

0.5D8E_3U Series

0.5W - Single Output DC-DC Converter - Fixed Input - Isolated & Unregulated

DC-DC Converter

0.5 Watt

- ⊕ 8 Pin DIL
- ⊕ 3KVDC Isolation
- ⊕ Operation temperature range: -40°C ~ +85°C
- ⊕ Low ripple and noise
- ⊕ Efficiency up to 83%
- ⊕ EMI complies with EN55032 Class B
- ⊕ Industry Standard Pinout

The 0.5D8E_3U series is a family of cost effective 0.5W single output DC-DC converters. These converters achieve low-cost and ultra-miniature DIP8 pin size. Devices are encapsulated using flame retardant resin.

They are specially designed for applications where an isolated voltage is required in a distributed power supply system. Such as: digit circuit condition; normal low-frequency artificial circuit condition; relay drive circuit and data switching circuit condition, etc.



Common specifications

Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C
Storage temperature range:	-40°C ~+125°C
Casing temperature:	100°C MAX
Soldering temperature:	260°C MAX, 1.5mm from case for 10 sec.
Storage humidity range:	< 95%
Case material:	Plastic [UL94-V0]
Pin material:	>1,121,000 hours
Safety standard:	IEC 60950-1
MTBF (MIL-HDFK-217F@25°C):	ø0.5mm Brass solder-coated
Weight:	1.8g

Output specifications

Item	Test condition	Min	Typ	Max	Units
Output voltage accuracy			±3		%
Line regulation	For Vin change of ±1%			±1.2	%
Load regulation	20% to 100% load • 3.3V output • others		20 10		% %
Ripple & Noise*	20MHz Bandwidth		100		mVpk-pk
Temperature drift	100% full load		±0.02		%/°C
Switching frequency	variable		80		KHz

* Ripple and noise are measured by "parallel cable" method, please see DC-DC Converter Application Notes for specific operation.

Input specifications

Item	Test condition	Min	Typ	Max	Units
Voltage range			10		%
Reflected ripple current*			20		mApk-pk
Surge voltage	• 3.3VDC input • 5VDC input • 12VDC input • 15VDC input • 24VDC input			6 7 15 18 28	VDC VDC VDC VDC VDC
Input filter	Filter capacitor				

* Measured with a simulated source inductance of 12μH and a source capacitor Cin (47μF, ESR<1.0Ω at 100KHz).

EMC specifications

CE*	EN55032	CLASS B
RE	EN55032	CLASS B
ESD	IEC/EN61000-4-2	perf. Criteria A
RS	IEC/EN61000-4-3	perf. Criteria A
EFT**	IEC/EN61000-4-4	perf. Criteria A
Surge**	IEC/EN61000-4-5	perf. Criteria A
CS	IEC/EN61000-4-6	perf. Criteria A
PFMF	IEC/EN61000-4-8	perf. Criteria A

* Input filter components are required to help meet conducted emission class B, which application refer to the EMI filter section.

** An external filter is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.

Isolation specifications

Item	Test condition	Min	Typ	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input-output, 100KHz/0.1V		60		pF

Example SIP4 Case:

0.5D8E_0505S3U
0.5= 0.5 Watt; D8= DIP8; E= Pinning; 05= 5 Vin; 05= 5Vout;
S= Single Output; 3= 3kVDC Isolation; U= Unregulated Output

Note:

- Operation under minimum load will not damage the converter; However, they may not meet all specification listed, and that will reduce the life of product.
- All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- Only typical models listed, other models may be different, please contact our technical person for more details.
- In this datasheet, all the test methods of indications are based on corporate standards.

