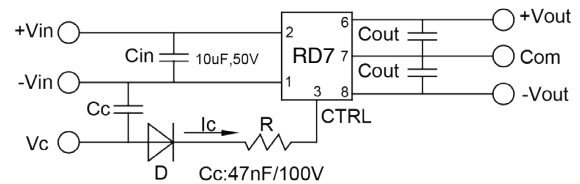


## Part Number

RD7 - XX X XX X X  
A B C D E F

A: Series  
B: Input Voltage  
C: Dual Output (D)  
D: Output Voltage  
E: Regulated (R)  
F: Isolation Voltage

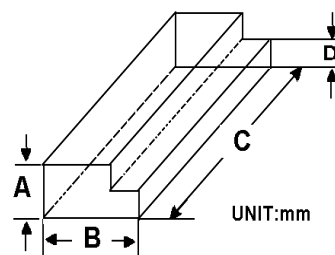
## Recommended Test Circuit



5V: Cin 10uF, 25V 5V: Cout 100uF/25V  
12V: Cin 10uF, 50V 9V: Cout 100uF/25V  
24V: Cin 10uF, 100V 12V: Cout 100uF/25V  
48V: Cin 10uF, 100V 15V: Cout 100uF/50V  
24V: Cout 100uF/50V

- When open or high impedance, the converter works well; when this pin is 'high', the converter shuts down. It should be noted that the input current should be between 5-10mA, exceeding the maximum 20mA will cause permanent damage to the converter.
- To make sure the product works at perfect operation status, a full loading external capacitor is necessary and it is recommended to use a high frequency low resistance electrolytic capacitor.

## Packaging



Size (mm)			
A	B	C	D
12.0	28.55	550	6.00

## PIN Connection

PIN	1	2	3	5	6	7	8
1KV	-Vin	+Vin	Ctrl-Control input can (can be left open)	NE-No external connection allowed	+Vout	COM	-Vout
3KV	-Vin	+Vin	Ctrl-Control input can (can be left open)	No Pin	+Vout	COM	-Vout

## FEATURES:

- 2:1 Wide Input Voltages Range
- High Efficiency up to 85%
- Regulated Output Types
- Low Ripple and Noise
- Internal SMD Construction
- 1KVDC & 3KVDC Isolation
- Industry Standard Pinout
- Continuous Short-Circuit Protection With Current Foldback
- UL Recognized

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

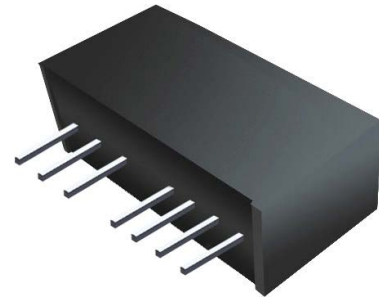
Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency
	Vdc	Vdc	mA	%TYP
RD7-05S05R	5~9	5	400	65
RD7-12S09R	9~18	9	222	80
RD7-24S12R	18~36	12	167	80
RD7-05S05R3	5~9	5	400	65
RD7-24S05R3	18~36	5	400	75

### Note:

1: No suffix is standard isolation (1KVDC) e.g., RD7-12S05R  
\*add suffix "3" for 3KVDC isolation, e.g., RD7-12S05R3

# ADAM TECH

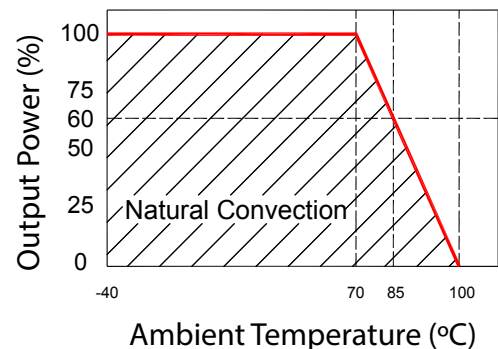
## DC-DC Converter RD7 Single Series 2 Watt 1KV & 3KV Isolated 2:1 Input Voltage Range Single Output SIP7



### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types	Vo, Io Nom			2:1	
Filter	Capacitor				

### Temperature Derating Graph



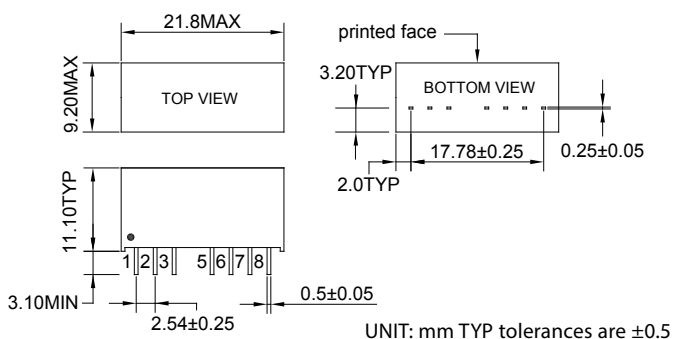
## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±3	%
Short Circuit Protection	Continuous				
Line Regulation	Regulated			±0.5	%
Load Regulation	Regulated			±0.8	%
Ripple & Noise	Output:5-9V TYPES BW=DC To 20MHz			100	mVp-p
	Output:12-24V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient Response Setting Time	50% load step change		350		us

## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Full load, nominal input		100		KHz
Operating Temperature		-40		+85	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	1,500,000			Hours
Weight			4.5		g
Dimensions			21.8x9.2x11.1		mm

## Markings and Dimensions

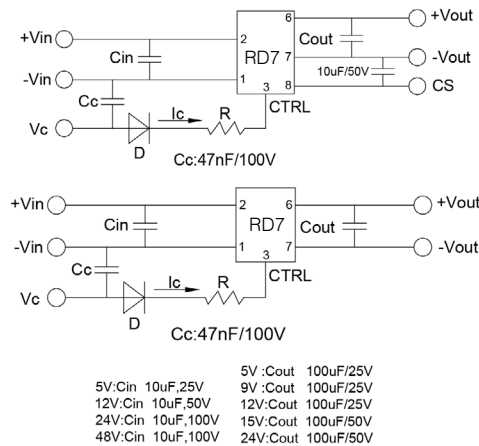


## Part Number

RD7 - XX X XX X X  
A B C D E F

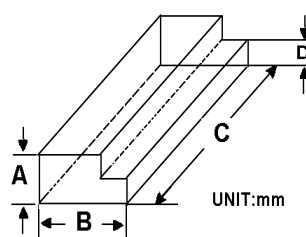
A: Series  
B: Input Voltage  
C: Single Output (S)  
D: Output Voltage  
E: Regulated (R)  
F: Isolation Voltage

## Recommended Test Circuit



- When open or high impedance, the converter works well; when this pin is 'high', the converter shuts down. It should be noted that the input current should be between 5-10mA, exceeding the maximum 20mA will cause permanent damage to the converter.
- To make sure the product works at perfect operation status, a full loading external capacitor is necessary and it is recommended to use a high frequency low resistance electrolytic capacitor.

