

Features

- ◆ Highest power density in SIP package
- ◆ Wide 4:1 input voltage range
- ◆ Ultra-compact SIP-8 package
- ◆ Smallest footprint 6W converter
- ◆ Full SMD design
- ◆ Temperature range -40° to $+71^{\circ}\text{C}$
- ◆ High efficiency up to 88%
- ◆ Indefinite short-circuit protection
- ◆ I/O isolation 1600 VDC
- ◆ Remote On/Off control
- ◆ Fully RoHS compliant
- ◆ 3-year product warranty



The TMR-6WI series is a new family of isolated 6W dc-dc converter modules with regulated output, featuring wide 4:1 input voltage ranges. The product comes in a ultra-compact SIP-8 plastic package with a small footprint occupying only 2.0 cm² (0.3 square in.) of board space.

An excellent efficiency allows -40° to $+71^{\circ}\text{C}$ operation temperatures. Further features include remote On/Off control and continuous short circuit protection. The very compact dimensions of these converters make them an ideal solution for many space critical applications in communication equipment, instrumentation and industrial electronics.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
TMR 6-2410WI	9.0 – 36 VDC (24 VDC nominal)	3.3 VDC	1500 mA	81 %
TMR 6-2411WI		5 VDC	1200 mA	84 %
TMR 6-2419WI		9 VDC	666 mA	86 %
TMR 6-2412WI		12 VDC	500 mA	87 %
TMR 6-2413WI		15 VDC	400 mA	88 %
TMR 6-2415WI		24 VDC	250 mA	87 %
TMR 6-2421WI		± 5 VDC	± 600 mA	84 %
TMR 6-2422WI		± 12 VDC	± 250 mA	87 %
TMR 6-2423WI		± 15 VDC	± 200 mA	87 %
TMR 6-4810WI		18 – 75 VDC (48 VDC nominal)	3.3 VDC	1500 mA
TMR 6-4811WI	5 VDC		1200 mA	84 %
TMR 6-4819WI	9 VDC		666 mA	85 %
TMR 6-4812WI	12 VDC		500 mA	87 %
TMR 6-4813WI	15 VDC		400 mA	87 %
TMR 6-4815WI	24 VDC		250 mA	87 %
TMR 6-4821WI	± 5 VDC		± 600 mA	84 %
TMR 6-4822WI	± 12 VDC		± 250 mA	87 %
TMR 6-4823WI	± 15 VDC		± 200 mA	87 %

Input Specifications

Input current at no load (nominal input voltage)	24 V models: 6 mA typ. 48 V models: 6 mA typ.
Surge voltage (100 msec. max.)	24 V models: 50 V max. 48 V models: 100 V max.
Input filter	capacitor type (application note for compliance to EN 55022 class A/B pending)
Recommended input fuse (normal blow, max. rating)	24 V models: 700 mA 48 V models: 315 mA
ESD (electrostatic discharge)	EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A
Radiated immunity	EN 61000-4-3, 20 V/m, perf. criteria A
Fast transient / surge (with external input capacitor)	EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 2 kV perf. criteria A
– external input capacitor	5 Vin models: Nippon chemi-con KY 330 μ F, 50 V, ESR 55 mOhm other models: Nippon chemi-con KY 220 μ F, 100 V, ESR 48 mOhm
Conducted immunity	EN 61000-4-6, 10 Vrms, perf. criteria A
PF Magnetic Field	EN 61000-4-8, 100 A/m, perf. criteria A

Output Specifications

Voltage set accuracy	± 1 % max
Regulation	– Input variation Vin min. to Vin max. 0.2 % max. – Load variation 0 – 100% single output models: 0.5 % max. dual output models: 1.0 % max. balanced load – Load cross regulation 25/100% 5.0 % max. (dual output models)
Minimum load	no minimum load required
Ripple and noise (20 MHz Bandwidth)	3.3 – 9 VDC output models: 50 mVp-p typ. 12 – 24 VDC output models: 75 mVp-p typ.
Transient response setting time (25% load step change)	250 μ s typ.
Short circuit protection	continuous, automatic recovery
Start up time	– Power On 30 ms typ. (constant resistive load) – Remote On 30 ms typ.
Capacitive load	3.3 VDC output models: 2200 μ F max. 5 VDC output models: 1100 μ F max. 9 VDC output models: 680 μ F max. 12 VDC output models: 470 μ F max. 15 VDC output models: 470 μ F max. 24 VDC output models: 180 μ F max. ± 5 VDC output models: ± 680 μ F max. ± 12 VDC output models: ± 330 μ F max. ± 15 VDC output models: ± 180 μ F max.

General Specifications

Temperature ranges	– Operating -40°C to $+71^{\circ}\text{C}$ (without derating) – Case temperature $+100^{\circ}\text{C}$ max. – Storage -55°C to $+125^{\circ}\text{C}$
Load derating	3.45 %/K above 71°C
Thermal shock, mechanical shock & vibration	EN 61373, MIL-STD-810F
– Test conditions	
Humidity (non condensing)	5 – 95 % rel. H max.
Temperature coefficient	± 0.02 %/K

All specifications valid at nominal input voltage, full load and $+25^{\circ}\text{C}$ after warm-up time unless otherwise stated.

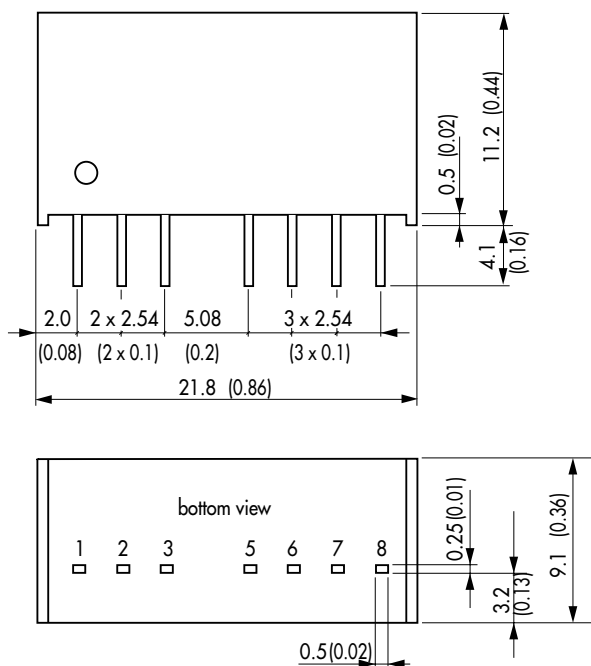
General Specifications

Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)	>2.9 Mio h
Isolation voltage (60sec.) – Input/Output	1600 VDC
Isolation capacitance – Input/Output	50 pF max.
Isolation resistance – Input/Output (500 VDC)	>1 GOhm
Switching frequency	580 kHz typ. (PWM)
Remote On/Off	– On: open or high impedance – Off: 2...4 mA current applied via 1KOhm resistor – Off stand by input current 2.5 mA typ.
Safety standards	IEC/EN 60950-1, UL 60950-1
Altitude during operation	4'000 m max. (13'120 ft) approved
Environmental compliance	– Reach – RoHS RoHS directive 2011/65/EU

Physical Specifications

Casing material	non-conductive plastic
Potting material	silicone, (UL 94V-0 rated)
Weight	4.8 g (0.17oz)

Outline Dimensions



Pin-Out		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	No function	No function
6	+Vout	+Vout
7	-Vout	Common
8	No function	-Vout

Dimensions in [mm], () = Inch
Tolerances: ± 0.5 (± 0.02)
Pin pitch tolerances: ± 0.25 (± 0.01)