



6 WATT Single & Dual Output

Regulated, 4:1 Wide Input Range

MEDICAL
DC/DC Converters

FEATURES

- **4:1 Wide Input Voltage Range**
- **Operating Temperature Range:**
-40° to +105° C (with derating)
- **Miniature DIP Package**
- **High Efficiency: To 89%**
- **Reinforced Insulation**
- **Clearance and Creepage**
Distance: 8.0 mm/2MOPP
- **5000 Vac Input/Output**
2MOPP Isolation
- **Built-In EMI Class A Filter**
- **2uA Patient Leakage Current**
- **Medical Safety Approvals**
Including: UL, CE and
ANSI/AAMI ES60601-1,
EN60601-1 and IEC60601-1
- **RoHS Compliant to 2011/65/EU**

TWB6/MHIA5 Series

Specifications - All specifications are typical at nominal input, full load and 25° C.

INPUT

Voltage Range.....	24VDC nominal input	9 -36VDC
	48VDC nominal input	18 -75VDC
Input filter.....		Pi Filter
Input Surge Voltage.....	24VDC input.....	50VDC 100ms, max.
	48VDC input.....	100VDC 100ms, max.
Input Reflected Ripple Current		20mA _{p-p}

Start up Time.	Constant resistive load.....	Power up.....	30ms
		Remote ON/OFF.....	30ms

Startup Voltage.....	24VDC input.....	9VDC, max.
	48VDC input.....	18VDC, max.

Shutdown Voltage.....	24VDC input.....	8VDC
	48VDC input.....	16VDC

Remote ON/OFF
(Only for B-Type Pin connection option)

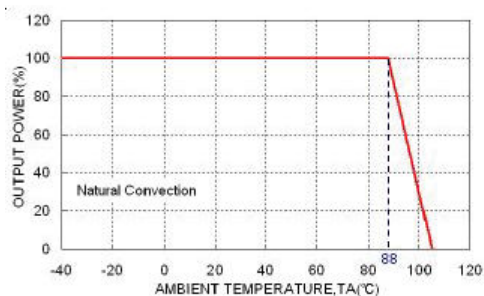
Referenced to - INPUT pin

DC-DC ON.....	Open or 0-1.2VDC
DC-DC OFF.....	2.2 - 12VDC
Input Current of Remote Control Pin.....	0.5-1mA
Remote off state input current.....	2.5mA

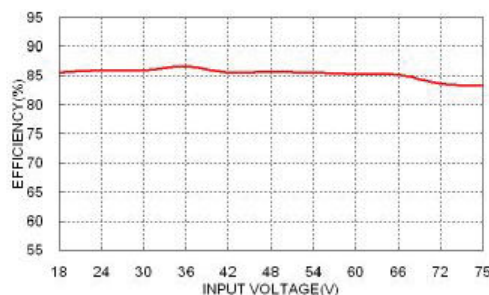
OUTPUT

Output Power.....		6 Watts max.
Voltage Accuracy.....		±1.0%
Line Regulation.....	LL to HL at Full Load.....	Single..... ±0.2%
		Dual..... ±0.5%
Load Regulation.....	No Load to Full Load.....	Single..... ±0.2%
		Dual..... ±1.0%
Cross Regulation.....	Asymmetrical Load 25% / 100% FL.....	Dual..... ±5%
Ripple and Noise.....	Measured by 20MHz band width	
	With a 10µF/25V X7R MLCC.....	3.3Vout, 5Vout... 30mVp-p
		12Vout, 15Vout. 40mVp-p
	With a 4.7µF/50V X7R MLCC.....	24Vout..... 50mVp-p
Temperature Coefficient.....		±0.2% / °C, max.
Transient Response recovery Time	25% load step change.....	250µs
	3.3 Vout.....	3.7 - 5.4VDC
	5Vout.....	5.6 - 7.0VDC
Over voltage protection.....	Continuous clamp.....	12Vout..... 13.5 - 19.6VDC
		15Vout..... 18.3 - 22.0VDC
		24Vout..... 29.1 - 32.5 VDC
Overload Protection.....	% of Iout rated; Hiccup mode.....	150%
Short Circuit Protection.....		Continuous, automatic recovery

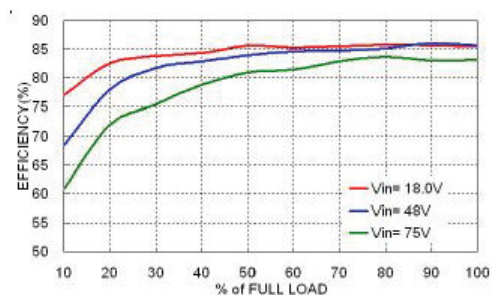
Additional specifications on next page.



