



6 WATT

Single & Dual Output

Regulated
Wide Input (2:1)
DC/DC Converters



FEATURES

- 2:1 Wide Input Voltage Range
- 6 Watts Maximum Output Power
- Output Current up to 1300 mA
- SIP Package 0.86" x 0.36" x 0.44"
- Input Under Voltage Protection
- High Efficiency (Up to 86%)
- Input to Output Isolation up to 3000 Vdc
- Plastic or Metal Case Options
- Continuous Short Circuit Protection
- External On/Off Control
- UL60950-1, EN60950-1 and IEC60950-1 Safety Approvals
- CE Mark Meets 200695/EC, 93/68/EEC and 2004/108/EC

SWA6 Series

Specifications

INPUT

	5VDC nominal input.....	4.5 -9VDC
	12VDC nominal input.....	9 -18VDC
	24VDC nominal input.....	18 -36VDC
	48VDC nominal input.....	36 -75VDC
Input Filter	Capacitor type	
	5VDC input.....	15VDC 1sec, max.
	12VDC input.....	36VDC 1sec, max.
	24VDC Input.....	50VDC 1sec, max.
	48VDC input.....	100VDC 1sec, max.
Input Reflected Ripple Current	30mA _{p-p}	

Start up Time	Nominal input and constant resistive load	Power up.....	30mS
		Remote On/Off.....	30mS

Start up Voltage	5Vdc input.....	4.5Vdc max.
	12Vdc input.....	9Vdc max.
	24Vdc input.....	18Vdc max.
	48Vdc input.....	36Vdc max.

Shutdown Voltage	5Vdc input	3.5Vdc
	12Vdc input	7Vdc
	24Vdc input	15Vdc
	48Vdc input	33Vdc

Remote On/Off	DC-DC On.....	Open or high impedance
	DC-DC Off	Control pin applied current 2 - 4mA max(via 1KΩ)
Remote off state input current	Nominal input.....	2.5mA

OUTPUT

Output Power	6 Watts max.	
Voltage Accuracy	±1%	
Minimum Load	0%	
Line Regulation	LL to HL at Full Load..... ±0.2%	
Load Regulation	Single.....No Load to Full Load.....	±1%
	Dual.....No Load to Full Load.....	±1%
Cross Regulation (Dual) Asymmetrical Load 25% / 100% FL.....	±5%	
Ripple and Noise 20MHz band width.....	See table	
Temperature Coefficient	±0.2% / °C, max.	
Transient Response recovery Time	25% load step change.....500µS	
Short Circuit Protection.....	Continuous, automatic recovery	

See next page for additional specifications.



GENERAL

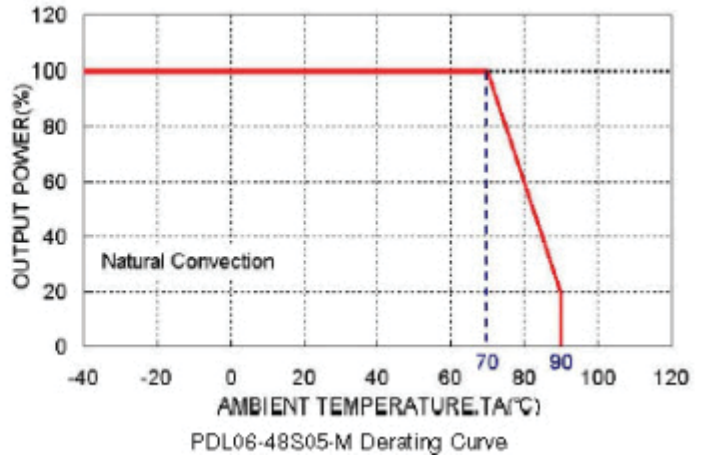
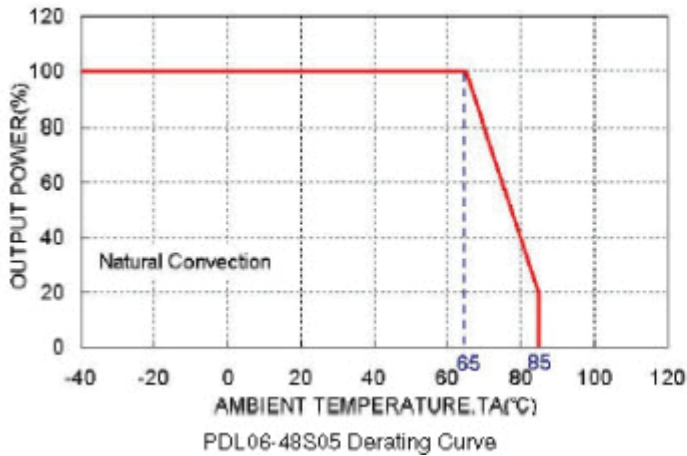
Efficiency.....	See table
Isolation Voltage	Input to Output Standard 1600Vdc, min. 1 minute Suffix "M" 1600Vdc, min. 1 minute Suffix "H" 3300Vdc, min. 1 minute
Isolation Resistance	Input to Case Output to Case Standard.....10 ¹⁰ ohms, min. Suffix "H".....50pF, max. Suffix "M".....50pF, max.
Isolation Capacitance	Standard.....50pF, max. Suffix "M".....50pF, max.
Switching Frequency	Full Load to Minimum Load.....100Hz, min.
Safety Approvals	IE60950-1, UL60950-1, EN60950-1
Case Material	Standard.....Non-conductive black plastic Suffix "M".....Copper
Base Material	None
Potting Material	Silicon (UL94-V0)
Dimensions	0.86 x 0.36 x 0.44 inches (21.8 x 9.1 x 11.2 mm)
Weight	Standard.....4.8g (0.17 oz.) Suffix "M".....5.9g (0.21 oz.)
MTBF (Note 1)	MIL-HDBK-217F Standard.....7.07 x 10 ⁵ hrs Suffix "M".....9.36 x 10 ⁵ hrs
	BELLCORE TR-NWT-000332.....1.093 x 10 ⁶ hrs

