P34TG-xxxxE/Z5:1M

Mainzer Straße 151–153
D-55299 Nackenheim
Tel. +49 6135 7026-0
Fax: +49 6135 931070
www.peak-electronics.de
peak@peak-electronics.de

PMRW-SERIES Rev.07-2015

- ✓ 8 Watt
- ✓ **5:1** Wide Input
- ✓ **Single and Dual Reg.** Output
- ✓ **3 kV** DC I/O Isolation
- ✓ **DIP24** case
- ✓ **On/Off Control**
- ✓ Designed for **Railway App.**

The PMRW Series include high performance 8W single & dual output DC-DC converters. These converters are consisted with nickle-coated copper DIP24 package with high performance features like synchronous rectification, high efficiency and tight line / load regulation. The Devices are encapsulated flame retardant resin. Available with railway Input voltages of 24, 36, 48, 72, 96 and 110Vdc (5:1 ultra wide), output voltages 3.3 , 5 , 12 , 15 , ±5, ±12 , ±15 (±1%) and high efficiency operation up to 86%

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

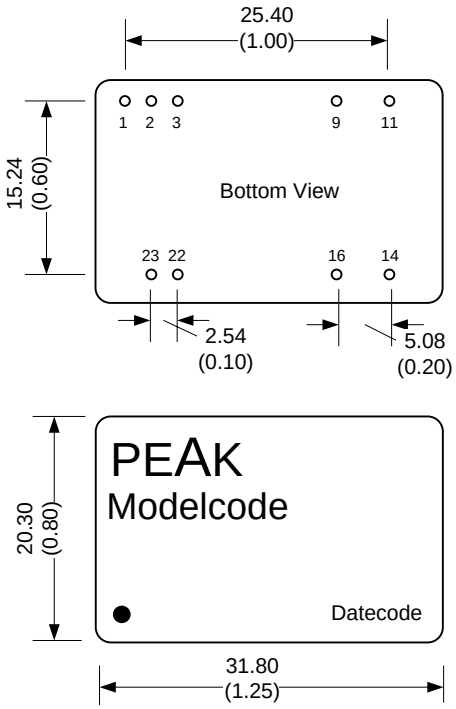
Input Specifications		
Voltage Range		5:1 Wide Input (see table)
Input Filter		Pi Type
Input Reflected Ripple Current[1]		20 mA pk-pk, typ.
Start up time (Nominal Vin and constant resistive load)		30mS, typ.
Output Specifications		
Voltage Accuracy		± 1%
Short Circuit Protection		Indefinite (hiccup) (Automatic Recovery)
Line Regulation		± 0.5%, max.
Load Regulation (0% - 100%)		± 0.5%, max.
Cross Regulation (Dual Output) [2]		± 5%
Ripple and Noise (20Mhz bandwidth) [3]		75 mV pk-pk
Temperature Coefficient		± 0.02% / °C
Transient Recovery Time[4]		250us, typ.
Transient Response Deviation[4]		± 3%, max. ± 5%, max (for 3.3V output)
General Specifications		
I/O Isolation Voltage (60 sec.)		3000 VDC
I/O Isolation Capacity		1000 pF, typ.
I/O Isolation Resistance		1000 MOhm
Switching Frequency		220-330 kHz, typ.
Humidity		95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)		> 800 Khrs
Designed to meet:	Safety Standart	IEC/EN 60950-1; EN50155
	Thermal Shock	IEC60068
	Shock/Vibration	EN 61373
Physical Specifications		
Case Material		Nickel-coated Copper
Potting Material		Epoxy (UL94V-0 rated)
Weight		~ 18g, typ.
Environment Specifications		
Operating Temperature		-40 to +85°C (ambient)
Maximum Case Temperature		105°C
Storage Temperature		-55 to +125°C
Cooling		Free Air Convection
RoHS Conform		Soldering 260°C, max. (1.5mm from case 10s.)

Selection Guide
Single and Dual Output

Order #	Input Voltage (VDC)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Min. Load (mA)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF) [5]
SINGLE OUTPUT								
P34TG-243R3E5:1M	13-70	30	398	3.3	0	2400	83	1330
P34TG-2405E5:1M	13-70	20	387	5	0	1600	86	1330
P34TG-2412E5:1M	13-70	10	392	12	0	665	85	330
P34TG-2415E5:1M	13-70	10	389	15	0	535	86	220
P34TG-1103R3E5:1M	42-176	10	89	3.3	0	2400	81	1330
P34TG-11005E5:1M	42-176	10	87	5	0	1600	84	1330
P34TG-11012E5:1M	42-176	5	87	12	0	665	84	330
P34TG-11015E5:1M	42-176	5	88	15	0	535	83	220
DUAL OUTPUT								
P34TG-2405Z5:1M	13-70	10	402	± 5	0	± 800	83	± 900
P34TG-2412Z5:1M	13-70	10	395	± 12	0	± 335	85	± 220
P34TG-2415Z5:1M	13-70	10	386	± 15	0	± 265	86	± 100
P34TG-11005Z5:1M	42-176	10	91	± 5	0	± 800	80	± 900
P34TG-11012Z5:1M	42-176	5	90	± 12	0	± 335	82	± 220
P34TG-11015Z5:1M	42-176	5	88	± 15	0	± 265	83	± 100

If you need other specifications, please enquire.

