P14RG-xxxxE/Z4:1LF

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PMBW-SERIES Rev.04-2009

- ✓ 3 Watt
- ✓ **4:1** Ultra Wide Input
- ✓ **Reg. Single and Dual** Output
- ✓ **1.5 kV** DC I/O Isolation
- ✓ **SIP9** case
- ✓ **On/Off Control**
- ✓ Contin. Short Circuit Protection

The PMBW 3Watt series is a family of cost effective DCDC converters with 4:1 ultra wide input, 3W single and dual output DC/DC converters with control Pin. These converters are encapsulated in an ultra miniature SIP9 plastic case. High performance features: continuous / long time short circuit protection with automatic restart and tight line / load regulation, high efficiency operation and output voltage accuracy of ±2% maximum.

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

Input Specifications	
Voltage Range	4:1 Ultra Wide Input (see table)
Input Filter	Capacitor
Input Reflected Ripple Current[1]	20 mA pk-pk
Start-up Time	10 mS, typ.
Output Specifications	
Voltage Accuracy	± 1%
Short Circuit Protection	Indefinite (hiccup, Automatic Recovery)
Line Regulation	± 0.5%
Load Regulation (0% - 100%)	± 0.5%, max.(<10% load: ±1% for 3.3Vout and 5Vout)
Cross Regulation (Dual Output)	± 5%
Ripple and Noise (20Mhz bandwidth)	50 mV pk-pk
Temperature Coefficient	± 0.02% / ℃
Transient Recovery Time[3]	300 us, typ.
Transient Response Deviation[3]	± 3%, max.
General Specifications	
I/O Isolation Voltage (3 sec.)	1500 VDC
I/O Isolation Capacity	500 pF, max.
I/O Isolation Resistance	1000 M Ohm
Switching Frequency	250 kHz
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 1.212 Mhrs
Physical Specifications	
Case Material	Non Conductive Black Plastic (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 6.5 g, typ.
Environment Specifications	
Operating Temperature	-40 to +75℃ (ambient)
Maximum Case Temperature	100℃
Storage Temperature	-40 to +125℃
Cooling	Free Air Convection (10mm distance required)
RoHS Conform	Soldering 260℃, max. (1.5mm from case 10s.)

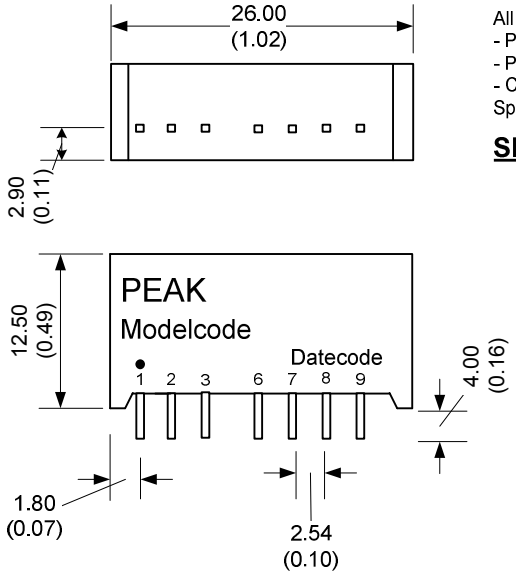
Selection Guide
Single/Dual Output

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)[2]
SINGLE OUTPUT								
P14RG-243R3E4:1LF	9-36	10	125	3.3	0	700	77	2200
P14RG-2405E4:1LF	9-36	10	153	5	0	600	82	1000
P14RG-2412E4:1LF	9-36	10	149	12	0	250	84	165
P14RG-2415E4:1LF	9-36	10	148	15	0	200	85	100
P14RG-483R3E4:1LF	18-72	5	65	3.3	0	700	75	2200
P14RG-4805E4:1LF	18-72	5	78	5	0	600	81	1000
P14RG-4812E4:1LF	18-72	5	75	12	0	250	84	165
P14RG-4815E4:1LF	18-72	5	75	15	0	200	84	100

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)[2]
DUAL OUTPUT								
P14RG-2405Z4:1LF	9-36	10	155	± 5	0	± 300	81	± 470
P14RG-2412Z4:1LF	9-36	10	149	± 12	0	± 125	84	± 100
P14RG-2415Z4:1LF	9-36	10	149	± 15	0	± 100	84	± 47
P14RG-4805Z4:1LF	18-72	5	78	± 5	0	± 300	81	± 470
P14RG-4812Z4:1LF	18-72	5	75	± 12	0	± 125	84	± 100
P14RG-4815Z4:1LF	18-72	5	76	± 15	0	± 100	83	± 47