## Packaging



Size (mm)			
A	B	C	D
12.0	28.55	550	6.00

## PIN Connection

PIN	1	2	3	5	6	7	8
1KV	-Vin	+Vin	Ctrl-Control input can (can be left open)	NE-No external connection allowed	+Vout	-Vout	CS Optional External capacitor
3KV	-Vin	+Vin	Ctrl-Control input can (can be left open)	No Pin	+Vout	-Vout	NC

## FEATURES:

- 2:1 Wide Input Voltages Range
- High Efficiency up to 80%
- Regulated Output Types
- Low Ripple and Noise
- Internal SMD Construction
- 1.5KVDC ~ 3KVDC Isolation
- Industry Standard Pinout
- Continuous Short-Circuit Protection With Current Foldback
- UL Recognized

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

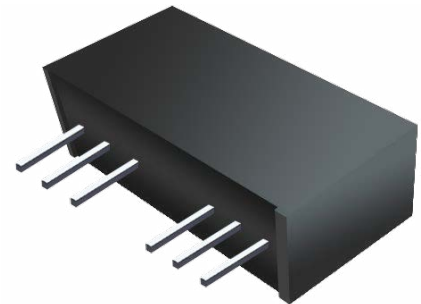
Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency
	Vdc	Vdc	mA	%TYP
RD7-24D053R	18~36	±5	±300	70
RD7-12D153R3	9~18	±15	±100	80
RD7-24D123R3	18~36	±12	±125	78
RD7-24D153R3	18~36	±15	±100	80

### Note:

1: No suffix is standard isolation (1.5KVDC) e.g., RD7-12D053R  
\*add suffix "3" for 3KVDC isolation, e.g., RD7-12D053R3

# ADAM TECH

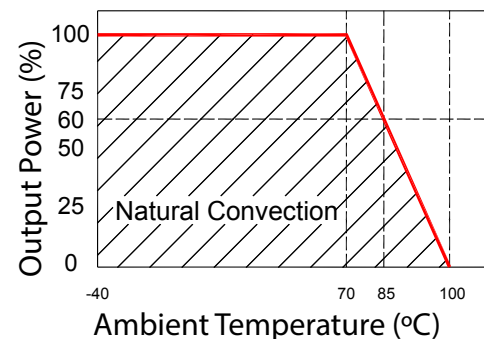
DC-DC Converter  
**RD7-3W Dual Series**  
3 Watt 1.5KV ~ 3KV Isolated  
2:1 Input Voltage Range  
Dual Output  
SIP8



### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types	Vo, Io Nom			2:1	
Filter	Capacitor				

### Temperature Derating Graph



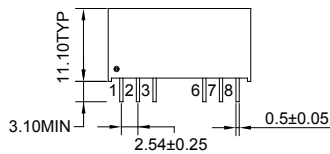
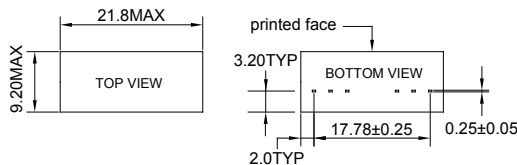
## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±3	%
Short Circuit Protection	Continuous				
Line Regulation	Regulated			±0.5	%
Load Regulation	Regulated			±0.8	%
Ripple & Noise	Output:5-9V TYPES BW=DC To 20MHz			100	mVp-p
	Output:12-15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient Response Setting Time	50% load step change		350		us

## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Full load, nominal input		100		KHz
Operating Temperature		-40		+85	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	1,500,000			Hours
Weight			4.5		g
Dimensions			21.8x9.2x11.1		mm

## Markings and Dimensions



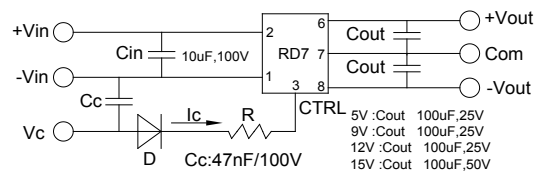
UNIT: mm TYP tolerances are ±0.5

## Part Number

RD7 - XX X XX X X X  
A B C D E F G

A: Series  
B: Input Voltage  
C: Dual Output (D)  
D: Output Voltage  
E: Output Power  
F: Regulated (R)  
G: Isolation Voltage

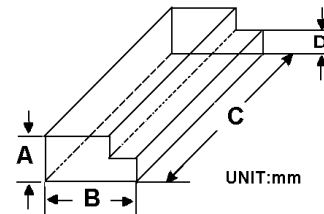
## Recommended Test Circuit



1. When open or high impedance, the converter works well; when this pin is 'high', the converter shuts down. It should be noted that the input current should be between 5-10mA, exceeding the maximum 20mA will cause permanent damage to the converter.

2. To make sure the product works at perfect operation status, a full loading external capacitor is necessary and it is recommended to use a high frequency low resistance electrolytic capacitor.

## Packaging



Size (mm)			
A	B	C	D
12.0	28.55	550	6.00

## PIN Connection

PIN	1	2	3	6	7	8
Dual	-Vin	+Vin	Ctrl-Control input can (can be left open)	+Vout	Com	-Vout

## FEATURES:

- 2:1 Wide Input Voltages Range
- High Efficiency up to 80%
- Regulated Output Types
- Low Ripple and Noise
- Internal SMD Construction
- 1.5KVDC ~ 3KVDC Isolation
- Industry Standard Pinout
- Continuous Short-Circuit Protection With Current Foldback
- UL Recognized

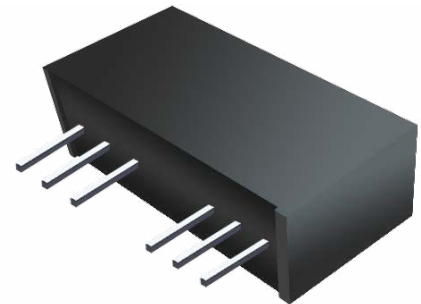


## DC-DC Converter RD7-3W Single Series

3 Watt 1.5KV ~ 3KV Isolated  
2:1 Input Voltage Range  
Single Output  
SIP8

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Output Voltage	Output Current	Efficiency
	Vdc	Vdc	mA	%TYP
RD7-12S033R	9~18	3.3	909	70
RD7-12S123R	9~18	12	250	78
RD7-24S033R	18~36	3.3	700	68
RD7-24S123R	18~36	12	250	78
RD7-24S153R	18~36	15	200	80
RD7-12S053R3	9~18	5	600	70
RD7-24S053R3	18~36	5	600	70
RD7-48S053R3	36~72	5	600	70



