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

ADAM TECH

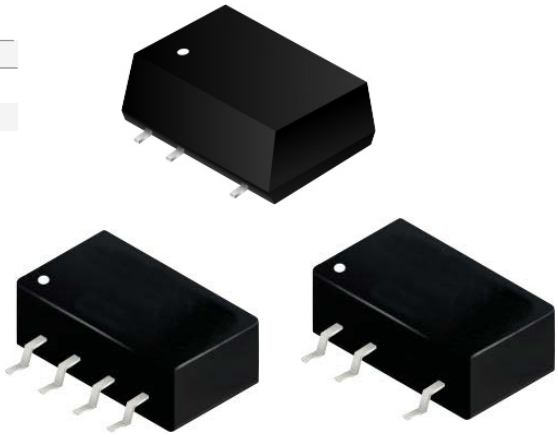
DC-DC Converter

ES3 Series

1 Watt
1.5KV ~ 3KV Isolated
Single Output
SMD14

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.	
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

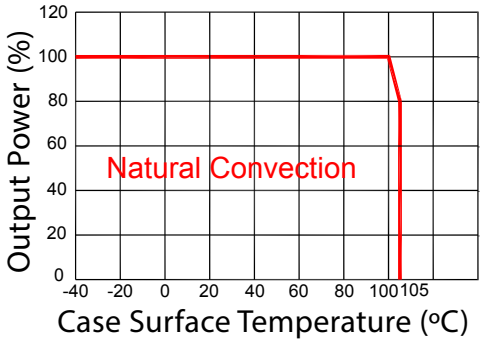


Note:
1: No suffix is standard isolation (1.5KVDC) e.g., ES3-12S05P
*add suffix "3" for 3KVDC isolation, e.g., ES3-12S05P3, ES3-15S12P3,
Package style: no suffix = package 1, T = package 2, R = package 3
e.g., ES3T-15S05P, ES3R-24S12P3
When the I / O is equal to 24V, package 1 and 2 are not available

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.

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	%
	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	ºC
Storage Temperature		-55		+125	ºC
Humidity	Non Condensing			95	%
Cooling	Free air Convection				
Case Material	DAP				
MTBF	MIL-HDBK-217F@25ºC	3,500,000			Hours
Weight	Package 1/2/3		1.2/1.2/1.28		g
Dimensions	Package 1		12.7x7.6x6.25		mm
	Package 2		12.7x7.6x6.25		mm
	Package 3		12.8x10.8x6.9		mm

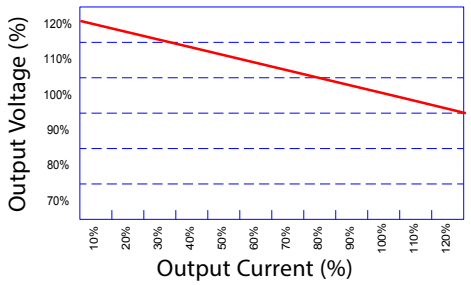
Part Number

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

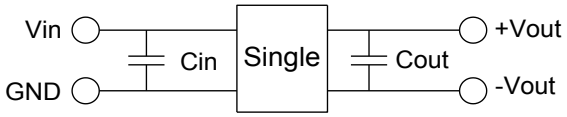
Tolerance Envelope Graph



Electromagnetic Compatibility (EMC)

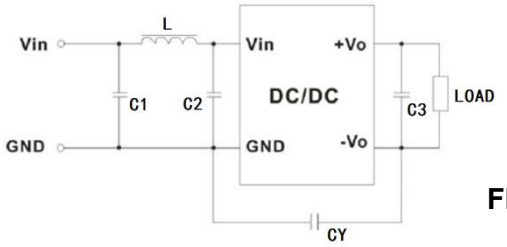
EMI	CE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 1 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2 Air ±8kV , Contact ±4kV perf. Criteria B

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

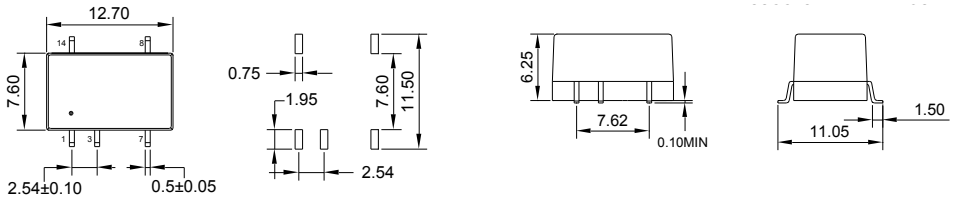


Flg.1

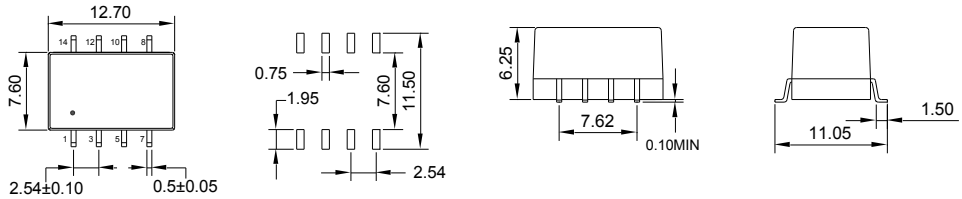
EMC Recommended Circuit Value Table		
EMI	C1	4.7μF /50V
	C2	4.7μF /50V
	CY	1nF/4kV
	C3	Recommended Test Circuit
	L	6.8μH

Markings and Dimensions

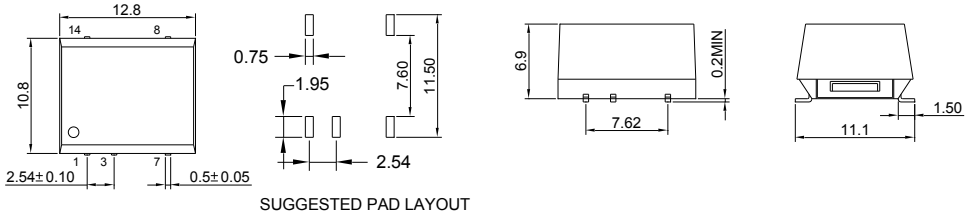
Package 1



Package 2 (T)



Package 3 (R)



UNIT: mm unless otherwise specified, all tolerances are ±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