TWB6-48S5/MHIA5 Derating Curve

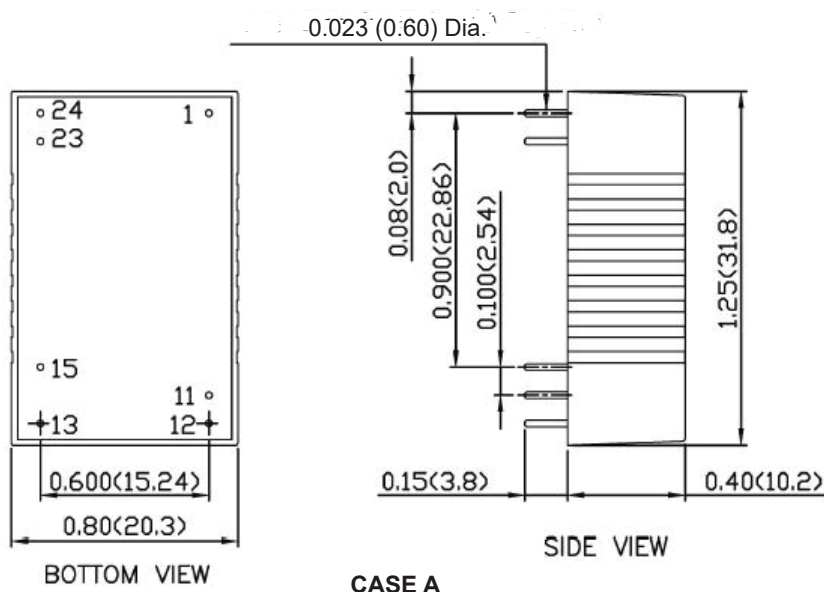


TWB6-48S5/MHIA5 Efficiency VS Input Voltage



TWB6-48S5/MHIA5 Efficiency VS Output Load

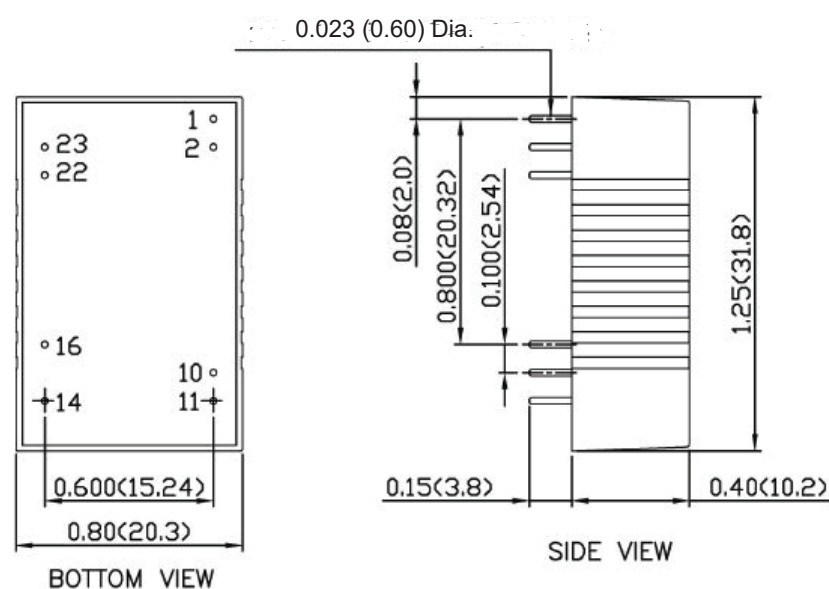
MECHANICAL DRAWINGS



CASE A

DIP PIN CONNECTION		
PIN	SINGLE	DUAL
1	+INPUT	+INPUT
11	NO PIN	COMMON
12	-OUTPUT	NO PIN
13	+OUTPUT	-OUTPUT
15	NO PIN	+OUTPUT
23	-INPUT	-INPUT
24	-INPUT	-INPUT

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



CASE B

DIP PIN CONNECTION		
PIN	SINGLE	DUAL
1	CTRL (Option)	CTRL (Option)
2	-INPUT	-INPUT
10	TRIM (Option)	TRIM (Option)
11	NO PIN/NC(**)	-OUTPUT
14	+OUTPUT	+OUTPUT
16	-OUTPUT	COMMON
22	+INPUT	+INPUT
23	+INPUT	+INPUT

**: The Pin 11 is "NO PIN" when single output
With Trim option (Suffix - T)
The Pin 11 is "NC" when single output
Without Trim pin.

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