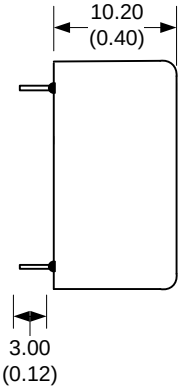
Package / Pinning / Derating



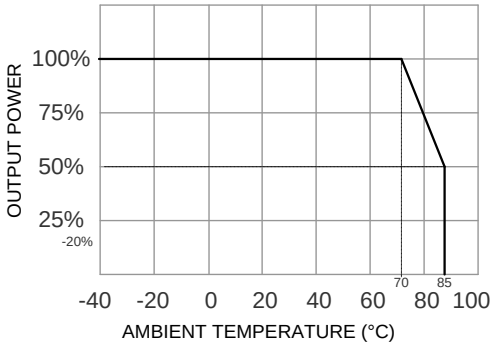
All dimensions are typical in millimeters (inches).
- Pin diameter: 0.5 +/-0.05 (0.02 +/-0.002)
- Pin pitch tolerance: +/-0.35 (+/-0.014)
- Case tolerance +/-0.5 (+/-0.02)

Standard Drawing
For exact pinning please see connection table!
Specification may change without notice.

DIP24 – METAL CASE



TEMPERATURE DERATING GRAPH



PIN CONNECTIONS		
#	SINGLE	DUAL
1	CTRL	CTRL
2	- Vin	- Vin
3	- Vin	- Vin
9	Omitted	Common
11	N.C.	- Vout
14	+Vout	+Vout
16	- Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

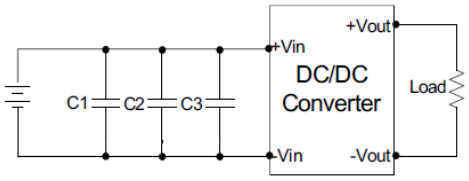
App Notes:

[1] = Measured Input reflected ripple current with a simulated source inductance of 12uH and source capacitor Cin (33uF, ESR<1Ohm at 100KHz)
[2] = One load is 25% to 100%, the other load is 100% load, the output voltage variable is within ±5%
[3] = Measured with a 0.1uF ceramic capacitor an 10uF electrolytic capacitor
[4] = Tested by normal Vin and 75%-50%-25% load step change at 1A/us
[5] = Tested by minimal Vin and constant resistive load

Operation at no-load conditions will not damage these devices, however they may not meet all specifications.

App Notes

EMI Filter (For 110Vin Models only)
Input Filter components (C1, C2, C3 = 1uF, 250V) are used to meet conducted emissions 79BuV from 0.15-0.5MHz and 73BuV from 0.5-30MHz. The components should be mounted as close as possible.



EMC Specifications

Radiated Emissions	EN50121-3-2		40dBuV from 30-230MHz 47dBuV from 230-1000MHz
Conducted Emissions	EN50121-3-2	Class A	99dBuV from 0.15-0.5MHz 93dBuV from 0.5-30MHz
ESD	EN50121-3-2	Air ± 8KV Contact ± 6KV	Perf. Criteria A
RS	EN50121-3-2	20V/m	Perf. Criteria A
EFT	EN50121-3-2	2.0 KV	Perf. Criteria A
Surge	EN50121-3-2	2.0 KV	Perf. Criteria A
CS	EN50121-3-2	10V	Perf. Criteria A
PFMF	EN61000-4-8	10A/m	Perf. Criteria A

Over Voltage Protection

The module has an internal output over voltage protection circuit, which monitors the voltage on the output terminals. If this voltage exceeds the over voltage set point, the module will activate the control loop of internal circuit to clamp the output voltage.

Over Current Protection

The module includes an internal over current protection circuit, which will endure current limiting for an unlimited duration during output over load condition. If the output current exceeds the OCP set point, the module will shut down automatically (hiccup). The module will try to restart after shut down. If the over load condition still exists, the module will shut down again.

The Remote on/off control:

Positive logic:
Turns on the module during high logic and off during low logic.

Ctrl module on/off can be controlles by an external switch between ctrl terminal and –Vin. The switch can be open collector or open drain.

If the ctrl feature is not used, please leave the ctrl pin floating.