Wall Industries, Inc.

POL Series

Non-Isolated Point of Load Products
16A Output Current Rating

- **High efficiency - 95% @ 3.3V full load**
- **SMD & SIP packages**
- **Small size and low profile: 1.3" x 0.53" x 0.305" (SMD) 2.0" x 0.50" x 0.287" (SIP)**
- **Output voltage programmable from 0.75Vdc to 3.3Vdc via external resistor**
- **Delivers up to 16A of output current**
- **No minimum load required**
- **Low output ripple and noise**
- **Fixed switching frequency (300KHz)**
- **Lead free Directive compatible**
- **Remote ON/OFF**
- **Input under-voltage lockout**
- **Output overcurrent protection**
- **Over temperature protection**
- **Cost - efficient open frame design**
- **ISO 9001 certified manufacturing facilities**
- **UL 60950-1 and TUV(EN60950-1) and CB**

TECHNICAL SPECIFICATIONS

All specs are typical at nominal input, full load and 25ºC unless otherwise noted

OUTPUT SPECIFICATIONS

Output current			16A max
Voltage accuracy	Full load and Vin,min		±2%Vo,set
Minimum load			0%
Line regulation	Vin=Vo,set+0.5V to Vin,max at Full Load		±0.3%Vo,set,typ
Load regulation	0% to 100% FL		±0.4%Vo,set,typ
Ripple and noise (Note1)	20MHz bandwidth		15mVrms,max 50mVp-p,max
Temperature coefficient			±0.4%, typ
Dynamic load response (Note1)	ΔIo /Δt = 2.5A/uS ,Vin,nom	Peak deviation	300mV, typ
	Load change step (50% to 100% or 100% to 50% of Io,max)	Setting time (Vo<10%peak deviation)	25uS, typ
Dynamic load response (Note2)	ΔIo /Δt = 2.5A/uS ,Vin,nom	Peak deviation	150mV, typ
	Load change step (50% to 100% or 100% to 50% of Io,max)	Setting time (Vo<10%peak deviation)	100uS, typ
Output current limit			220%, typ
Output short-circuit current			Hiccup, automatic recovery
External load capacitance	ESR≥1mΩ ESR≥10mΩ		1000uF,max 5000uF,max
Output voltage overshoot-startup	Vin=2.4~5.5V, F.L.		1%Vo,set
Voltage adjustability (see fig.1)	(Note3)		0.7525V ~ 3.63V

INPUT SPECIFICATIONS

Input voltage range	Vo,set < Vin – 0.5V	2.4 – 5.5VDC
Maximum input current	Vin=2.4 to 5.5V; Io=Io,max	16000mA
Input filter (Note 4)		C filter
Input no load current (Vin=5V, Io=0, module enabled)	Vo,set =0.75Vdc Vo,set =3.3Vdc	25mA,typ 40mA,typ
Input stand-by current (Vin=5V, Io=0, module disabled)		1.5mA,typ
Input undervoltage lockout	Start-up voltage Shutdown voltage	2.2V,typ 2.0V,typ
Input reflected ripple	5~20MHz, 1uH source impedance	100mAp-p

GENERAL SPECIFICATIONS

Efficiency		See table
Isolation voltage		None
Switching frequency		300KHz, typ
Sfety standards		IEC60950-1, UL60950-1, EN60950-1
Dimensions	(SMD)	1.30 X 0.53 X 0.305 Inch (33.0 X 13.5 X 7.75 mm)
	(SIP)	2.0 X 0.50 X 0.287 Inch (50.8 X 12.7 X 7.3 mm)
Weight		6.0g(0.22oz)
MTBF (Note 5)		$1.428*10^7$ hrs

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range	–40ºC ~ +85ºC
Storage temperature range	–55ºC ~ +125ºC
Thermal shock	MIL-STD-810D
Over temperature protection	125ºC, typ

FEATURE SPECIFICATIONS

Remote ON/OFF(Note 6)		
(Positive logic)		ON = Vin,max,I_{IN}=10μA,max. OFF=0V < Vr < 0.3V, I_{IN}=1mA,max.
(Negative logic)		ON = 0V < Vr < 0.3V, I_{IN}=1mA,max. OFF =1.5V < Vr < Vin,max,I_{IN}=10μA, max
Remote sense range		0.5V,max
Rise time	Time for Vo to rise from 10% to 90% of Vo,set	6msec,max
Turn-on delay time	Case 1 (Note7) Case 2 (Note8)	1msec,typ 1msec,typ