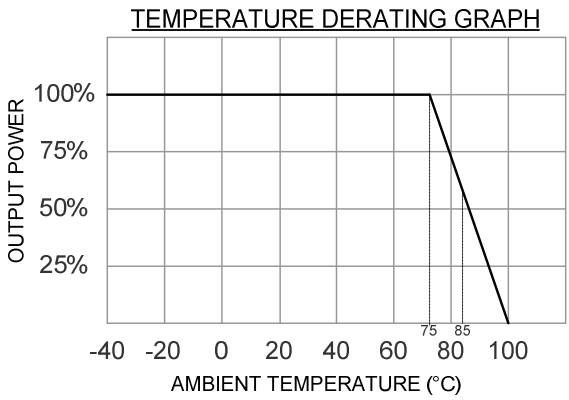
If you need other specifications, please enquire.

Package / Pinning / Derating



All dimensions are typical in millimeters (inches).
- Pin diameter: 1.0 +/-0.05 (0.04 +/-0.002)
- Pin pitch tolerance: +/-0.35 (+/-0.014)
- Case tolerance +/-0.5 (+/-0.02)
Specification may change without notice.

SIP9 – PLASTIC CASE



PIN CONNECTIONS		
#	SINGLE	DUAL
1	- Vin	- Vin
2	+Vin	+Vin
3	Ctrl.	Ctrl.
6	+Vout	+Vout
7	N.C.	Common
8	N.C.	N.C.
9	- Vout	- Vout

App Notes:

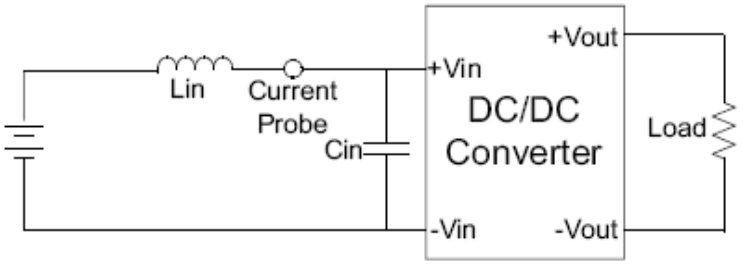
[1] = Measured Input reflected ripple current with a simulated source inductance of 12uH
[2] = Tested by nominal Vin and constant resistive load.
[3] = Test by normal Vin and 100%-25% load,25% load step change; If Vout is 3.3V then the Transient Response Deviation is ±5%.
[4] = Input filter components are required to help meet conducted emission class A
[5] = An external filter capacitor is required to meet EN61000-4-4 and EN61000-4-5. (e.g. Nippon-chemi-con KY series, 220uF/100V)

EMC SPECIFICATIONS		
Conducted Emissions[4]	EN 55022	CLASS A
Radiated Emissions	EN 55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria B
RS	IEC 61000-4-3	Perf. Criteria A
EFT[5]	IEC 61000-4-4	Perf. Criteria B
Surge[5]	IEC 61000-4-5	Perf. Criteria B
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

Remote ON/OFF

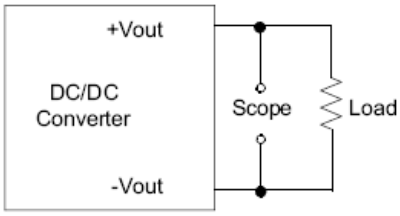
The MCU Pin Voltage is referenced to –Vin (Pin1)
ON: 0 – 0.6 VDC or open circuit
OFF: 2.7 - 15 VDC
OFF stand by input current: 5mA, max.

App Notes
Test Configurations



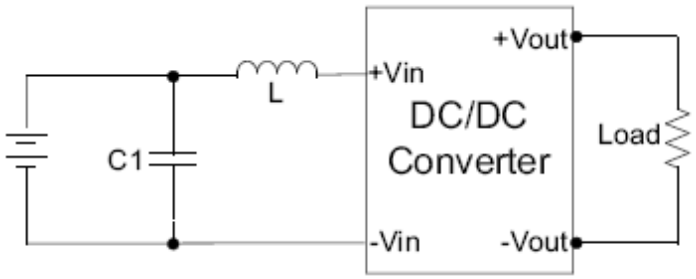
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor Lin(12uH) and a source capacitor Cin(47uF, ESR<1.Ohm at 100KHz) at nominal input and full load.



Output Ripple & Noise Measurement Test

The Scope measurement bandwidth is 20MHz.



EMI Filter

Input filter components (C1, L) are used to help meet conducted emissions equirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

Input Components		
	C1	L
P14RG-24xx	1210, 225k/100V,X7R (2pcs)	6.8 uH
P14RG-48xx	1210,105k/100V,X7R	56 uH