ENVIRONMENTAL

Operating Ambient Temperature	Standard	Standard	-.40°C - +55°C (without derating)+55°C - +85°C (with derating)
	Suffix "M"	Suffix "M"	-.40°C - +60°C (without derating)+60°C - +90°C (with derating)
Storage Temperature Range.....			-55°C - +125°C
Thermal Shock.....			MIL-STD-810F
Vibration.....			MIL-STD-810F
Relative Humidity.....			5% to 95% RH

EMC CHARACTERISTICS

EMI (Note 5).....	EN55022.....	Class A
ESD.....	EN61000-4-2 ...Air Contact..	±8KVPerf. Criteria A
Radiated Immunity.....	EN61000-4-3	±6KV10 V/m Perf. Criteria A
Fast Transient (Note 6).....	EN61000-4-4	±2KV.....Perf. Criteria A
Surge (Note 6).....	EN61000-4-5	±1KV.....Perf. Criteria A



See next page for Selection Guide and Notes.



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SELECTION GUIDE

Input Voltage Range	Output Voltage	Output Current		Output ⁽³⁾ Ripple & Noise	Input Current No load ⁽²⁾	Efficiency (%)	Model Number	Capacitor Load max. ⁽⁴⁾
		Min. load	Full load					
4.5-9 Vdc	3.3 Vdc	0mA	1300mA	50mVp-p	65mA	77	SWA6-5S33	6600µF
4.5-9 Vdc	5 Vdc	0mA	1200mA	50mVp-p	105mA	81	SWA6-5S5	3300µF
4.5-9 Vdc	9 Vdc	0mA	666mA	50mVp-p	105mA	83	SWA6-5S9	2000µF
4.5-9 Vdc	12 Vdc	0mA	500mA	50mVp-p	105mA	84	SWA6-5S12	1600µF
4.5-9 Vdc	15 Vdc	0mA	400mA	50mVp-p	105mA	84	SWA6-5S15	1400µF
4.5-9 Vdc	24 Vdc	0mA	250mA	50mVp-p	105mA	84	SWA6-12S24	680µF
9-18 Vdc	3.3 Vdc	0mA	1300mA	50mVp-p	40mA	78	SWA6-12S33	6600µF
9-18 Vdc	5 Vdc	0mA	1200mA	50mVp-p	55mA	83	SWA6-12S5	3300µF
9-18 Vdc	9 Vdc	0mA	666mA	50mVp-p	55mA	85	SWA6-12S9	2000µF
9-18 Vdc	12 Vdc	0mA	500mA	50mVp-p	55mA	85	SWA6-12S12	1600µF
9-18 Vdc	15 Vdc	0mA	400mA	50mVp-p	55mA	85	SWA6-12S15	1400µF
9-18 Vdc	24 Vdc	0mA	250mA	50mVp-p	55mA	84	SWA6-12S24	680µF
18-36 Vdc	3.3 Vdc	0mA	1300mA	50mVp-p	20mA	78	SWA6-24S33	6600µF
18-36 Vdc	5 Vdc	0mA	1200mA	50mVp-p	28mA	83	SWA6-24S5	3300µF
18-36 Vdc	9 Vdc	0mA	666mA	50mVp-p	28mA	85	SWA6-24S9	2000µF
18-36 Vdc	12 Vdc	0mA	500mA	50mVp-p	28mA	86	SWA6-24S12	1600µF
18-36 Vdc	15 Vdc	0mA	400mA	50mVp-p	28mA	86	SWA6-24S15	1400µF