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Model Name	ON/OFF Logic	Package	Input Voltage	Output Voltage	Output Current	Efficiency (%) 5Vin, 3.3Vdc@16A
POLS16-05T	Negative	SMD	2.4 ~ 5.5Vdc	0.75 ~ 3.3Vdc	16A	95%
POLS16-05T-P	Positive					
POLT16-05T	Negative	SIP	2.4 ~ 5.5Vdc	0.75 ~ 3.3Vdc	16A	95%
POLT16-05T-P	Positive					

Note

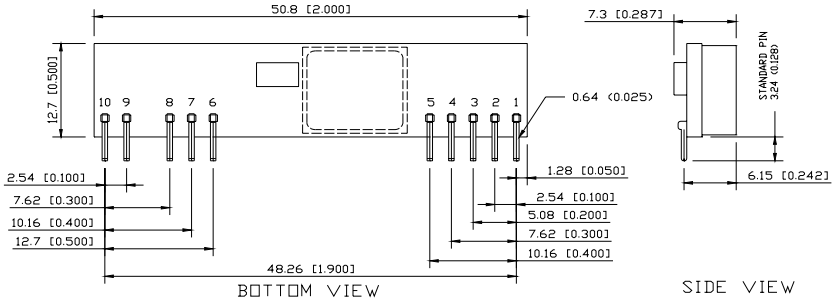
1. External with C_{out} = 1uF ceramic // 10uF tantalum capacitors.
2. External with C_{out} = 2x150uF polymer capacitors.
3. Output voltage programmable from 0.75V to 3.3V by connecting a single resistor (shown as Rtrim in Table 1) between the TRIM and GND pins of the module. To calculate the value of the resistor ***Rtrim*** for a particular output voltage ***Vo***, use the following equation:

$$Rtrim = \left[\frac{21070}{Vo - 0.7525} - 5110 \right] \Omega$$

4. To minimize input voltage ripple, Low-ESR polymer and ceramic capacitors are recommended at the input of the module. We suggest external C_{in} = 2x150uF polymer capacitors and 2x47uF ceramic capacitors.
5. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 25ºC. (Ground fixed and controlled environment).
6. Device code with suffix "**-P**" – Positive logic (On/Off is open collector/drain logic input; Signal referenced to GND).
   Device code with no suffix – Negative logic (On/Off pin is open collector/drain logic input with external pull–up resistor; signal referenced to GND).
7. Case 1 :On/Off input is set to logic low (module on) and then input power is applied (delay from instant at which Vin=Vin,min until Vo=10% of Vo,set).
8. Case 2 :Input power is applied for at least one second and then the On/Off input is set to logic low (delay from instant at which Von/off=0.3V until Vo=10% of Vo,set).

CAUTION: This power module is not internally fused. An input line fuse must always be used.

POLT16-05T



POLT16-05T	
PIN	FUNCTION
1	Vo
2	Vo
3	+SENSE
4	Vo
5	GND
6	GND
7	Vin
8	Vin
9	Trim
10	ON/OFF

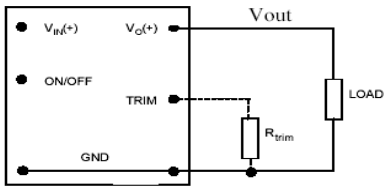


Figure1

POLS16-05T

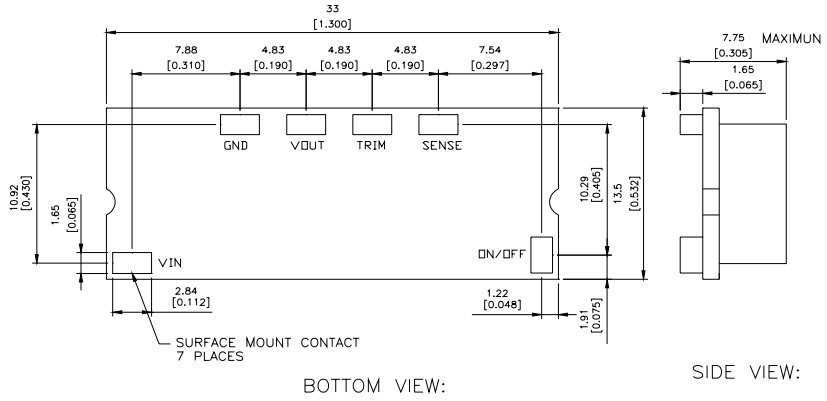


Table 1	
Vo,set (V)	Rtrim (KΩ)
0.7525	Open
1.2	41.973
1.5	23.077
1.8	15.004
2.5	6.974
3.3	3.160

Dimensions are in millimeter and (inches).
Tolerances : x.x mm ±0.5mm (x.xx in ±0.02in) [unless otherwise indicated].
x.xx mm ±0.25mm (x.xxx in ±0.01in).