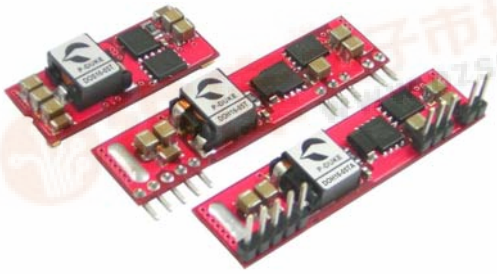
POWER MATE P-DUKE TECHNOLOGY CO.,LTD.

DOS16-05T Non-isolated
DOH16-05T Point of load DC/DC converters



FEATURES

- OUTPUT CURRENT UP TO 16A
- SMALL SIZE AND LOW PROFILE : 1.30" X 0.53" X 0.30" (SMD) ; 2.00" X 0.50" X 0.28" (SIP)
- HIGH EFFICIENCY - 95% @ 3.3V FULL LOAD
- INPUT RANGE FROM 2.4VDC TO 5.5VDC
- FIXED SWITCHING FREQUENCY (300KHZ)
- SMD & SIP PACKAGES
- OUTPUT VOLTAGE PROGRAMMABLE FROM 0.75VDC TO 3.3VDC VIA EXTERNAL RESISTOR
- INPUT UNDER-VOLTAGE LOCKOUT
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Distributed Power Architectures
Semiconductor Equipment
Microprocessor Power Applications

OPTIONS

Positive Logic Remote on/off

DESCRIPTION

DOS16-05T (SMD type), DOH16-05T (for Vertical Mounting SIP type) and DOH16-05TA (for Horizontal Mounting SIP type) are non-isolated DC/DC converters that can deliver up to 16A of output current with full load efficiency of 95% at 3.3V output.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS

Output current			16A max.
Voltage accuracy	Full load and Vin(nom.)		± 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	No Load to Full Load		± 0.4%Vo(set),typ.
Ripple and noise (Note2)	20MHz bandwidth		15mVrms,max. 50mVp-p,max.
Temperature coefficient			±0.4%, typ.
Dynamic load response (Note 2)	ΔIo /Δt = 2.5A/μS ,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)	25μS,typ.
Dynamic load response (Note 3)	ΔIo /Δt = 2.5A/μS ,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)	100μS,typ.
Output current limit			180%,typ.
Output short-circuit current			Hiccup, automatics recovery
External load capacitance	ESR≧1mΩ ESR≧10mΩ		1000μF,max. 5000μF,max.
Output voltage overshoot-startup	Vin=2.4~5.5V, F.L.		1%Vo(set)
Voltage adjustability (see fig.1)	(Note 4)		0.7525V ~ 3.63V

GENERAL SPECIFICATIONS

Efficiency		See table
Isolation voltage		None
Switching frequency		300KHz, typ.
Approvals and standard		IEC60950-1, UL60950-1, EN60950-1
Dimensions	SMD	1.30 X 0.53 X 0.30 Inch (33.0 X 13.5 X 7.7 mm)
	SIP	2.00 X 0.50 X 0.28 Inch (50.8 X 12.7 X 7.2 mm)
Weight		6.0g(0.22oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332	1.428 x 10^7 hrs
	MIL-HDBK-217F	6.523 x 10^5 hrs

INPUT SPECIFICATIONS

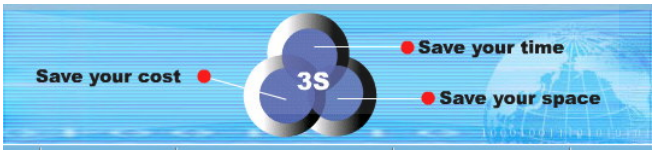
Input voltage range	Vo(set) < Vin – 0.5V		2.4 – 5.5VDC
Maximum input current	Vin=2.4 to 5.5V; Io=Io(max.)		16A
Input filter (Note 5)			C filter
Input no load current (Vin=5V, Io=0, module enabled)		Vo(set) =0.75Vdc	100mA,typ.
		Vo(set) =3.3Vdc	130mA,typ.
Input under voltage lockout		Start-up voltage	2.2V,typ.
		Shutdown voltage	2.0V,typ.
Input reflected ripple current	5~20MHz, 1μH source impedance		100mAp-p

ENVIRONMENTAL SPECIFICATIONS

Operating ambient temperature	–40ºC ~ +85ºC(with derating)
Storage temperature range	–55ºC ~ +125ºC
Thermal shock	MIL-STD-810F
Over temperature protection	125ºC,typ.