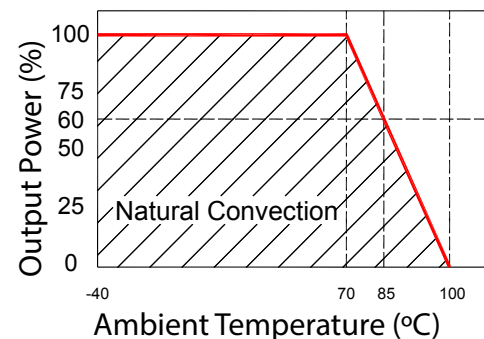
### Note:

1: No suffix is standard isolation (1.5KVDC) e.g., RD7-12S053R  
\*add suffix "3" for 3KVDC isolation, e.g., RD7-12S053R3

### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types	Vo, Io Nom			2:1	
Filter	Capacitor				

### Temperature Derating Graph



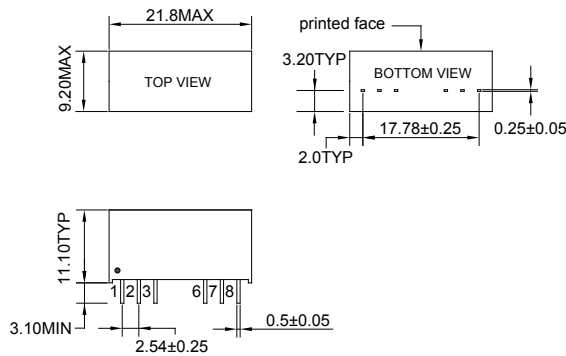
## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±3	%
Short Circuit Protection	Continuous				
Line Regulation	Regulated			±0.5	%
Load Regulation	Regulated			±0.8	%
Ripple & Noise	Output:3.3V-9V TYPES BW=DC To 20MHz			100	mVp-p
	Output:12-15V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient Response Setting Time	50% load step change		350		us

## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Full load, nominal input		100		KHz
Operating Temperature		-40		+85	°C
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	1,500,000			Hours
Weight			4.5		g
Dimensions			21.8x9.2x11.1		mm

## Markings and Dimensions



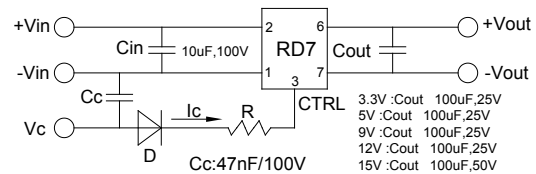
UNIT: mm TYP tolerances are ±0.5

## Part Number

RD7 - XX X XX X X X  
A B C D E F G

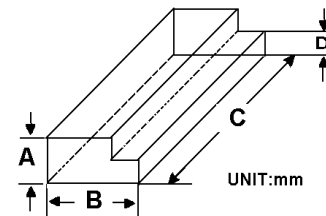
A: Series  
B: Input Voltage  
C: Single Output (S)  
D: Output Voltage  
E: Output Power  
F: Regulated (R)  
G: Isolation Voltage

## Recommended Test Circuit



- When open or high impedance, the converter works well; when this pin is 'high', the converter shuts down. It should be noted that the input current should be between 5-10mA, exceeding the maximum 20mA will cause permanent damage to the converter.
- To make sure the product works at perfect operation status, a full loading external capacitor is necessary and it is recommended to use a high frequency low resistance electrolytic capacitor.

## Packaging



Size (mm)			
A	B	C	D
12.0	28.55	550	6.00

## PIN Connection

PIN	1	2	3	6	7	8
Dual	-Vin	+Vin	Ctrl-Control input can (can be left open)	+Vout	-Vout	NC

## FEATURES:

- 6 Watt SIP8 package
- 2:1 Wide Input Voltages Range
- 100% Burned In
- High Efficiency up to 86%
- Customized Solutions Available
- Remote Control: On/Off
- UL94V-0 Package Material
- UL Recognized

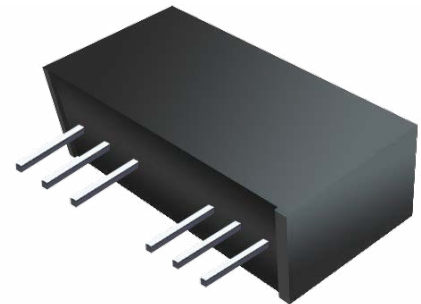
Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Input Current (mA TYP)		Output Voltage Range	Output Current	Efficiency
	Vdc	No Load	Full Load	Vdc	mA	%TYP
RD7-24S036R	18~36	7	255	3.3	1500	81
RD7-24S056R	18~36	7	301	5	1200	83
RD7-24S126R	18~36	7	294	12	500	85
RD7-24S156R	18~36	7	291	15	400	86
RD7-24S246R	18~36	7	294	24	250	85
RD7-12D126R	9~18	5	602	±12	±250	83
RD7-24D156R	18~36	7	298	±15	±200	84



## DC-DC Converter RD7-6W Series

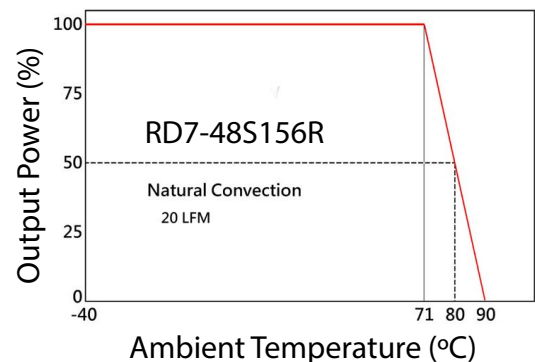
6 Watt 1.5KV Isolated  
2:1 Input Voltage Range  
Single & Dual Output  
SIP8



### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types	Vo, Io Nom			2:1	
Filter	Capacitor				

### Temperature Derating Graph



## Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±2	%
Short Circuit Protection	Continuous, Auto-Recovery				
Line Regulation		-0.5		+0.5	%
Load Regulation	Single output models Dual output models (Balance Load)	-0.5 -1.0		+0.5 +1.0	%
Ripple & Noise	Output:3V-10V TYPES BW=DC To 20MHz			100	mVp-p
	Output:>10V TYPES BW=DC To 20MHz			1% of Vout	mVp-p
Transient Response Setting Time	25% load step change		250		us

## Part Number

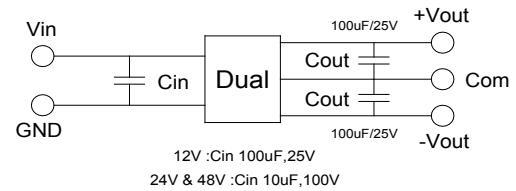
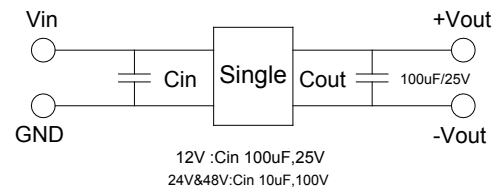
RD7 - XX X XX X X X  
A B C D E F G

A: Series  
B: Input Voltage  
C: Single (S) / Dual Output (D)  
D: Output Voltage  
E: Output Power  
F: Regulated (R)  
G: Isolation Voltage