18-36 Vdc	24 Vdc	0mA	250mA	50mVp-p	28mA	85	SWA6-24S24	680µF
36-75 Vdc	3.3 Vdc	0mA	1300mA	50mVp-p	14mA	78	SWA6-48S33	6600µF
36-75 Vdc	5 Vdc	0mA	1200mA	50mVp-p	14mA	82	SWA6-48S5	3300µF
36-75 Vdc	9 Vdc	0mA	666mA	50mVp-p	14mA	84	SWA6-48S9	2000µF
36-75 Vdc	12 Vdc	0mA	500mA	50mVp-p	14mA	84	SWA6-48S12	1600µF
36-75 Vdc	15 Vdc	0mA	400mA	50mVp-p	14mA	86	SWA6-48S15	1400µF
36-75 Vdc	24 Vdc	0mA	250mA	50mVp-p	14mA	84	SWA6-48S24	680µF
4.5-9 Vdc	+/-5 Vdc	0mA	+/-600mA	50mVp-p	105mA	81	SWA6-5-5	+/-2000µF
4.5-9 Vdc	+/-12 Vdc	0mA	+/-250mA	50mVp-p	105mA	83	SWA6-5-12	+/-900µF
4.5-9 Vdc	+/-15 Vdc	0mA	+/-200mA	50mVp-p	105mA	83	SWA6-5-15	+/-660µF
9-18 Vdc	+/-5 Vdc	0mA	+/-600mA	50mVp-p	55mA	81	SWA6-12-5	+/-200µF
9-18 Vdc	+/-12 Vdc	0mA	+/-250mA	50mVp-p	55mA	83	SWA6-12-12	+/-900µF
9-18 Vdc	+/-15 Vdc	0mA	+/-200mA	50mVp-p	55mA	84	SWA6-12-15	+/-660µF
18-36 Vdc	+/-5 Vdc	0mA	+/-600mA	50mVp-p	28mA	81	SWA6-24-5	+/-200µF
18-36 Vdc	+/-12 Vdc	0mA	+/-250mA	50mVp-p	28mA	84	SWA6-24-12	+/-900µF
18-36 Vdc	+/-15 Vdc	0mA	+/-200mA	50mVp-p	28mA	84	SWA6-24-15	+/-666µF
36-75 Vdc	+/-5 Vdc	0mA	+/-600mA	50mVp-p	14mA	81	SWA6-48-5	+/-200µF
36-75 Vdc	+/-12 Vdc	0mA	+/-250mA	50mVp-p	14mA	84	SWA6-48-12	+/-900µF
36-75 Vdc	+/-15 Vdc	0mA	+/-200mA	50mVp-p	14mA	85	SWA6-48-15	+/-660µF

Notes:

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40QC.
MIL-HDBK-217F Notice2 @Ta=25°C, Full 10ad(Ground, Benign, controlled environment)
- Typical value at nominal input and no load.
- Typical value at nominal input and full load.
- Test by minimum input and constant resistive load.
- The SWA6 Series meets EN55022 Class A and Class B only with external input filter.
- An external input filter capacitor is,required if the module has to meet EN61000-4-4, EN61000-4-5.
- The filter capacitor Polytron suggests: 5 VDC input: Nippon chemi-con KY series, 330µF/50V, ESR 55mΩ.
Others: Nippon cherru-con KY series, 220µF/100V, ESR 48mΩ.

Caution: This power module is not internally fused. An input line fuse must always be used.

See next page for mechanical specifications.