FEATURE SPECIFICATIONS

Remote ON/OFF(Note 6)		
Negative logic(standard)	ON = 0V < Vr < 0.3V	I_{IN}=10μA,max.
	OFF =1.5V < Vr < Vin(max)	I_{IN}=1mA,max.
Positive logic(option)	ON = Vin(max)	I_{IN}=10μA,max.
	OFF=0V < Vr < 0.3V	I_{IN}=1mA,max.
Input current of Remote control pin		10μA~1.0mA
Remote off state input current	Nominal Vin	1.5mA,typ.
Remote sense range		0.5V,max.
Rise time	Time for Vo to rise from 10% to 90%of Vo(set)	6ms,max.
Turn-on delay time	Case 1 (Note 7)	1ms,typ.
	Case 2 (Note 8)	1ms,typ.



Model Name	ON/OFF Logic	Package	Input Voltage	Output Voltage	Output Current		Efficiency (%)
					Min. Load	Max. Load	5.0Vin, 3.3Vdc@16A
DOS16-05T	Negative	SMD	2.4 ~ 5.5Vdc Vin(min.)=Vo(set)+0.5V	0.75 ~ 3.3Vdc	0A	16A	95%
DOS16-05T-P	Positive						
DOH16-05T	Negative	Vertical Mounting SIP					
DOH16-05T-P	Positive						
DOH16-05TA	Negative	Horizontal Mounting SIP					
DOH16-05TA-P	Positive						

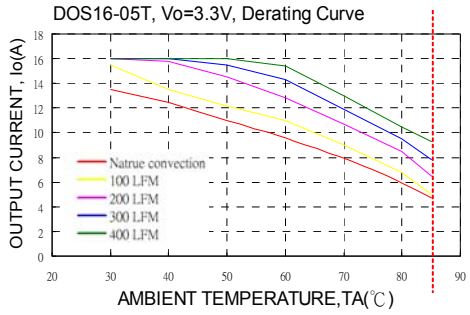
Note

1. BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load(Ground, Benign, controlled environment).
2. External with C_{out} = 1μF ceramic//10μF tantalum capacitors.
3. External with C_{out} = 2×150μF polymer capacitors.
4. 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:

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

5. It's necessary to equip the external input capacitors at the input of the module. The capacitors should connect as close as possible to the input terminals that ensuring module stability. The external C_{in} is 4×150μF low-ESR polymer capacitors // 4×47μF ceramic capacitors at least.
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 form 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.