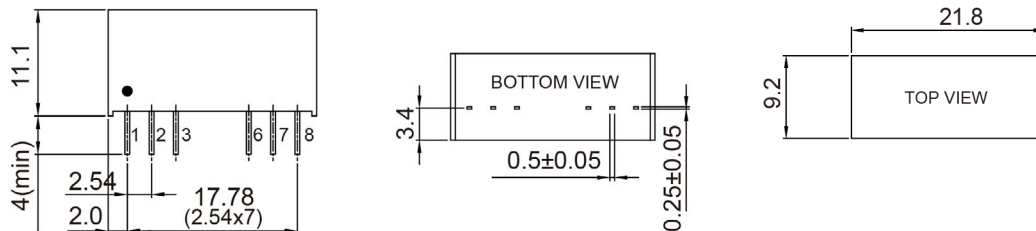
## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage			1500		Vdc
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	Single Dual		400 500		KHz
Operating Temperature		-40		+85	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing			95	%
Cooling	Natural Convection (20LFM)				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25°C	1,500,000			Hours
Weight			4.5		g
Dimensions			21.8x9.2x11.1		mm

## Recommended Test Circuit



## Dimensions



UNIT: mm tolerances are XX.X±0.5, XX.XX±0.25, the tolerance of Pin size is ±0.05

## PIN Connection

PIN	1	2	3	6	7	8
Single	-Vin	+Vin	Remote ON/OFF	+Vout	-Vout	NC
Dual	-Vin	+Vin	Remote ON/OFF	+Vout	COM	-Vout

## FEATURES:

- 1" X 1" DIL Package
- 4:1 Wide Input Voltages Range
- Regulated Output Types
- High Efficiency Up To 92%
- Customized Solutions Available
- Remote Control: On/Off
- UL/cUL/IEC 60950-1 , 62368-1 Approved (5V/12V Single Output Only)
- EMC Standard of EMI EN55032:2012+AC:2013 (Class B) Approved
- MC Standard of EMS EN55024:2010 Approved
- UL Recognized

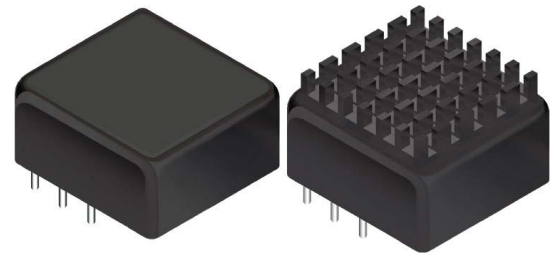
Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Input Current (mA TYP)		Output Voltage Range	Output Current	Efficiency
	Vdc	No Load	Full Load	Vdc	mA	%TYP
RQ9S-24S12R	9~36	10	1404	12	2500	89
RQ9S-24S05R	9~36	10	1420	5	6000	88
RQ9S-24S24R	9~36	10	1389	24	1250	90
RQ9S-48S05R	18~75	7	702	5	6000	89



## DC-DC Converter RQ9S Series

30 Watt 1.5KV Isolated  
4:1 Input Voltage Range  
Single & Dual Output  
1" x 1"



### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Types	V <sub>o</sub> , I <sub>o</sub> Nom			4:1	
Surge Voltage (1 sec. max.)	24V models			50	Vdc
	48V models			100	
Remote ON/OFF	Positive logic	DC-DC ON		Open or 3 ~ 15VDC	
		DC-DC OFF		Short or 0 ~ 1.2VDC	
	Input current of Ctrl pin			-0.5 ~ +1.0 mA	
	Remote off input current			2.0 mA TYP	

### Part Number

RQ9 X - XX X XX X X  
A B C D E F G

- A: Series
- B: Package
- C: Input Voltage
- D: Single (S) / Dual Output (D)
- E: Output Voltage
- F: Regulated (R)
- G: Isolation Voltage

## Output Specifications

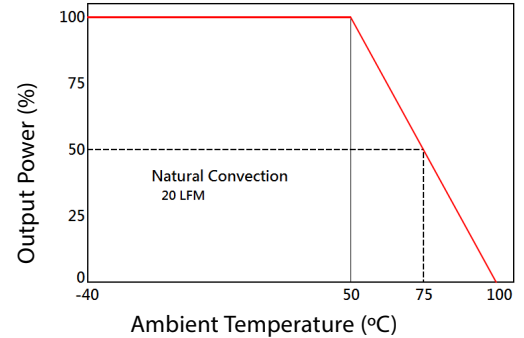
Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% full load			±2	%
Short Circuit Protection	Continuous, Auto-Recovery				
Output Power Protection	Continuous, Auto-Recovery	110		170	%
Over Voltage Protection	3.3Vdc	3.7		5.4	
	5Vdc	5.6		7.0	
	12Vdc	13.5		19.6	Vdc
	15Vdc	18.3		22.0	
	24Vdc	29.1		32.5	
Line Regulation	Nominal Input Voltage			±0.5	%
Load Regulation	Single			±0.5	%
Ripple & Noise	BW=DC To 20MHz Single: 3.3V & 5V with 22uF 12V & 15V with 2*22uF 24V with 2*6.8uF			100	mVp-p
Start up time	Nominal Input Voltage			30	ms
Transient Response Setting Time	25% load step change		350		us

## General Specifications

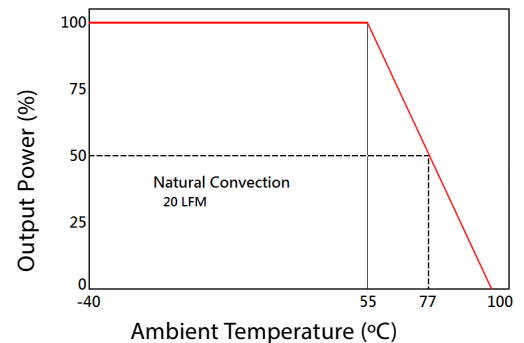
Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage	Input To Output	1500			Vdc
	Input (Output) To Case	1000			
Isolation Resistance	500Vdc	1000			MΩ
Switching Frequency	3.3 & 5.0 Vout models:	245	275	305	KHz
	other models:	300	330	360	
Operating Temperature	Without Heatsink	-40		75	°C
	With Heatsink	-40		77	
Case Temperature				105	°C
Humidity	Non Condensing	5		95	%
Cooling	Natural Convection (20LFM)				
Case Material	Six-side shield case				
MTBF	MIL-HDBK-217F@25°C	1,200,000			Hours
Weight	Without Heatsink		22		g
	With Heatsink		24.5		
Dimensions			25.4x25.4x10.6		mm

