

Features:

- 2:1 wide input range
- 4:1 wide input range (Option)
- 1000VDC I/O isolation
- 3000VDC I/O isolation (Option)
- Built-in remote ON/OFF control
- Built-in EMI filter
- Protections: Short circuit / Overload
- Cooling by free air convection
- Single in line package
- 100% full load burn-in test
- Low cost / High reliability
- Modified models available: output 3.3V/9V
- 2 years warranty

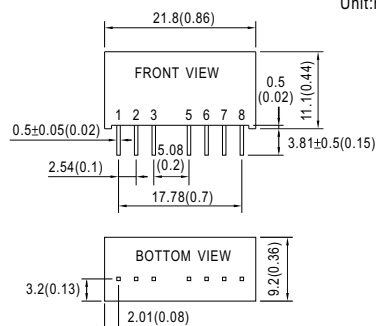


SPECIFICATION

ORDER NO.		SPA02E-05	SPA02A-05	SPA02B-05	SPA02C-05	SPA02E-12	SPA02A-12	SPA02B-12	SPA02C-12	SPA02E-15	SPA02A-15	SPA02B-15	SPA02C-15	
OUTPUT	DC VOLTAGE	5V				12V				15V				
	CURRENT RANGE	40 ~ 400mA				15 ~ 150mA		17 ~ 167mA		12 ~ 120mA		13 ~ 133mA		
	RATED POWER	2W				1.8W		2W		1.8W		2W		
	RIPPLE & NOISE (max.) Note.2	60mVp-p				60mVp-p				60mVp-p				
	LINE REGULATION Note.3	±0.5%												
	LOAD REGULATION Note.4	±0.5%												
	VOLTAGE ACCURACY	±2.0%												
SWITCHING FREQUENCY		100KHz min.												
INPUT	VOLTAGE RANGE	E: 4.5 ~ 9VDC A: 9 ~ 18VDC B: 18 ~ 36VDC C: 36 ~ 72VDC												
	EFFICIENCY (Typ.)	71%	76%	76%	74%	74%	80%	80%	82%	76%	80%	80%	78%	
	DC CURRENT	Full load	E: 600mA A: 225mA B: 115mA C: 60mA											
		No load	E: 50mA A: 25mA B: 15mA C: 8mA											
	FILTER	Pi network												
PROTECTION		Fuse recommended												
PROTECTION (Note. 5)	OVERLOAD	150 ~ 250% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed												
	SHORT CIRCUIT	All output equipped with short circuit Protection type : Hiccup mode, recovers automatically after fault condition is removed												
ENVIRONMENT	WORKING TEMP.	-40 ~ +85℃ (Refer to output load derating curve)												
	WORKING HUMIDITY	20% ~ 90% RH non-condensing												
	STORAGE TEMP., HUMIDITY	-25 ~ +105℃, 10 ~ 95% RH												
	TEMP. COEFFICIENT	±0.05% / °C (0 ~ 50℃)												
	VIBRATION	10 ~ 500Hz, 2G 10min./1 cycle, period for 60min. each along X, Y, Z axes												
SAFETY	WITHSTAND VOLTAGE	I/P-O/P:1KVDC												
	ISOLATION RESISTANCE	I/P-O/P: 100M Ohms / 500VDC / 25℃ / 70% RH												
	ISOLATION CAPACITANCE	80pF max.												
	EMI CONDUCTION & RADIATION	Compliance to EN55022 Class B, FCC part 15 Class B												
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8 light industry level, criteria A												
OTHERS	REMOTE CONTROL	Power ON : R.C. ~ +Vin < 1VDC or open ; Power OFF : R.C. ~ +Vin > 4VDC or short												
	MTBF	600Khrs min. MIL-HDBK-217F(25℃)												
	DIMENSION	21.8*9.2*11.1mm or 0.86**0.36**0.44" inch (L*W*H)												
	WEIGHT	4.8g												

