



**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

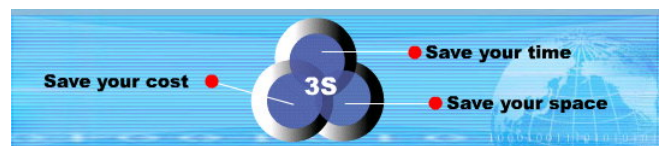
**DESCRIPTION**

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 25°C 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 <sup>7</sup> hrs
	MIL-HDBK-217F 1.048 x 10 <sup>6</sup> 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 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
Over temperature protection	125°C,typ.
FEATURE SPECIFICATIONS	
Remote ON/OFF(Note 6)	
Negative logic(standard)	ON = 0V < Vr < 0.3V IIN=10μA,max.
	OFF = 2.5V < Vr < Vin(max.) IIN=1mA,max.
Positive logic(option)	ON = (Vin-4) < Vr < Vin(max.) IIN=10μA,max.
	OFF=0V < Vr < 0.3V IIN=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 (%) 12Vin, 3.3Vdc@10A
					Min. Load	Max. Load	
DOS10-12T	Negative	SMD	$V_o(\text{set}) \leq 3.63\text{V}$ $V_{in} = 8.3\text{-}14\text{Vdc}$	0.75 ~ 5.0Vdc	0A	10A	93%
DOS10-12T-P	Positive						
DOH10-12T	Negative	Vertical Mounting SIP	$V_o(\text{set}) > 3.63\text{V}$ $V_{in} = 8.3\text{-}13.2\text{Vdc}$	0.75 ~ 5.0Vdc	0A	10A	93%
DOH10-12T-P	Positive						
DOH10-12TA	Negative	Horizontal Mounting SIP	$V_o(\text{set}) > 3.63\text{V}$ $V_{in} = 8.3\text{-}13.2\text{Vdc}$	0.75 ~ 5.0Vdc	0A	10A	93%
DOH10-12TA-P	Positive						

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  $C_{out} = 1\mu\text{F}$  ceramic//10μF tantalum capacitors.
- External with  $C_{out} = 2 \times 150\mu\text{F}$  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  $V_o$ , use the following equation:

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

- 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 4x47μF 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  $V_{in}=V_{in}(\text{min.})$  until  $V_o=10\%$  of  $V_o(\text{set})$ )
- 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  $V_{on/off}=0.3\text{V}$  until  $V_o=10\%$  of  $V_o(\text{set})$ )

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

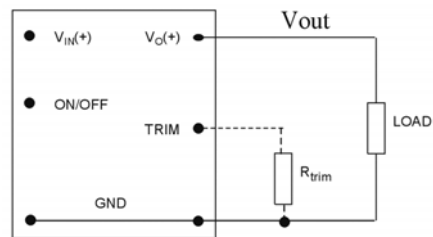
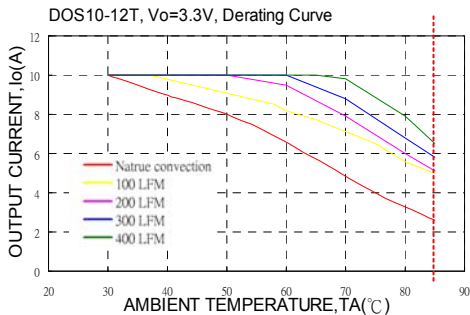
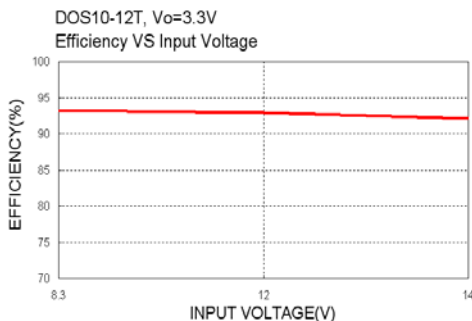
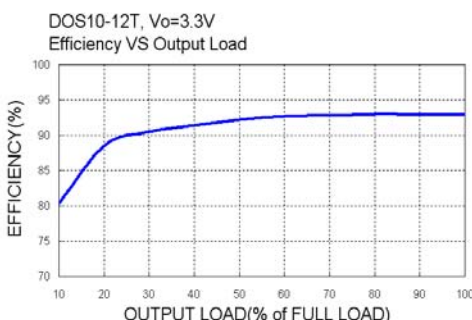