## Temperature Derating Graph @20LFM

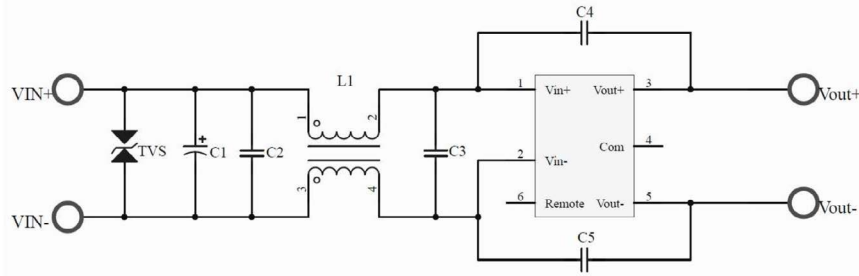
### Derating Curve



### Derating Curve With Heat-Sink

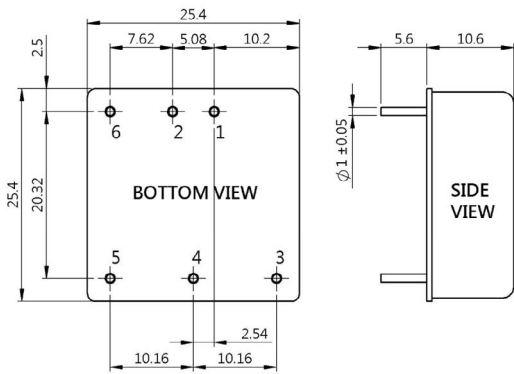


**Recommended Test Circuit**



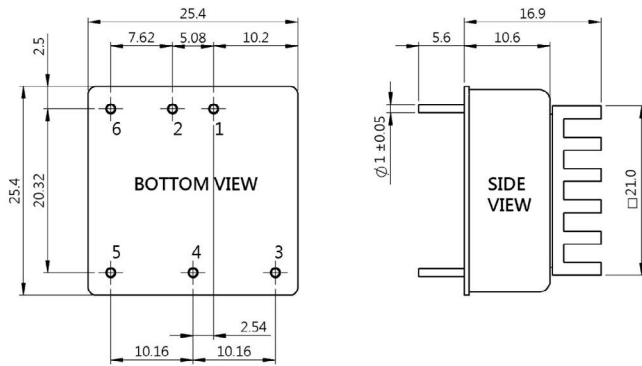
24V C1 220uF/100V&C2&C3 4.7uF/50V C4&C5 2200pF/2kV L1 0.94mH TVS 3.0SMCJ58AG  
 48V C1 220uF/100V&C2&C3 4.7uF/100V C4&C5 3200pF/2kV L1 6.20mH TVS 3.0SMCJ120AG

**Dimensions**



**No Heat Sink**

UNIT: mm  
 Tolerances are XX.X±0.5, XX.XX±0.25



**Heat Sink**

UNIT: mm  
 Tolerances are XX.X±0.5, XX.XX±0.25

**PIN Connection**

PIN	1	2	3	4	5	6
Single	+Vin	-Vin	+Vout	Trim	-Vout	Remote ON/OFF
Dual	+Vin	-Vin	+Vout	Com	-Vout	Remote ON/OFF

**FEATURES:**

- 15 Watt DIL Package
- 4:1 Wide Input Voltage Range
- High Efficiency Up To 91%
- Regulated Output Types
- No Minimum Load Required
- Over Power and Short Circuit Protection
- UL94V-0 Package Material
- 100% Burned In
- UL Recognized



**DC-DC Converter**  
**KR15 Series**

**15 Watt**  
**1600Vdc Isolated**  
**4:1 Input Voltage Range**  
**Single & Dual Output**  
**DIP24 Package**

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range		Input Current (mA TYP)		Output Voltage Range		Output Current (mA (typ))	Efficiency % (typ)	Maximum Capacitor Load (µ F)
	Vdc	No-Load	Full-Load	Vdc	mA (typ)				
		mA (typ)	mA (typ)						
KR15-24S12	9~36	7	702	12	1250	89	1200		
KR15-24S24	9~36	7	694	24	625	90	300		



**Part Number**

$\frac{KR}{A} \frac{15}{B} - \frac{XX}{C} \frac{X}{D} \frac{XX}{E}$

- A: Series
- B: Output Power
- C: Input Voltage
- D: Single (S) / Dual Output (D)
- E: Output Voltage



**Input Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Input Voltage	24V models	9		36	Vdc
	48V models	18		75	
Input Surge Voltage (100 ms max.)	24V models	-0.7		50	Vdc
	48V models	-0.7		100	
Start-up Voltage	24V models			9	Vdc
	48V models			18	
Under Voltage Shutdown	24V models		7.5		Vdc
	48V models		16		
Start-up Time	Constant Resistive Load, Nominal Vin	Power-up	30		ms
		Remote ON/OFF	30		
Input Filter	All Models		Internal Pi type		
Remote ON/OFF (Ctrl PIN Refer to -Vin PIN)	Positive Logic	DC-DC ON	Open or 3.5 ~ 12VDC		
		DC-DC OFF	Short or 0 ~ 1.2VDC		
	Input Current of Ctrl Pin	-0.5		0.5	mA
Remote Off Input Current		3			

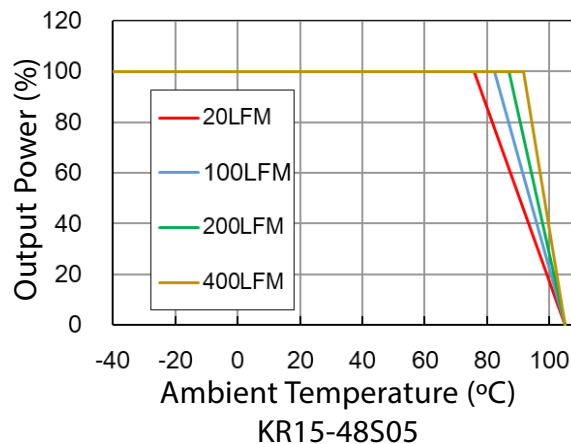
**Output Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% Load	-2		+2	%
Line Regulation	Vin (min) to Vin (max) @100% Load	-0.2		+0.2	%
Load Regulation	0% Load to 100% Load	5V Output	-1	+1	%
		Other Outputs	-0.5	+0.5	
Load Cross Regulation	Asymmetrical Load 25% / 100% Load	Dual Output	-5.0	+5.0	%
Ripple & Noise (BW=20MHz)	24Vout			150	mVp-p
	Other Outputs			100	
Transient Response Setting Time	25% Load Step Change		300	500	us
Transient Response Deviation	25% Load Step Change	-5	±3	+5	%
Temperature Coefficient		-0.02		+0.02	%/°C
Output Power Protection	% of Io, Hiccup mode, Auto-recovery	120	150	180	%
Short Circuit Protection	Continuous [Hiccup Mode], Auto-Recovery				
Over Voltage Protection	5Vout		6.2		Vdc
	12Vout		15		
	15Vout		18		
	24Vout		30		

