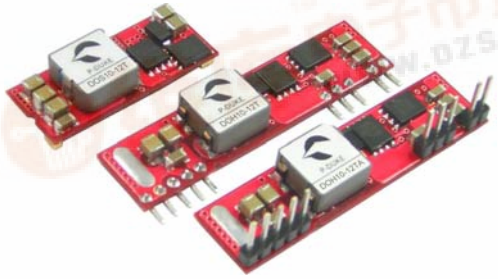
P-DUKE **POWER MATE TECHNOLOGY CO.,LTD.**

DOS10-12T Non-isolated
DOH10-12T Point of load DC/DC converters



FEATURES

- OUTPUT CURRENT UP TO 10A
- 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 - 93% @ 3.3V FULL LOAD
- INPUT RANGE FROM 8.3VDC TO 14.0VDC
- FIXED SWITCHING FREQUENCY (300KHZ)
- SMD & SIP PACKAGES
- OUTPUT VOLTAGE PROGRAMMABLE FROM 0.75VDC TO 5.0VDC 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

DOS10-12T (SMD type), DOH10-12T (for Vertical Mounting SIP type) and DOH10-12TA (for Horizontal Mounting SIP type) are non-isolated DC/DC converters that can deliver up to 10A of output current with full load efficiency of 93% at 3.3V output.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS

Output current			10A max.
Voltage accuracy	Full load and Vin(nom.)		± 2%Vo(set)
Minimum load			0%
Line regulation	Vin=Vin(min.) 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		30mVrms,max. 75mVp-p,max.
Temperature coefficient			±0.4%, typ.
Dynamic load response (Note 2)	ΔIo/Δt = 2.5A/μS ,Vin(nom.)	Peak deviation	200mV,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	100mV,typ.
	Load change step (50% to 100% or 100% to 50% of Io(max.))	Setting time (Vo<10%peak deviation)	25μS,typ.
Output current limit			200%
Output short-circuit current			Hiccup, automatics recovery
External load capacitance	ESR≧1mΩ		1000μF,max.
	ESR≧10mΩ		5000μF,max.
Output voltage overshoot-startup	Vin=Vin(min.) to Vin(max.) F.L.		1%Vo(set)
Voltage adjustability (see fig.1)	(Note 4)		0.7525V ~ 5.0V

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	1.409 x 10^7 hrs
	MIL-HDBK-217F	1.048 x 10^6 hrs

INPUT SPECIFICATIONS

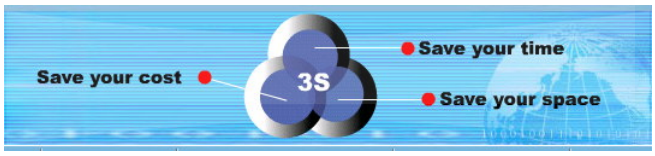
Input voltage range	Vo(set) ≦3.63V	Vin(nom.) =12V	8.3 – 14VDC
	Vo(set) >3.63V		8.3 – 13.2VDC
Maximum input current	Vin=8.3 to 14.0Vdc; Io=Io(max.)		7A
Input filter (Note 5)			C filter
Input no load current (Vin=12V, Io=0, module enabled)		Vo(set) =0.75Vdc	40mA,typ.
		Vo(set) =5.0Vdc	100mA,typ.
Input under voltage lockout		Start-up voltage	7.9V,typ.
		Shutdown voltage	7.8V,typ.
Input reflected ripple current	5~20MHz, 1μH source impedance		20mAp-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 =2.5V < Vr < Vin(max.)	I_{IN}=1mA,max.
Positive logic(option)	ON = (Vin-4) < Vr < 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	2.0mA,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)	3ms,typ.
	Case 2 (Note 8)	3ms,typ.



Model Name	ON/OFF Logic	Package	Input Voltage	Output Voltage	Output Current		Efficiency (%)
					Min. Load	Max. Load	12Vin, 3.3Vdc@10A
DOS10-12T	Negative	SMD	Vo(set)≦3.63V Vin = 8.3-14Vdc	0.75 ~ 5.0Vdc	0A	10A	93%
DOS10-12T-P	Positive						
DOH10-12T	Negative	Vertical Mounting SIP	Vo(set)＞3.63V Vin = 8.3-13.2Vdc				
DOH10-12T-P	Positive						
DOH10-12TA	Negative	Horizontal Mounting SIP					
DOH10-12TA-P	Positive						

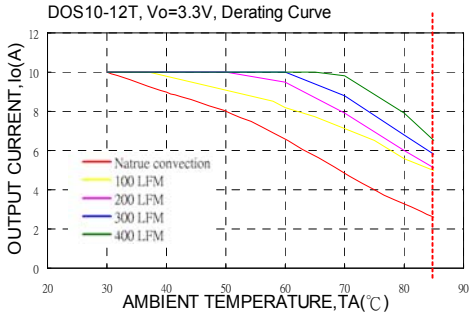
Note

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 0.7525V to 5V 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:

$$Rtrim = \left[\frac{10500}{Vo - 0.7525} - 1000 \right] \Omega$$

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 4×47μF 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.