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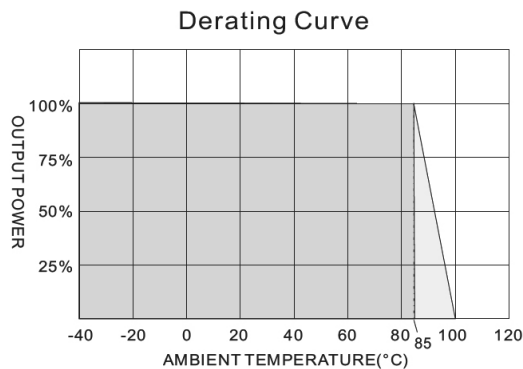
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Part Number	Input Voltage [V]	Input current [mA, max]	Output Voltage [VDC]	Output current [mA, max]	Efficiency [%, typ]	Capacitive load [μF max]
0.5D8E_0303S3U	3.3	205	3.3	152	76	100
0.5D8E_0305S3U	3.3	216	5	100	70	100
0.5D8E_0307S3U	3.3	216	7.2	69	70	100
0.5D8E_0309S3U	3.3	216	9	56	70	100
0.5D8E_0312S3U	3.3	201	12	42	72	100
0.5D8E_0315S3U	3.3	208	15	33	73	100
0.5D8E_0318S3U	3.3	208	18	28	73	100
0.5D8E_0324S3U	3.3	208	24	21	73	100
0.5D8E_0503S3U	5	132	3.3	151.5	76	100
0.5D8E_0505S3U	5	124	5	100	81	100
0.5D8E_0507S3U	5	134	7.2	69.44	75	100
0.5D8E_0509S3U	5	128	9	55.55	78	100
0.5D8E_0512S3U	5	127	12	41.67	79	100
0.5D8E_0515S3U	5	130	15	33.33	77	100
0.5D8E_0518S3U	5	127	18	27.77	79	100
0.5D8E_0524S3U	5	134	24	20.83	75	100
0.5D8E_1203S3U	12	58	3.3	151.5	73	100
0.5D8E_1205S3U	12	54	5	100	78	100
0.5D8E_1207S3U	12	57	7.2	69.44	73	100
0.5D8E_1209S3U	12	58	9	55.55	73	100
0.5D8E_1212S3U	12	58	12	41.67	72	100
0.5D8E_1215S3U	12	61	15	33.33	69	100
0.5D8E_1218S3U	12	61	18	27.77	68	100
0.5D8E_1224S3U	12	59	24	20.83	71	100
0.5D8E_1503S3U	15	44	3.3	151.5	75	100
0.5D8E_1505S3U	15	43	5	100	78	100
0.5D8E_1507S3U	15	44	7.2	69.44	75	100
0.5D8E_1509S3U	15	44	9	55.55	75	100
0.5D8E_1512S3U	15	44	12	41.67	77	100
0.5D8E_1515S3U	15	48	15	33.33	70	100
0.5D8E_1518S3U	15	51	18	27.77	66	100
0.5D8E_1524S3U	15	51	24	20.83	66	100
0.5D8E_2403S3U	24	31	3.3	151.5	69	100
0.5D8E_2405S3U	24	29	5	100	74	100
0.5D8E_2407S3U	24	31	7.2	69.44	69	100
0.5D8E_2409S3U	24	30	9	55.55	71	100
0.5D8E_2412S3U	24	31	12	41.67	69	100
0.5D8E_2415S3U	24	31	15	33.33	69	100
0.5D8E_2418S3U	24	29	18	27.77	73	100
0.5D8E_2424S3U	24	29	24	20.83	72	100

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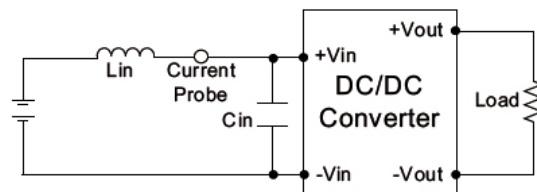
Typical characteristics



Test configurations

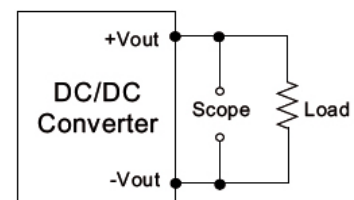
Input reflected ripple current test step

Input reflected ripple current is measured through a source inductor L_{in} (12 μ H) and a source capacitor C_{in} (47 μ F, ESR<1.0 Ω) at 100KHz) at nominal input and full load.



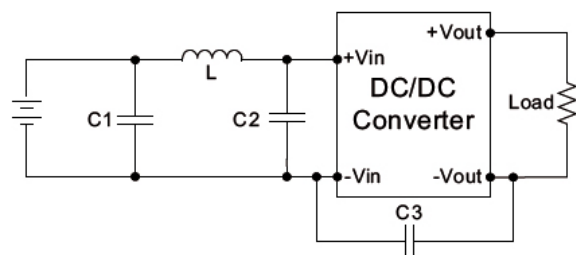
Output ripple & noise measurement test

The scope measurement bandwidth is 20MHz.