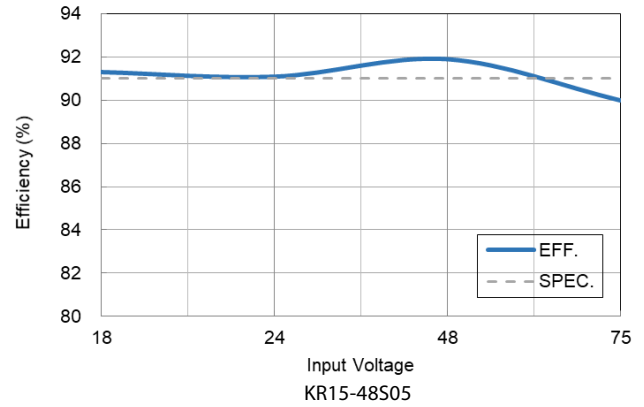
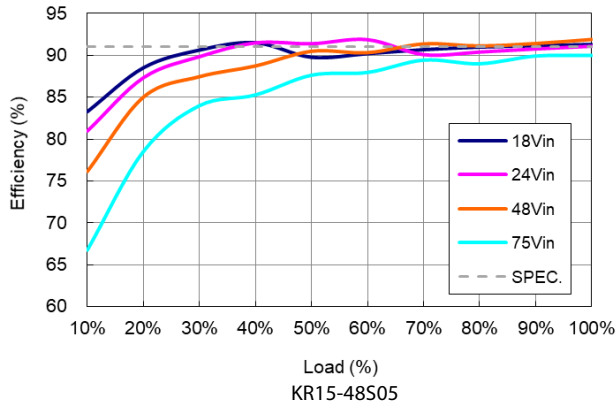
## General Specifications

Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage	Input To Output (60 sec)	1600			Vdc
	Input (Output) To Case (60 sec)	1000			Vdc
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	100kHz, 1V			2200	pF
Switching Frequency	100% Load, Nominal Input	5V Output		250	KHz
		Other Output		330	
Operating Ambient Temperature (Power Derating See Derating Graph)	Nominal Vin, 100% Load	KR15-24S05, KR15-48S05 KR15-48S15, KR15-48S24		+75.9	°C
		KR15-24S12, KR15-24D12		+68.7	
		KR15-24S15, KR15-24S24, KR15-24D15, KR15-48S12, KR15-48D12, KR15-48D15		+72.3	
Thermal Impedance	20LFM			19.6	°C/W
	100LFM			15.3	
	200LFM			12.1	
	400LFM			8.9	
Maximum Case Temperature				+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing	5		95	%
Cooling	Natural Convection				
Case Material	Copper				
Potting Material	Silicone (UL94-V0)				
MTBF	MIL-HDBK-217F@25°C (calculated)		9.03X10 <sup>5</sup>		Hours
Weight			17		g
Dimensions	31.6 x 20.1 x 10.0				mm

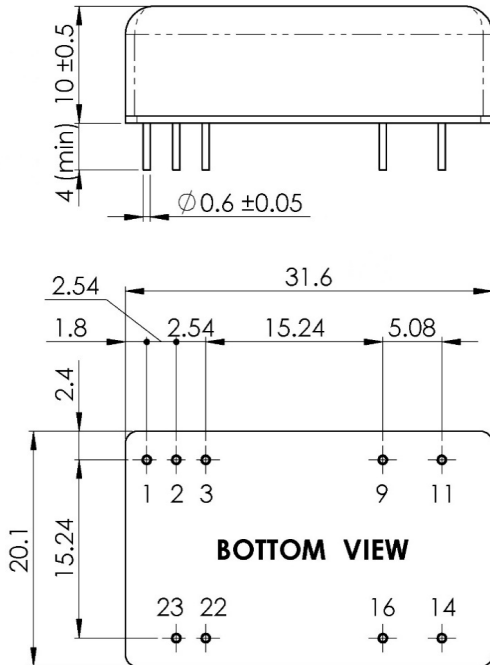
## Temperature Derating Graph



**Characteristic Curve**



**Dimensions**



UNIT: mm  
Tolerances are XX.X±0.5, XX.XX±0.25

**PIN Assignment**

PIN	Single	Dual	Diameter
1	Ctrl	Ctrl	0.6mm [0.024"]
2	-Vin	-Vin	0.6mm [0.024"]
3	-Vin	-Vin	0.6mm [0.024"]
9	NC	Com	0.6mm [0.024"]
11	NC	-Vout	0.6mm [0.024"]
14	+Vout	+Vout	0.6mm [0.024"]
16	-Vout	Com	0.6mm [0.024"]
22	+Vin	+Vin	0.6mm [0.024"]
23	+Vin	+Vin	0.6mm [0.024"]

**FEATURES:**

- 10 Watt DIL Package
- 4:1 Wide Input Voltage Range
- High Efficiency Up To 88%
- Regulated Output Types
- No Minimum Load Required
- Over Power and Short Circuit Protection
- UL94V-0 Package Material
- 100% Burned In
- UL Recognized



**DC-DC Converter**  
**UC10 Series**

**10 Watt**  
**1600Vdc Isolated**  
**4:1 Input Voltage Range**  
**Single & Dual Output**  
**DIP16 Package**

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Input Current (mA TYP)		Output Voltage Range	Output Current (mA (typ))	Efficiency % (typ)	Maximum Capacitor Load $\mu$ F
		No-Load mA (typ)	Full-Load mA (typ)				
	Vdc	mA (typ)	mA (typ)	Vdc			
UC10-24S12	9~36	9	479	12	833	87	660
UC10-24S24	9~36	9	483	24	416	88	240
UC10-24D15	9~36	9	473	$\pm$ 15	$\pm$ 333	88	$\pm$ 270



**Part Number**

$\frac{UC}{A} \frac{10}{B} - \frac{XX}{C} \frac{X}{D} \frac{XX}{E}$

- A: Series
- B: Output Power
- C: Input Voltage
- D: Single (S) / Dual Output (D)
- E: Output Voltage

**Input Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Input Voltage	24V models	9		36	Vdc
	48V models	18		75	
Input Surge Voltage (100 ms max.)	24V models	-0.7		50	Vdc
	48V models	-0.7		100	
Start-up Voltage	24V models			9	Vdc
	48V models			18	
Under Voltage Shutdown	24V models		8		Vdc
	48V models		15		
Start-up Time	Constant Resistive Load, Nominal Vin		Power-up	30	ms
Input Filter	All Models			Internal LC type	