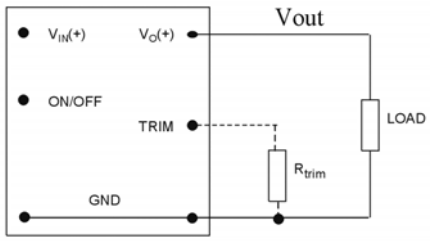


Fig. 1

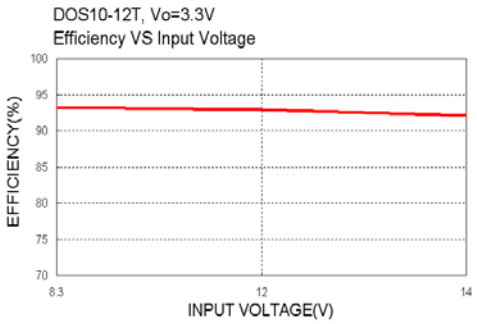
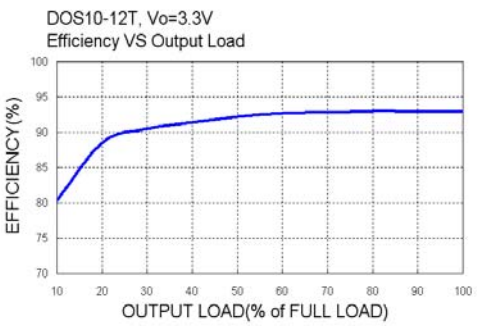
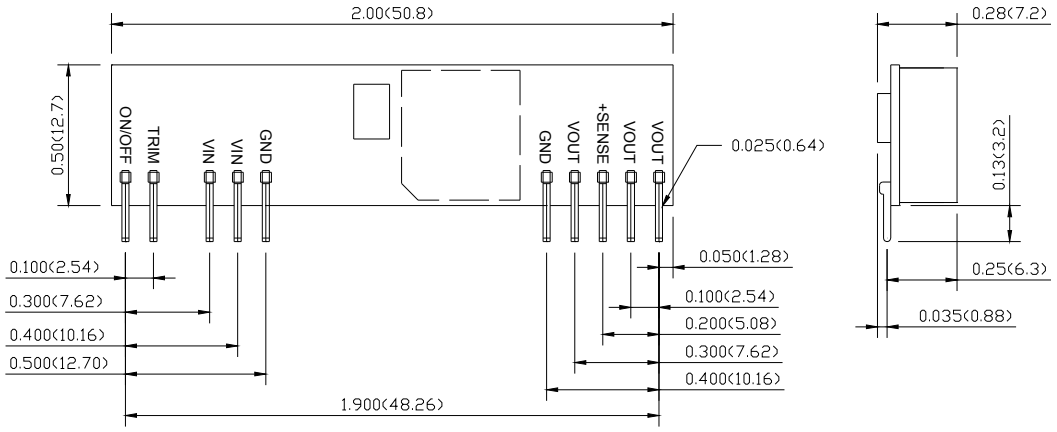


Table 1	
Vo(set) (V)	Rtrim (KΩ)
0.7525	Open
1.2	22.46
1.5	13.05
1.8	9.024
2.5	5.009
3.3	3.122
5	1.472

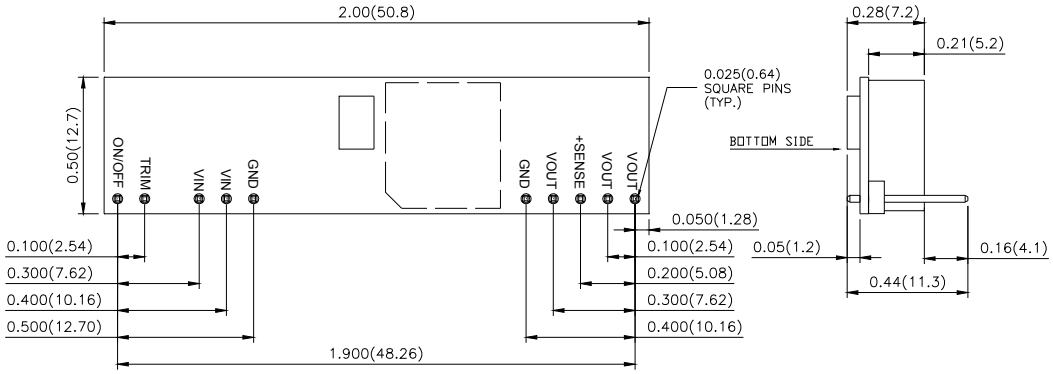


DOH10-12T



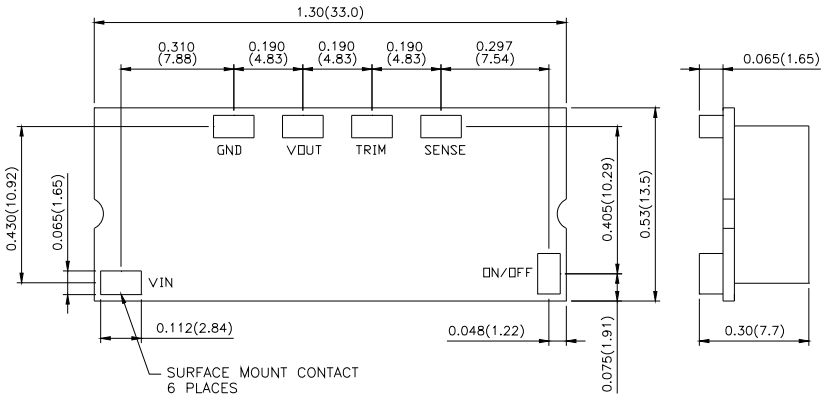
BOTTOM VIEW SIDE VIEW

DOH10-12TA



BOTTOM VIEW SIDE VIEW

DOS10-12T



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)