

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.

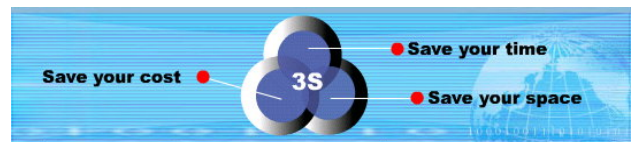
TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25°C otherwise noted

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

INPUT SPECIFICATIONS	
Input voltage range	Vo(set) ≤ 3.63V 8.3 – 14VDC
	Vo(set) > 3.63V Vin(nom) = 12V 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					
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} = 1µF ceramic//10µF tantalum capacitors.
- External with C_{out} = 2x150µF 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 Vin=Vin(min) until Vo=10% of Vo(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 Vo=10% of Vo(set))

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

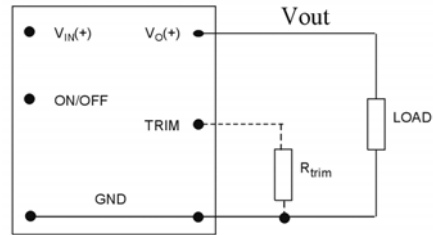
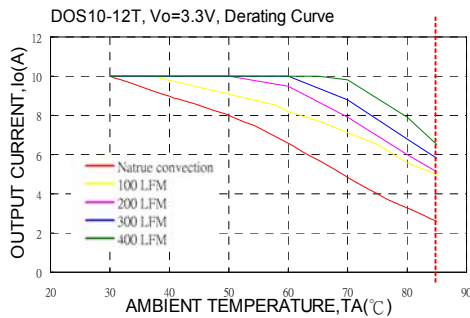
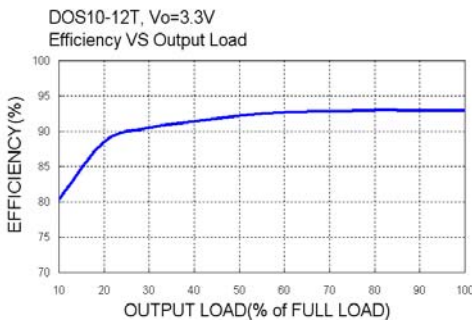
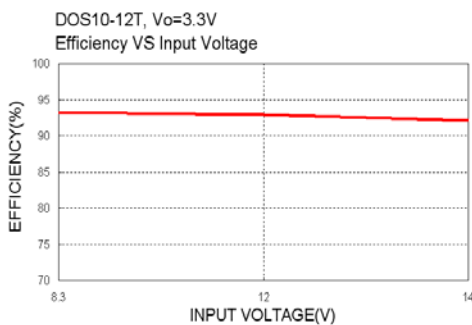


Fig. 1

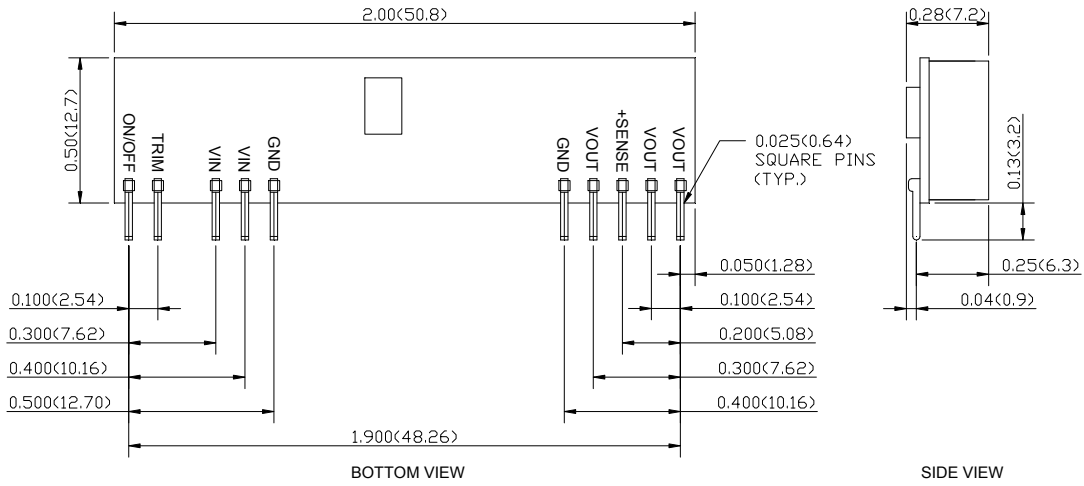


V _o (set) (V)	R _{trim} (KΩ)
0.7525	Open
1.2	22.46
1.5	13.05
1.8	9.024
2.5	5.009
3.3	3.122
5	1.472

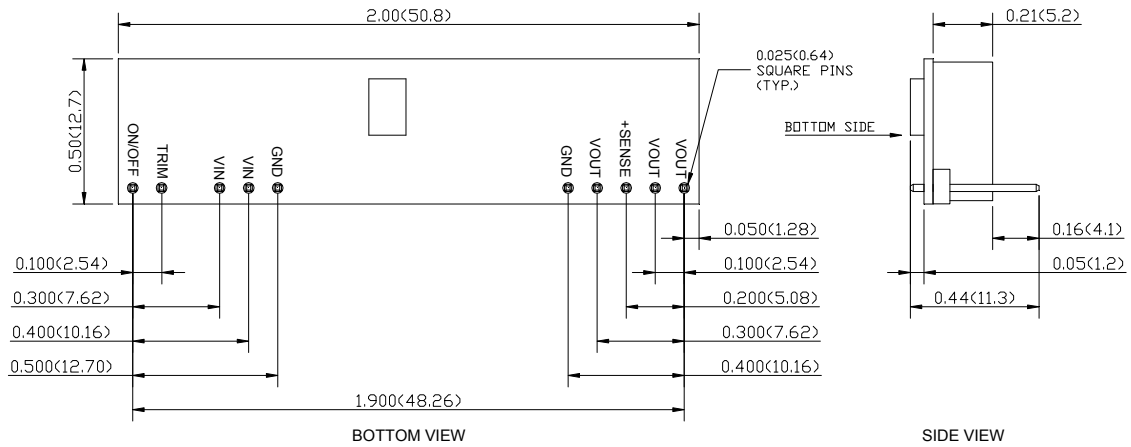




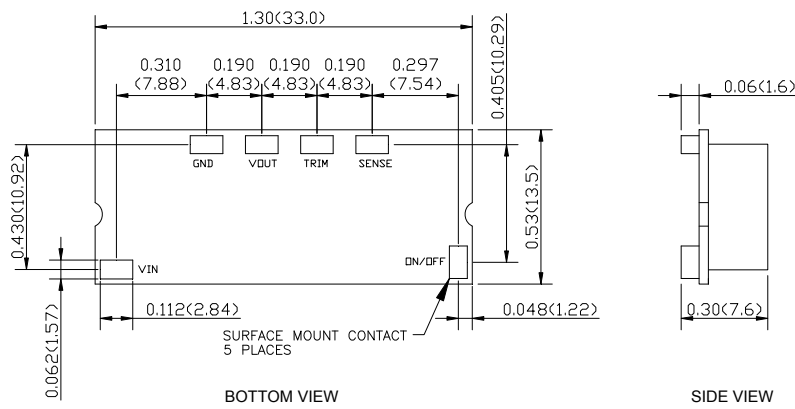
DOH10-12T



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)