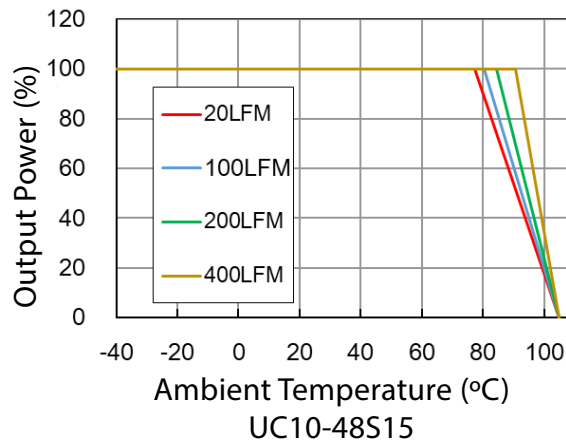
**Output Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% Load	-2		+2	%
Line Regulation	Vin (min) to Vin (max) @100% Load	-0.5		+0.5	%
Load Regulation	0% Load to 100% Load	-0.5		+0.5	%
Load Cross Regulation	Asymmetrical Load 25% / 100% Load	Dual Output	-5.0	+5.0	%
Ripple & Noise (BW=20MHz)	All models		60	100	mVp-p
Transient Response Setting Time	25% Load Step Change		350	500	us
Transient Response Deviation	25% Load Step Change	-5	±3	+5	%
Temperature Coefficient		-0.03		+0.03	%/°C
Output Power Protection	% of Io, Hiccup mode, Auto-recovery	120	155	190	%
Short Circuit Protection	Continuous [Hiccup Mode], Auto-Recovery				
Over Voltage Protection	5Vout		6.2		Vdc
	12Vout		15		
	15Vout		18		
	24Vout		30		

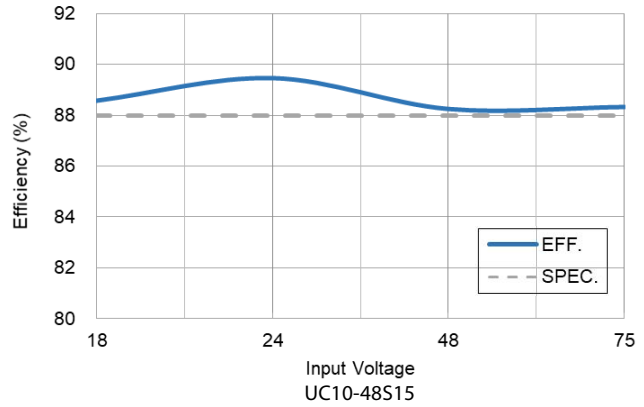
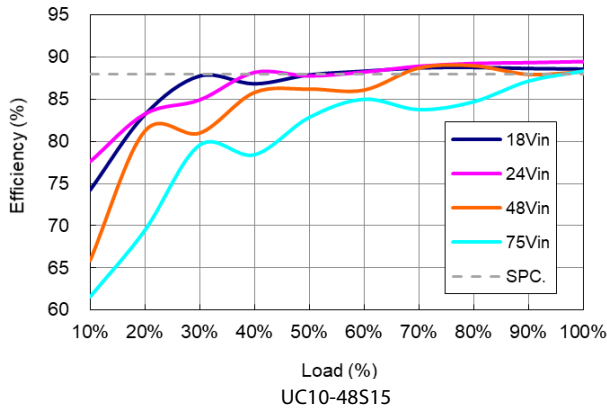
**General Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Isolation Voltage	Input To Output (60 sec)	1600			Vdc
Isolation Resistance	500Vdc	1000			MΩ
Isolation Capacitance	100kHz, 1V			2200	pF
Switching Frequency	100% Load, Nominal Input		390		KHz
Operating Ambient Temperature (Power Derating See Derating Graph)	Nominal Vin, 100% Load	UC10-24S05, UC10-48S05	-40	+66	°C
		UC10-24S12, UC10-48S12		+74	
		UC10-24S15, UC10-48S15 UC10-24S24, UC10-48S24 UC10-24D12, UC10-48D12 UC10-24D15, UC10-48D15		+77	
Thermal Impedance	20LFM		20.4		°C/W
	100LFM		18.1		
	200LFM		15.1		
	400LFM		10.5		
Maximum Case Temperature				+105	°C
Storage Temperature		-55		+125	°C
Humidity	Non Condensing	5		95	%
Cooling	Natural Convection				
Case Material	Copper, Black Coating				
Potting Material	Silicone (UL94-V0)				
MTBF	MIL-HDBK-217F@25°C (calculated)		1.1X10 <sup>6</sup>		Hours
Weight			10		g
Dimensions	24.0 x 14.0 x 9.8				mm

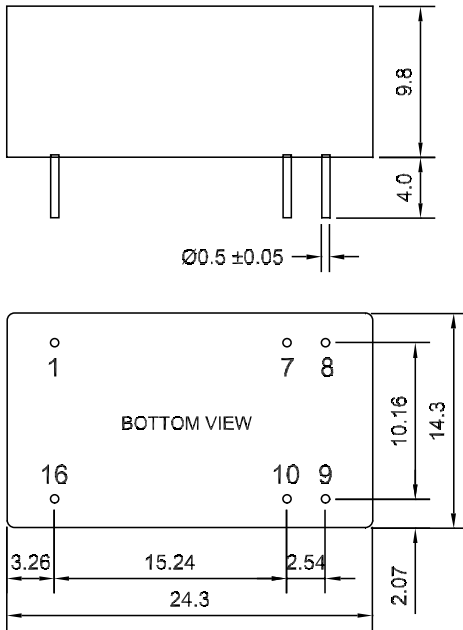
**Temperature Derating Graph**



**Characteristic Curve**



**Dimensions**



UNIT: mm  
 Tolerances are XX.X±0.5, XX.XX±0.25

UNIT: mm  
 Tolerances are XX.X±0.5, XX.XX±0.25

**PIN Assignment**

PIN	Single	Dual	Diameter
1	-Vin	-Vin	0.5mm [0.02"]
7	NC	NC	0.5mm [0.02"]
8	NC	Com	0.5mm [0.02"]
9	+Vout	+Vout	0.5mm [0.02"]
10	-Vout	-Vout	0.5mm [0.02"]
16	+Vin	+Vin	0.5mm [0.02"]

**FEATURES:**

- 15 Watt DIL Package
- 4:1 Wide Input Voltage Range
- High Efficiency Up To 90%
- Regulated Output Types
- No Minimum Load Required
- Over Power and Short Circuit Protection
- UL94V-0 Package Material
- 100% Burned In
- UL Recognized



**DC-DC Converter**  
**UC15 Series**

**15 Watt**  
**1600Vdc Isolated**  
**4:1 Input Voltage Range**  
**Single & Dual Output**  
**DIP16 Package**

Specifications typical at TA=25°C nominal input voltage and rated output current unless otherwise specified

Part Number	Input Voltage Range	Input Current (mA TYP)		Output Voltage Range		Output Current (mA (typ))	Efficiency % (typ)	Maximum Capacitor Load $\mu$ F
		No-Load	Full-Load	Vdc	Vdc			
	Vdc	mA (typ)	mA (typ)	Vdc	mA (typ)	% (typ)	$\mu$ F	
UC15-24S12	9~36	10	702	12	1250	89	1000	
UC15-24S24	9~36	10	702	24	625	89	360	
UC15-24D15	9~36	10	702	$\pm$ 15	$\pm$ 500	89	$\pm$ 360	