Mechanical Specification

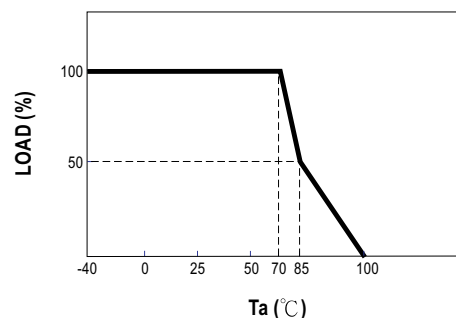
Unit:mm(inch)



Pin Configuration

Pin No.	Output
1	-Vin
2	+Vin
3	R.C.
5	N.C.
6	+Vout
7	-Vout
8	N.C.

Derating Curve



NOTE

- 1.All parameters are specified at normal input, rated load, 25°C 70% RH ambient.
- 2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1uf & 47uf capacitor.
- 3.Line regulation is measured from low line to high line at rated load.
- 4.Load regulation is measured from 10% to 100% rated load.
- 5.Please prevent the converter from operating in overload or short circuit condition for more than 30 seconds.

Model : SPA02E-12 1.8W
12V / 15~150mA

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	VOLTAGE ACCURACY	-2%~+2%	I/P:5VDC O/P:FULL LOAD Ta:25°C	0.29%	P
2	RIPPLE & NOISE	60mVp-p	I/P:5VDC O/P:FULL LOAD Ta:25°C	28mV	P
3	LINE REGULATION	-0.5%~+0.5%	I/P:4.5VDC~9.0VDC O/P:FULL LOAD Ta:25°C	-0.01%~+0.01%	P
4	LOAD REGULATION	-0.5%~+0.5%	I/P:5VDC O/P:MIN ~FULL LOAD Ta:25°C	-0.04%~+0.04%	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	4.5VDC~9VDC	I/P:TESTING O/P:FULL LOAD Ta:25°C	2.4V~9Vdc	P
2	EFFICIENCY	74% (Typ)	I/P:5VDC O/P:FULL LOAD Ta:25°C	78.69%	P
3	DC CURRENT	50 mA / NO LOAD 600 mA / FULL LOAD	I/P:5VDC O/P:NO / FULL LOAD Ta:25°C	33.0 mA / NO LOAD 459 mA / FULL LOAD	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	150% ~ 250% (Typ)	I/P:5VDC O/P:TESTING Ta:25°C	208% HICCUP MODE AUTO-RECOVER	P
2	SHORT PROTECTION	YES	I/P:9VDC O/P:SHORT Ta:25°C	NO DAMAGE HICCUP MODE AUTO-RECOVER	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	REMOTE CONTROL	POWER ON : R.C ~ Vin < 1VDC OR OPEN POWER OFF : R.C ~ Vin > 4VDC OR SHORT	I/P:5VDC O/P:FULL LOAD Ta:25℃	POWER ON : 1.1VDC OR OPEN POWER OFF : 2.8VDC OR SHORT	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT						
1	TEMPERATURE RISE TEST	1. ROOM AMBIENT BURN-IN : 3HRS I/P:5VDC O/P:FULL LOAD Ta=30.1℃ <table><tr><td>Position</td><td>CENTER</td><td>1</td></tr><tr><td>CASE</td><td>SPA02E-12</td><td>48.8℃</td></tr></table>			Position	CENTER	1	CASE	SPA02E-12	48.8℃	P
Position	CENTER	1									
CASE	SPA02E-12	48.8℃									
2	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 3 HOURS	I/P:5VDC O/P: 100% LOAD Ta= -40℃	TEST : OK	P						

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P:1KVDC/min	I/P-O/P:1KVDC/min Ta:25℃	I/P-O/P:0.02mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P:500VDC Ta:25℃	I/P-O/P:>100MΩ NO DAMAGE	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2007.7.31	PRODUCT SAMPLE	PASS	PETER	T.K.CHENG