EMI filter

Input filter components (C_1 , L , C_2 , C_3) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

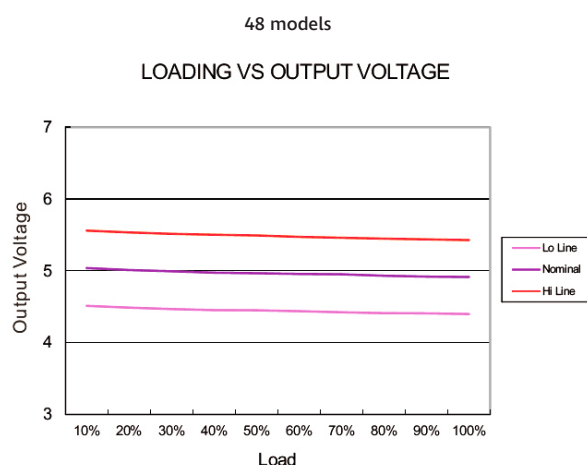
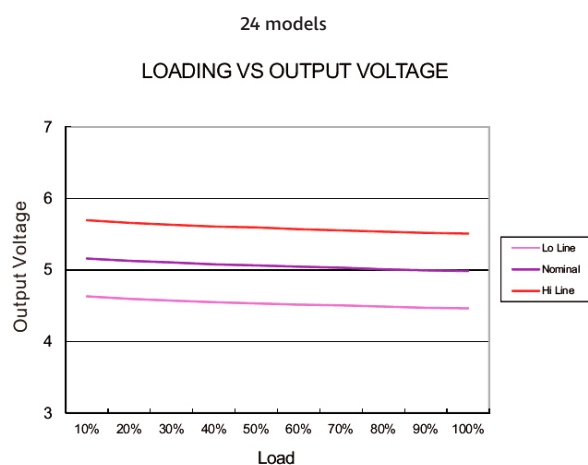
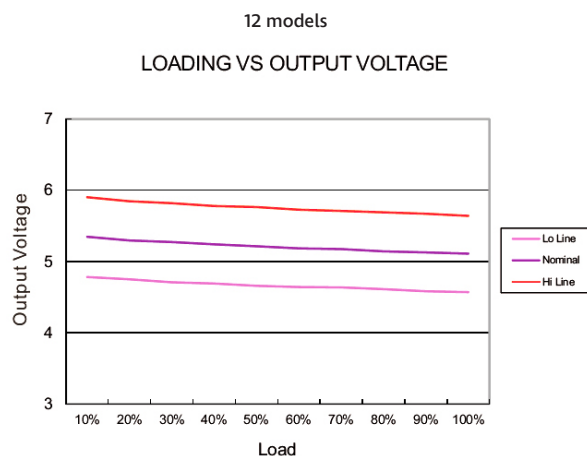
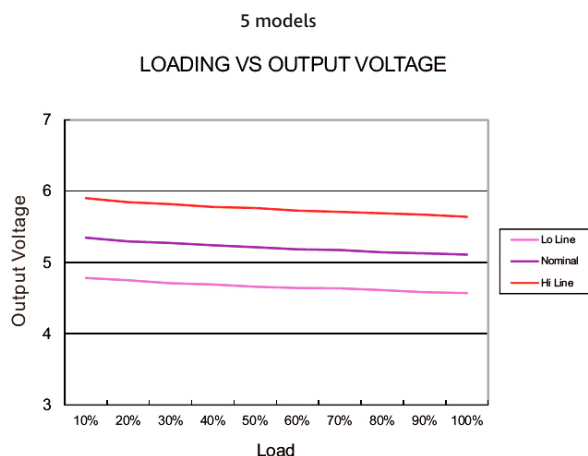


	C1	L	C2	C3
0.5D8E_03xx_3U	1210, 2.2 μ F/100V	18 μ H		
0.5D8E_05xx_3U	1210, 2.2 μ F/100V	18 μ H		
0.5D8E_12xx_3U	1210, 2.2 μ F/100V	18 μ H		
0.5D8E_15xx_3U	1210, 2.2 μ F/100V	18 μ H		
0.5D8E_24xx_3U	1210, 2.2 μ F/100V	18 μ H	1210, 2.2 μ F/100V	1206, 470pF/2KV
0.5D8E_48xx_3U	Electrolytic capacitor, 10 μ F/100V	18 μ H	1210, 2.2 μ F/100V	1206, 470pF/2KV

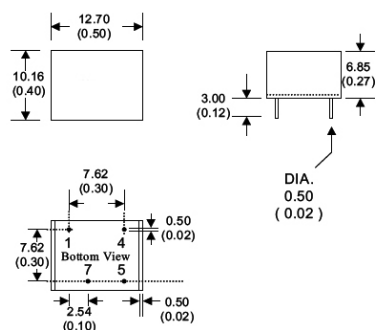
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Loading vs. output voltage



Mechanical dimensions



8 Pin DIL Package

Notes : All dimensions are typical in millimeters (inches).

1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	-V Input
4	+V Input
5	+V Output
7	-V Output

(The Pin Connection of high isolation one is the same with normal one.)