



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



TEN06 SERIES

- PACKAGE, 1.61 x 1.02 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 TEN06 series offer 6 watts of output power from a 1.61 x 1.02 x 0.33 inch package without derating to 50°C and without external input/output capacitor. The TEN06 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	6 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	150%, 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
Remote ON/OFF	See figure 1	

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

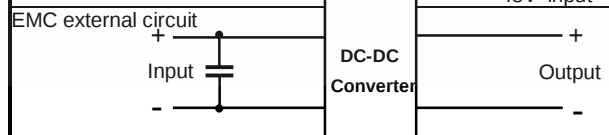
Efficiency	See table		
Isolation voltage	Input to Output	DC500V	500 Vac
	Input to Case		
	Output to Case		
Isolation resistance	Input to Output	DC500V	50M ohms
	Input to Case		
	Output to Case		
Isolation capacitance	300 pF,max		
Safety standard pending	IEC60950, J60950, UL60950, EN60950		
Switching frequency	Full load to No load	100 to 1500 KHz	
Case material	Metal case		
Base material	None		
Weight	20.0g (0.71oz)		
Dimension	1.61 x 1.02 x 0.33 Inch (41 x 25.8 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





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6WATTS OUTPUT DC-DC CONVERTER

Model Number	Input Range	Output Voltage	Output Voltage Range	Output Current	Input Current ⁽⁶⁾	Eff ⁽⁷⁾ (%)	Capacitor ⁽⁸⁾ Load max
TEN06-05S33	4.5 – 9 VDC	3.3 VDC	2.84 – 3.67 VDC	1200 mA	1212 mA	70	6600 uF
TEN06-05S05	4.5 – 9 VDC	5 VDC	4.3 – 6 VDC	1000 mA	1429 mA	74	3000 uF
TEN06-05S12	4.5 – 9 VDC	12 VDC	12 – 15 VDC	500 mA	1622 mA	78	1400 uF
TEN06-05D12	4.5 – 9 VDC	±12 VDC	±12 – ±15 VDC	±250 mA	1667 mA	76	±510 uF
TEN06-12S33	9 – 18 VDC	3.3 VDC	2.84 – 3.67 VDC	1500 mA	604 mA	73	6600 uF
TEN06-12S05	9 – 18 VDC	5 VDC	4.3 – 6 VDC	1200 mA	658 mA	80	3000 uF
TEN06-12S12	9 – 18 VDC	12 VDC	12 – 15 VDC	500 mA	617 mA	85	1400 uF
TEN06-12D12	9 – 18 VDC	±12 VDC	±12 – ±15 VDC	±250 mA	617 mA	85	±510 uF
TEN06-24S33	18 – 36 VDC	3.3 VDC	2.84 – 3.67 VDC	1500 mA	286 mA	77	6600 uF
TEN06-24S05	18 – 36 VDC	5 VDC	4.3 – 6 VDC	1200 mA	321 mA	82	3000 uF
TEN06-24S12	18 – 36 VDC	12 VDC	12 – 15 VDC	500 mA	309 mA	85	1400 uF
TEN06-24D12	18 – 36 VDC	±12 VDC	±12 – ±15 VDC	±250 mA	309 mA	85	±510 uF
TEN06-48S33	36 – 75 VDC	3.3 VDC	2.84 – 3.67 VDC	1500 mA	143 mA	77	6600 uF
TEN06-48S05	36 – 75 VDC	5 VDC	4.3 – 6 VDC	1200mA	165 mA	80	3000 uF
TEN06-48S12	36 – 75 VDC	12 VDC	12 – 15 VDC	500 mA	155 mA	85	1400 uF
TEN06-48D12	36 – 75 VDC	±12 VDC	±12 – ±15 VDC	±250 mA	155 mA	85	±510 uF

Note

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

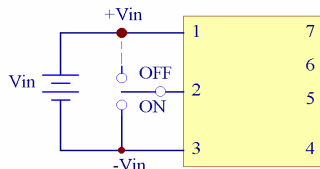
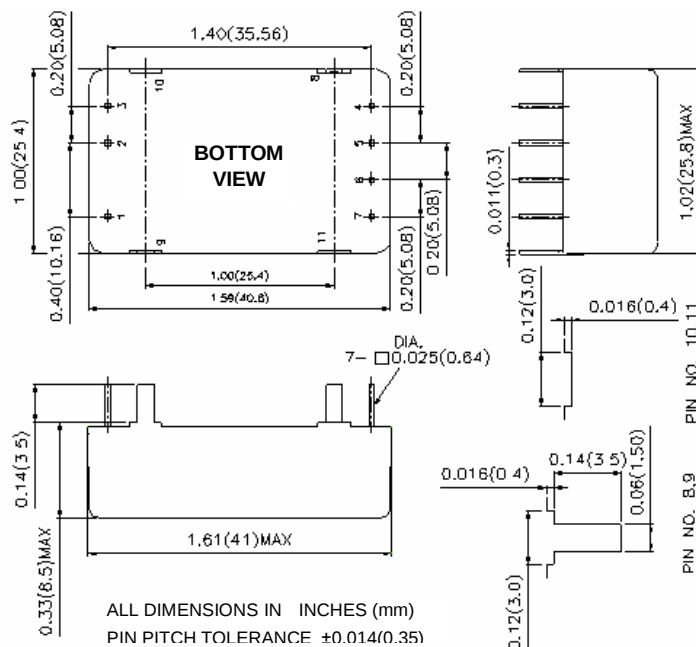


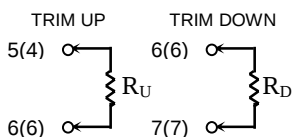
Figure 1



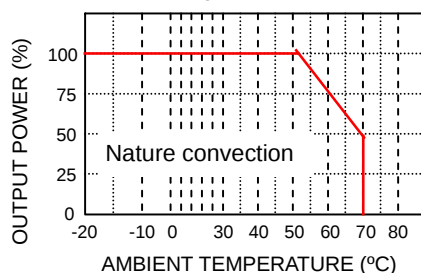
ALL DIMENSIONS IN INCHES (mm)
PIN PITCH TOLERANCE $\pm 0.014(0.35)$

EXTERNAL OUTPUT TRIMMING

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



Derating Curve



PIN CONNECTION

PIN	SINGLE	DUAL
1	+ Vi	+ Vi
2	Ctrl	Ctrl
3	- Vi	- Vi
4	NC	- Vo
5	- Vo	COM
6	Vset	Vset
7	+ Vo	+ Vo