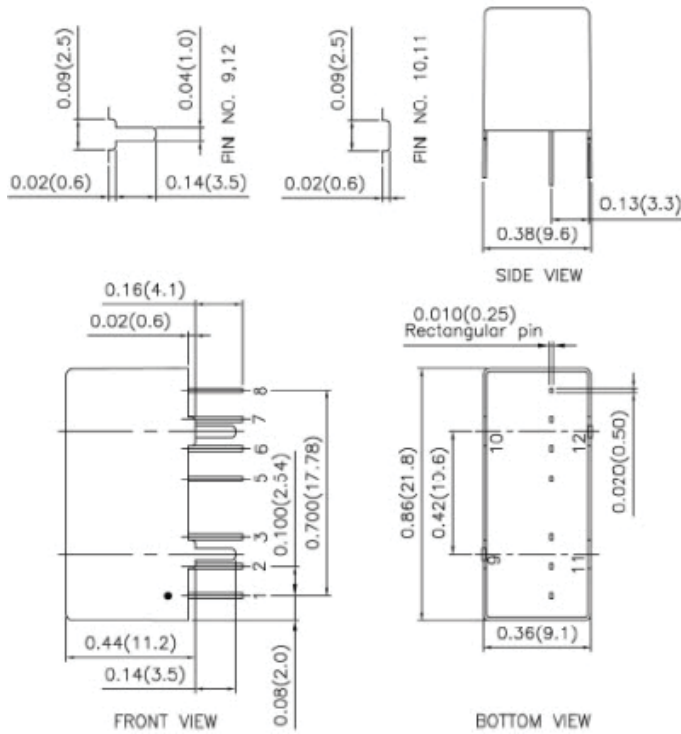


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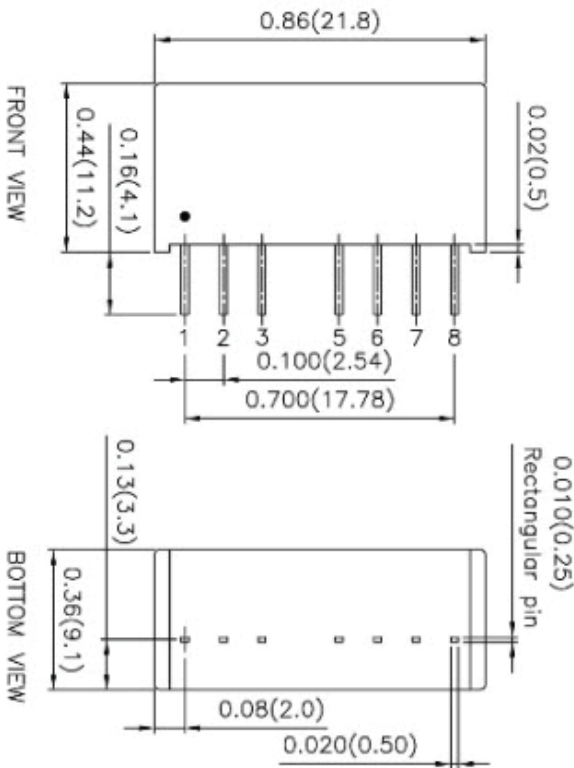
Mechanical Drawing (Metal Case):



PIN CONNECTION		
PIN	SINGLE	DUAL
1	-INPUT	-INPUT
2	+INPUT	+INPUT
3	CTRL	CTRL
5	NC	NC
6	+OUTPUT	+OUTPUT
7	-OUTPUT	COMMON
8	NC	-OUTPUT
9	CASE	CASE
10	STAND OFF	STAND OFF
11	STAND OFF	STAND OFF
12	CASE	CASE

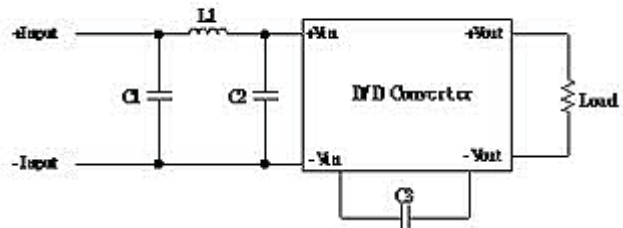
1. All dimensions in inches (mm)
2. Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
3. Pin pitch tolerance: ±0.01 (0.25)
4. Pin dimension tolerance: ±0.004 (0.1)

Mechanical Drawing (Plastic Case):



1. All dimensions in inches (mm)
2. Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
3. Pin pitch tolerance: ±0.01 (0.25)
4. Pin dimension tolerance: ±0.004 (0.1)

Recommended EMI Filter:



Recommended Filter for EN55022 Class B Compliance

The components used in the above figure, together with the manufacturers' part numbers for these components, are as follows:

C1	C2	C3	L1
47µF/16V 1210 MLCC	47µF/16V 1210 MLCC	150pF/3KV 1808 MLCC	10µH 0504 SMD Inductor PMT-044

PIN CONNECTION		
PIN	SINGLE	DUAL
1	-INPUT	-INPUT
2	+INPUT	+INPUT
3	CTRL	CTRL
5	NC*/NO PIN**	NC*/NO PIN**
6	+OUTPUT	+OUTPUT
7	-OUTPUT	COMMON
8	NC	-OUTPUT

*NC pin for standard.
**NO pin for 3KV isolation. (P/N suffix "M")



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