**Part Number**

$\frac{UC}{A} \frac{15}{B} - \frac{XX}{C} \frac{X}{D} \frac{XX}{E}$

- A: Series
- B: Output Power
- C: Input Voltage
- D: Single (S) / Dual Output (D)
- E: Output Voltage

**Input Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Input Voltage	24V models	9		36	Vdc
	48V models	18		75	
Input Surge Voltage (100 ms max.)	24V models	-0.7		50	Vdc
	48V models	-0.7		100	
Start-up Voltage	24V models			9	Vdc
	48V models			18	
Under Voltage Shutdown	24V models		8		Vdc
	48V models		15		
Start-up Time	Constant Resistive Load, Nominal Vin		Power-up	35	ms
Input Filter	All Models			Internal LC type	

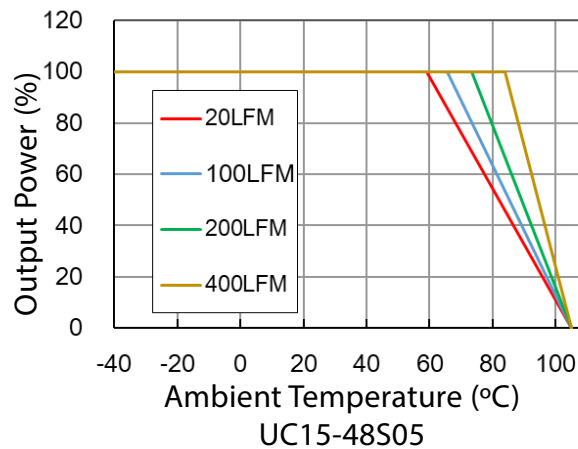
**Output Specifications**

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	100% Load	-2		+2	%
Line Regulation	Vin (min) to Vin (max) @100% Load	-0.5		+0.5	%
Load Regulation	0% Load to 100% Load	-0.5		+0.5	%
Load Cross Regulation	Asymmetrical Load 25% / 100% Load	Dual Output	-5.0	+5.0	%
Ripple & Noise (BW=20MHz)	All models		60	100	mVp-p
Transient Response Setting Time	25% Load Step Change		350	500	us
Transient Response Deviation	25% Load Step Change	-5	±3	+5	%
Temperature Coefficient		-0.02		+0.02	%/°C
Output Power Protection	% of Io, Hiccup mode, Auto-recovery	120	155	190	%
Short Circuit Protection	Continuous [Hiccup Mode], Auto-Recovery				
Over Voltage Protection	5Vout		6.2		Vdc
	12Vout		15		
	15Vout		18		
	24Vout		30		

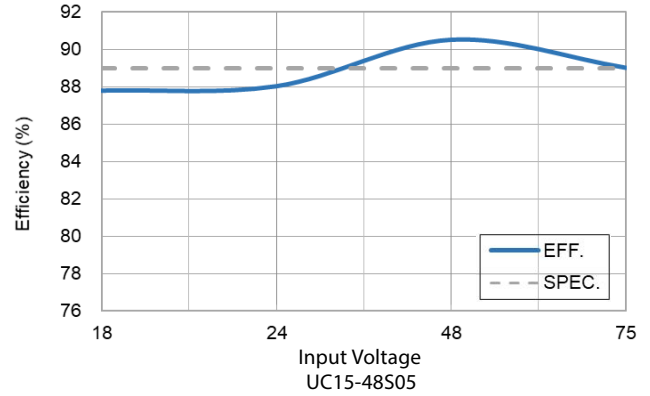
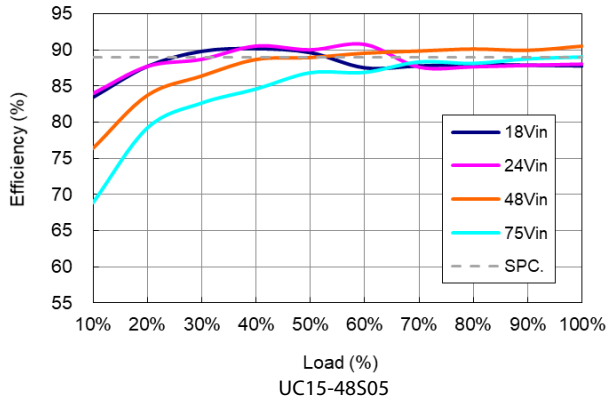
**General Specifications**

Parameters	Conditions	Min	Typ	Max	Units	
Isolation Voltage	Input To Output (60 sec)	1600			Vdc	
	Input (Output) To Case (60sec)	1000			Vdc	
Isolation Resistance	500Vdc	1000			MΩ	
Isolation Capacitance	100kHz, 1V			2200	pF	
Switching Frequency	100% Load, Nominal Input	5V Output		270	KHz	
		Other Output		390		
Operating Ambient Temperature (Power Derating See Derating Graph)	Nominal Vin, 100% Load	UC15-24S05, UC15-48S05 UC15-24S12, UC15-48S12 UC15-24S24, UC15-48S24 UC15-24D15, UC15-48D12	-40		+59.2	°C
		UC15-24S15, UC15-48S15 UC15-24D12			+54.5	
		UC15-48D15			+63.8	
Thermal Impedance	20LFM		24.7		°C/W	
	100LFM		21.2			
	200LFM		17.1			
	400LFM		11.3			
Maximum Case Temperature				+105	°C	
Storage Temperature		-55		+125	°C	
Humidity	Non Condensing	5		95	%	
Cooling	Natural Convection					
Case Material	Copper, Black Coating					
Potting Material	Silicone (UL94-V0)					
MTBF	MIL-HDBK-217F@25°C (calculated)		7.5X10 <sup>5</sup>		Hours	
Weight			11		g	
Dimensions	24.0 x 14.0 x 9.8				mm	

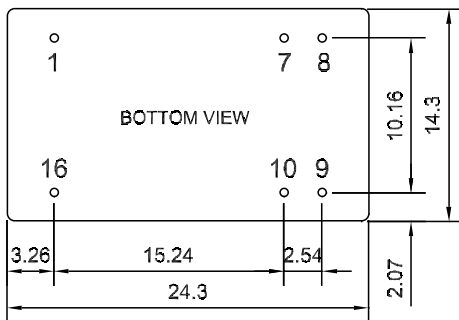
**Temperature Derating Graph**



**Characteristic Curve**



**Dimensions**



UNIT: mm  
Tolerances are XX.X±0.5, XX.XX±0.25

UNIT: mm  
Tolerances are XX.X±0.5, XX.XX±0.25

**PIN Assignment**

PIN	Single	Dual	Diameter
1	-Vin	-Vin	0.5mm [0.02"]
7	NC	NC	0.5mm [0.02"]
8	NC	Com	0.5mm [0.02"]
9	+Vout	+Vout	0.5mm [0.02"]
10	-Vout	-Vout	0.5mm [0.02"]
16	+Vin	+Vin	0.5mm [0.02"]



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