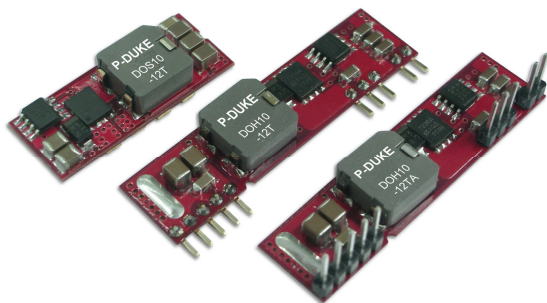




APPLICATIONS

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

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 UP TO 93% @ 3.3V FULL LOAD
- INPUT RANGE FROM 8.3VDC TO 14.0VDC
- FIXED SWITCHING FREQUENCY (300KHZ)
- SMD & SIP PACKAGES
- SMD PACKAGE QUALIFIED FOR LEADFREE REFLOW SOLDER PROCESS ACCORDING IPC J-STD-020D
- OUTPUT VOLTAGE PROGRAMMABLE FROM 0.75VDC TO 5.0VDC VIA EXTERNAL RESISTOR
- INPUT UNDER-VOLTAGE PROTECTION
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

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 25°C otherwise noted

OUTPUT SPECIFICATIONS			
Output current		10A max	
Voltage accuracy		$\pm 2\% V_{out(set)}$	
Minimum load		0%	
Line regulation	$V_{in}=V_{in(min)} \text{ to } V_{in(max)}$ at Full Load	$\pm 0.3\% V_{out(set)}$	
Load regulation	No Load to Full Load	$\pm 0.4\% V_{out(set)}$	
Ripple and noise (Note2)	20MHz bandwidth	30mVrms,max 75mVp-p,max	
Temperature coefficient		$\pm 0.4\%$	
Dynamic load response (Note 2)	$\Delta I_o / \Delta t = 2.5A/\mu S, V_{in(nom)}$	Peak deviation	200mV
	Load change step (50% to 100% or 100% to 50% of $I_o(max)$)	Setting time ($V_{out}<10\%$ peak deviation)	25 μS
	$\Delta I_o / \Delta t = 2.5A/\mu S, V_{in(nom)}$	Peak deviation	100mV
Dynamic load response (Note 3)	$\Delta I_o / \Delta t = 2.5A/\mu S, V_{in(nom)}$	Peak deviation	100mV
	Load change step (50% to 100% or 100% to 50% of $I_o(max)$)	Setting time ($V_{out}<10\%$ peak deviation)	25 μS
Output current limit		200%	
Output short-circuit current		Hiccup, automatics recovery	
External load capacitance	$ESR \geq 1m\Omega$	1000 μF ,max	
	$ESR \geq 10m\Omega$	5000 μF ,max	
Output voltage overshoot-startup	$V_{in}=V_{in(min)} \text{ to } V_{in(max)}$ F.L.	1% $V_{out(set)}$	
Voltage adjustability (see fig.1)	(Note 4)	0.7525V ~ 5.0V	
GENERAL SPECIFICATIONS			
Efficiency		See table	
Isolation voltage		None	
Switching frequency		300KHz $\pm 10\%$	
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	$V_{out(set)} \leq 3.63V$	$V_{in(nom)} = 12V$	8.3 ~ 14VDC
	$V_{out(set)} > 3.63V$		8.3 ~ 13.2VDC
Maximum input current	$V_{in}=8.3 \text{ to } 14.0VDC; I_o=I_o(max)$		7A
Input filter (Note 5)			C filter
Input no load current ($V_{in}=12V, I_o=0$, module enabled)	$V_{out(set)} = 0.75VDC$		40mA
	$V_{out(set)} = 5.0VDC$		100mA
Input under voltage lockout	Start-up voltage		7.9VDC
	Shutdown voltage		7.8VDC
Input reflected ripple current	5~20MHz, 1 μH source impedance		20mA p-p
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature		-40°C ~ +85°C(with derating)	
Storage temperature range		-55°C ~ +125°C	
Thermal shock		MIL-STD-810F	
Vibration		MIL-STD-810F	
Relative humidity(non-condensing)		5% to 95% RH	
Lead-free reflow solder process		IPC J-STD-020D	
Moisture sensitivity level(MSL)		IPC J-STD-033B Level 2a	
Over temperature protection		125°C	
FEATURE SPECIFICATIONS			
Remote ON/OFF(Note 6)			
Negative logic(standard)	ON = Open or $0V < V_r < 0.3V$	$I_{IN}=10\mu A$,max	
	OFF = $2.5V < V_r < V_{in(max)}$	$I_{IN}=1mA$,max	
Positive logic(option)	ON = Open or $(V_{in}-4) < V_r < V_{in(max)}$	$I_{IN}=10\mu A$,max	
	OFF = $0V < V_r < 0.3V$	$I_{IN}=1mA$,max	
Input current of Remote control pin		10 μA ~1.0mA	
Remote off state input current	Nominal Input	2.0mA	
Remote sense range		0.5V,max	
Rise time	Time for V_{out} to rise from 10% to 90% of $V_{out(set)}$	6mS,max.	
Turn-on delay time	Case 1 (Note 7)	3mS	
	Case 2 (Note 8)	3mS	





