



**POWER MATE
TECHNOLOGY CO.,LTD.**

TEM03 SERIES



- PACKAGE, 1.12 x 0.81 x 0.33 INCH
- NO EXTERNAL INPUT AND OUTPUT CAPACITOR NEEDED
- 2:1 WIDE INPUT VOLTAGE RANGE
- LOW RIPPLE & NOISE
- FIVE-SIDED SHIELD
- OVER CURRENT PROTECTION
- SHORT CIRCUIT PROTECTION
- LONG LIFE WITHOUT ELECTROLYTIC CAPACITOR

The TEM03 series offer 3 watts of output power from a 1.12 x 0.81 x 0.33 inch package without derating to 50°C and without external input/output capacitor. The TEM03 series with 2:1 wide input voltage of 4.5-9, 9-18, 18-36 and 36-75VDC and features 500VAC of isolation, short-circuit protection. The safety meets to EN60950 and UL1950. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS			
Maximum output power		3 Watts	
Voltage accuracy	Full load and nominal Vin	± 2%	
Minimum load		0%	
Line regulation	LL to HL at Full Load	0.2%	
Load regulation	10% to 100% FL	0.5%	
Ripple and noise	50MHz bandwidth	120mVp-p, max	
Maximum temperature drift		±0.02% / °C	
Transient response recovery time	25% load step change	500uS, typ	
Short circuit protection	Continuous, automatic recovery		
Over current protection		170%, typ.	
INPUT SPECIFICATIONS			
Input voltage range	5V nominal input	4.5 – 9VDC	
	12V nominal input	9 – 18VDC	
	24V nominal input	18 – 36VDC	
	48V nominal input	36 – 75VDC	
Input filter		L-C filter	
Input surge voltage 100ms max	5V nominal input	15VDC	
	12V nominal input	36VDC	
	24V nominal input	50VDC	
	48V nominal input	100VDC	
OUTPUT VOLTAGE ADJUSTMENT TERMINAL(Vset) (Note1)			
Model number	Open	-Vout shorted	+Vout shorted
XXS33	3.3V	3.67V	2.84V
XXS05	5V	6V	4.3V
XXS12	12V	15V	-
XXD12	±12V	±15V	-
Model number	Open	-Vout connected with resistance (2)	+Vout connected with resistance (2)
XXS33	3.3V	3.3 to 3.67V (3-1)	3.3 to 2.84V (3-2)
XXS05	5V	5 to 6V (3-3)	5 to 4.3V (3-4)
XXS12	12V	12 to 15V (3-5)	-
XXD12	±12V	±12 to ±15V (3-6)	-

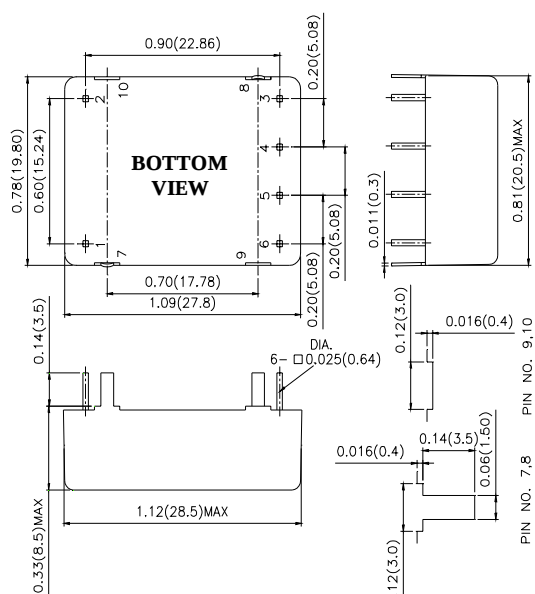
GENERAL SPECIFICATIONS			
Efficiency			See table
Isolation voltage	Input to Output Input to Case Output to Case		500 Vac
Isolation resistance	Input to Output Input to Case Output to Case	DC500V	50M ohms
Isolation capacitance			300 pF,max
Safety standard pending	IEC60950, J60950, UL60950, EN60950		
Switching frequency	Full load to No load		100 to 1500 KHz
Case material			Metal case
Base material			None
Weight			11.5g (0.41oz)
Dimension			1.12 x 0.81 x 0.33 Inch (28.5 x 20.5 x 8.5 mm)
MTBF (Note 4)			650Fit (1500000hrs, 100% Load)
ENVIRONMENTAL SPECIFICATIONS			
Operating temperature range (with derating)			-20°C to +70°C
Storage temperature range			-40°C to +85°C
Cooling			Nature convection
Thermal shock			MIL-STD-810D
Vibration	At no operation, 10~55~10Hz (sweep for 15min.) amplitude 1.5mm constant (maximum 9G X, Y, Z 2hrs each)		
Shock			100G
Operating humidity range			20% to 95% RH
Storage humidity range			20% to 95% RH
EMC CHARACTERISTICS			
Meet EN55022 classes A recommend circuit with external capacitor filter at input (Note 5)	5V input	220uF/16V	
	12V input	220uF/25V	
	24V input	100uF/50V	
	48V input	100uF/100V	