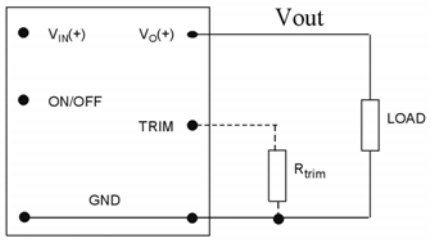


Fig. 1

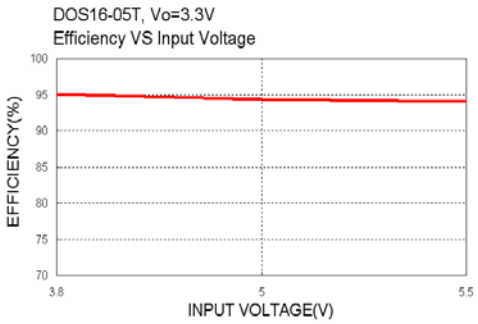
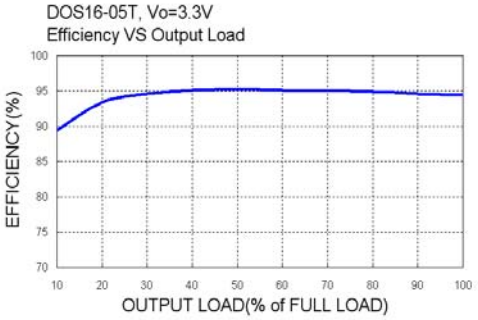
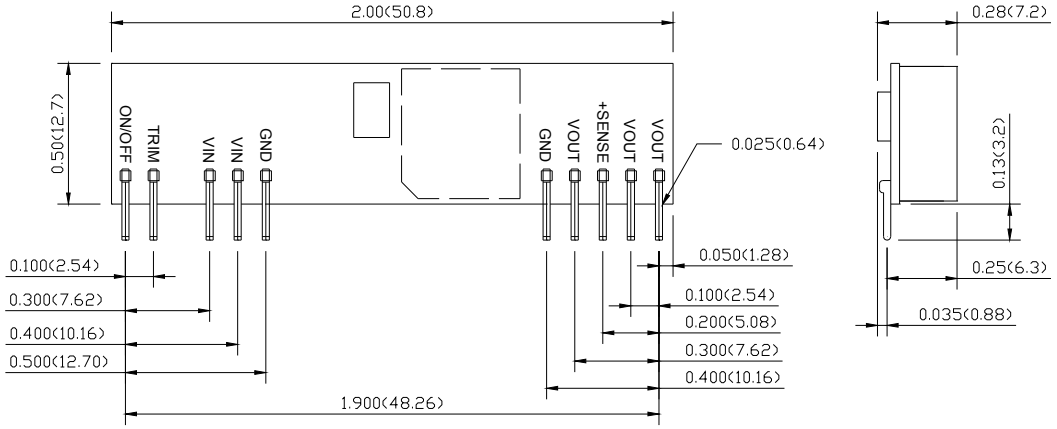


Table 1	
Vo(set) (V)	Rtrim (KΩ)
0.7525	Open
1.2	41.973
1.5	23.077
1.8	15.004
2.5	6.974
3.3	3.160

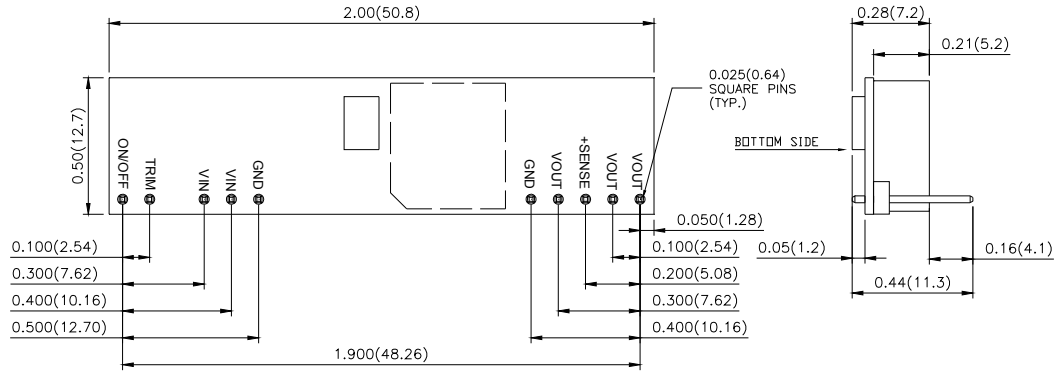


DOH16-05T



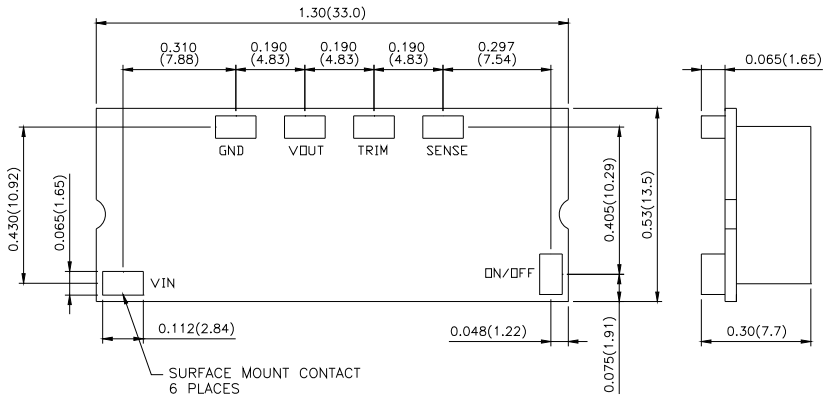
BOTTOM VIEW SIDE VIEW

DOH16-05TA



BOTTOM VIEW SIDE VIEW

DOS16-05T



BOTTOM VIEW SIDE VIEW

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