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

Note

- BELLCORE TR-NWT-000332. Case 1: 50% Stress, Temperature at 40°C.
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- External with C_{out} = 1μF ceramic/10μF tantalum capacitors.
- External with C_{out} = 2pcs of 150μF polymer capacitors.
- Output voltage programmable from 0.7525V to 5V by connecting a single resistor (shown as R_{trim} in Table 1) between the TRIM and GND pins of the module. To calculate the value of the resistor **R_{trim}** for a particular output voltage **V_{out}**, use the following equation:

$$R_{trim} = \left[\frac{10500}{V_{out} - 0.7525} - 1000 \right] \Omega$$

- 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 4pcs of 47μF ceramic capacitors at least.
- 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)
- 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 Vout=10% of Vout(set))
- 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 Vout=10% of Vout(set))

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

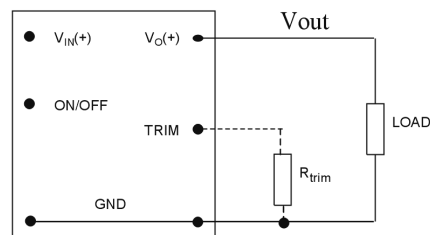
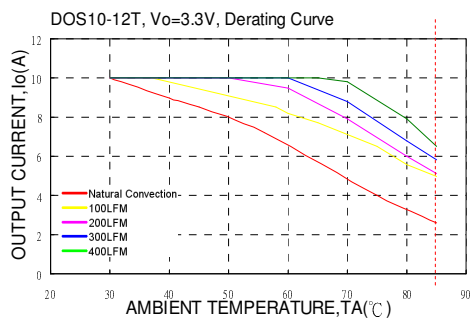


Fig. 1

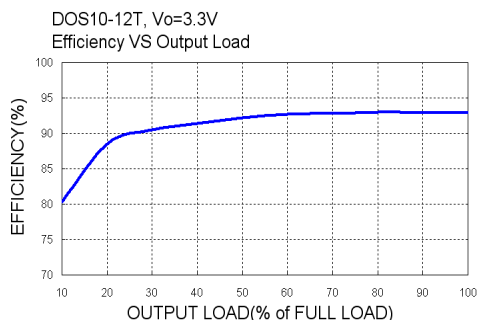
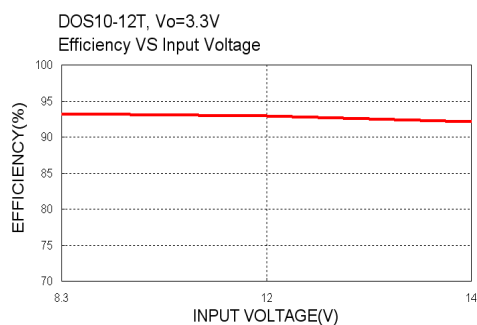