Model Number	Input Range	Output Voltage	Output Voltage Range	Output Current	Input Current ⁽⁶⁾	Eff ⁽⁷⁾ (%)	Capacitor ⁽⁸⁾ Load max
TEM03-05S33	4.5 – 9 VDC	3.3 VDC	2.84 – 3.67 VDC	600 mA	656 mA	65	3300 uF
TEM03-05S05	4.5 – 9 VDC	5 VDC	4.3 – 6 VDC	600 mA	909 mA	70	1500 uF
TEM03-05S12	4.5 – 9 VDC	12 VDC	12 – 15 VDC	250 mA	883 mA	72	700 uF
TEM03-05D12	4.5 – 9 VDC	±12 VDC	±12 – ±15 VDC	±125 mA	883 mA	72	±250 uF
TEM03-12S33	9 – 18 VDC	3.3 VDC	2.84 – 3.67 VDC	600 mA	253 mA	70	3300 uF
TEM03-12S05	9 – 18 VDC	5 VDC	4.3 – 6 VDC	600 mA	352 mA	75	1500 uF
TEM03-12S12	9 – 18 VDC	12 VDC	12 – 15 VDC	250 mA	343 mA	77	700 uF
TEM03-12D12	9 – 18 VDC	±12 VDC	±12 – ±15 VDC	±125 mA	343 mA	77	±250 uF
TEM03-24S33	18 – 36 VDC	3.3 VDC	2.84 – 3.67 VDC	600 mA	126 mA	70	3300 uF
TEM03-24S05	18 – 36 VDC	5 VDC	4.3 – 6 VDC	600 mA	176 mA	75	1500 uF
TEM03-24S12	18 – 36 VDC	12 VDC	12 – 15 VDC	250 mA	169 mA	78	700 uF
TEM03-24D12	18 – 36 VDC	±12 VDC	±12 – ±15 VDC	±125 mA	169 mA	78	±250 uF
TEM03-48S33	36 – 75 VDC	3.3 VDC	2.84 – 3.67 VDC	600 mA	63 mA	70	3300 uF
TEM03-48S05	36 – 75 VDC	5 VDC	4.3 – 6 VDC	600 mA	88 mA	75	1500 uF
TEM03-48S12	36 – 75 VDC	12 VDC	12 – 15 VDC	250 mA	85 mA	78	700 uF
TEM03-48D12	36 – 75 VDC	±12 VDC	±12 – ±15 VDC	±125 mA	85 mA	78	±250 uF

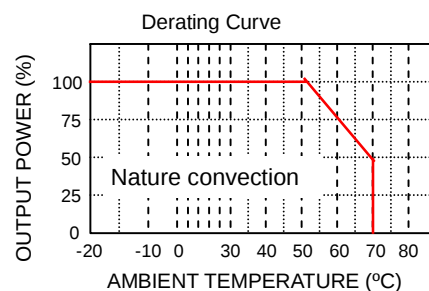
Note

1. The follow output voltage can be outputted by connecting this terminal to an output + or – terminal. Unless the output voltage is adjusted, this terminal should be open.
 2. In addition, the voltage can be adjusted not by shorting these terminals, but by connecting them to resistances as shown below.
 3. Arithmetic expression connected resistance: R (K Ω)
 3-1 $V_o = (3.3 \cdot R + 36.7) / (R + 10)$ 3-2 $V_o = (3.3 \cdot R + 36.7) / (R + 12.92)$
 3-3 $V_o = 2.5 \cdot [2 + 2.7 / (R + 6.8)]$ 3-4 $V_o = 2.5 \cdot [2 - 2.7 / (R + 9.5)]$
 3-5 $V_o = 2.5 + 9.5(R + 10.9) / (R + 8.2)$ 3-6 $V_o = 2.5 + 22 \cdot (R + 12.7) / (R + 10)$ (Between two outputs)
 4. Bellcore TR-NWT-000332. Case1:50% Stress, temperature at 40°C.
(Ground fixed and controlled environment)
 5. The filter capacitor recommended use " CHEMICON " KMF series
or equivalent impedance at 0.16 ~ 0.33 Ω (100KHz 20°C)
 6. Maximum value at nominal input voltage and full load.
 7. Typical value at nominal input voltage and full load.
 8. Test by minimum V_{in} and constant resistor load.

PIN CONNECTION		
PIN	SINGLE	DUAL
1	+ V_i	+ V_i
2	- V_i	- V_i
3	NC	- V_o
4	- V_o	COM
5	V_{set}	V_{set}
6	+ V_o	+ V_o



ALL DIMENSIONS IN INCHES (mm)
PIN PITCH TOLERANCE $\pm 0.014(0.35)$



EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.
() for dual output trim