Fig. 1

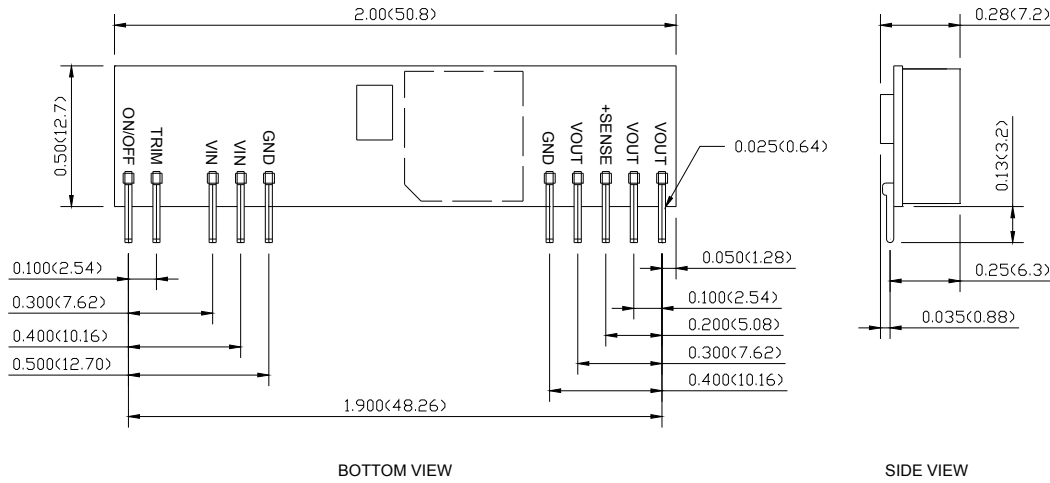


$V_o(\text{set})$ (V)	$R_{trim}$ (KΩ)
0.7525	Open
1.2	22.46
1.5	13.05
1.8	9.024
2.5	5.009
3.3	3.122
5	1.472

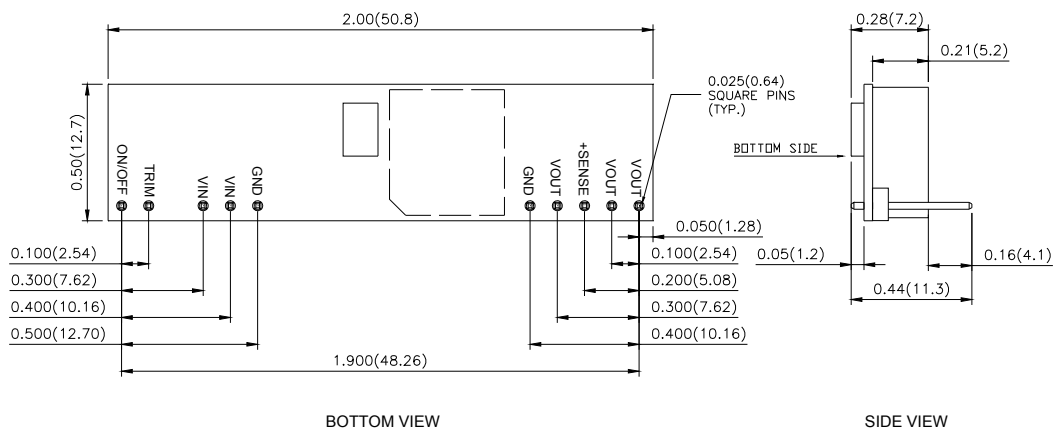




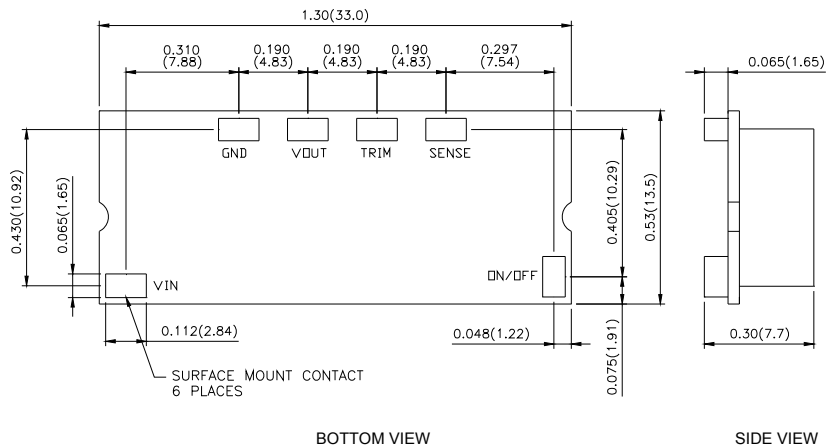
**DOH10-12T**



**DOH10-12TA**



**DOS10-12T**



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)