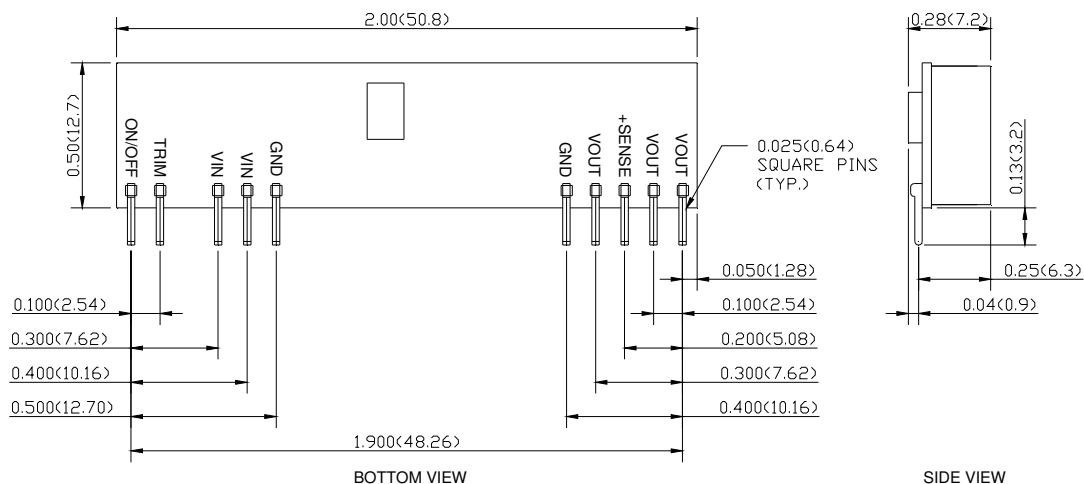
Table 1	
Vout(set) (V)	Rtrim (KΩ)
0.7525	Open
1.2	22.46
1.5	13.05
1.8	9.024
2.5	5.009
3.3	3.122
5	1.472



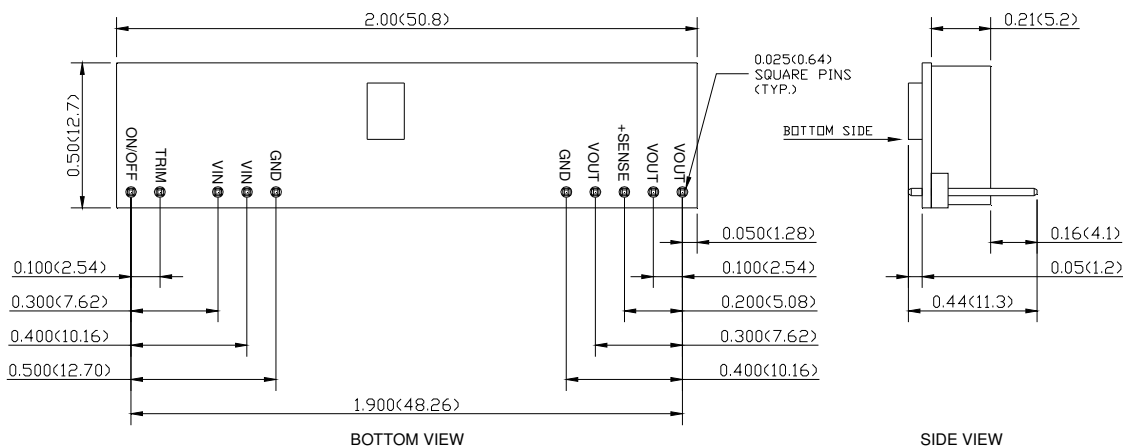


Mechanical Drawing:

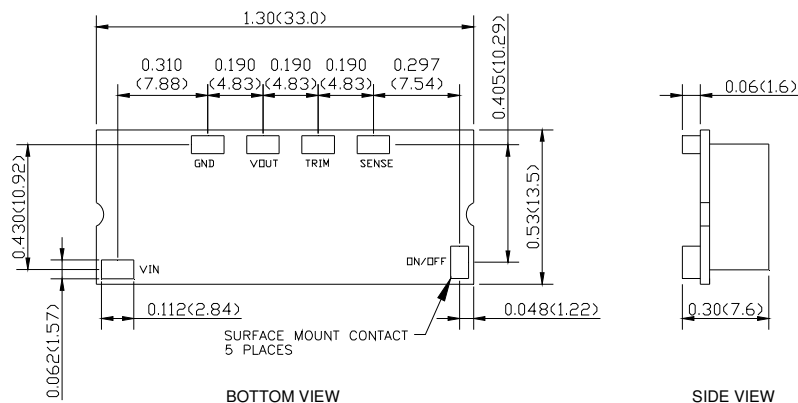
DOH10-12T



DOH10-12TA



DOS10-12T



1. All dimensions in Inch (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)

