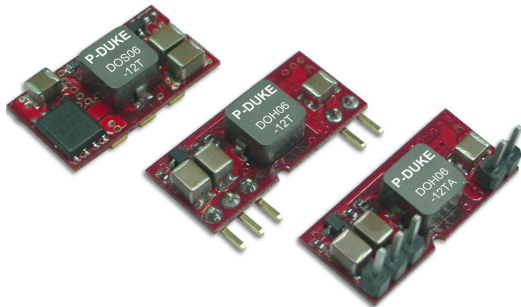




APPLICATIONS

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

FEATURES

- OUTPUT CURRENT UP TO 6A
- SMALL SIZE AND LOW PROFILE :
0.80" X 0.45" X 0.25" (SMD) ; 0.90" X 0.40" X 0.24" (SIP)
- HIGH EFFICIENCY UP TO 89% @ 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, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

OPTIONS

POSITIVE LOGIC REMOTE ON/OFF

DESCRIPTION

DOS06-12T (SMD type), DOH06-12T (for Vertical Mounting SIP type) and DOH06-12TA (for Horizontal Mounting SIP type) are non-isolated DC/DC converters that can deliver up to 6A of output current with full load efficiency of 89% at 3.3V output.

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

OUTPUT SPECIFICATIONS		
Output current		6A 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	20mVrms,max 50mVp-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
Dynamic load response (Note 3)	$\Delta I_o / \Delta t = 2.5A/\mu s, V_{in(nom)}$	Peak deviation 50mV
	Load change step (50% to 100% or 100% to 50% of $I_o(max)$)	Setting time ($V_{out}<10\%$ peak deviation) 50 μs
Output current limit		200%
Output short-circuit current		Continuous, automatics recovery
External load capacitance	$ESR \geq 1m\Omega$	1000 μF ,max
	$ESR \geq 10m\Omega$	3000 μF ,max
Output voltage overshoot-startup	$V_{in}=V_{in(min)} \sim V_{in(max)}$; 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 $\pm 10\%$
Safety approvals		IEC60950-1, UL60950-1, & EN60950-1
Dimensions	SMD	0.80 X 0.45 X 0.25 Inch (20.3 X 11.4 X 6.5 mm)
	SIP	0.90 X 0.40 X 0.24 Inch (22.9 X 10.2 X 6.0 mm)
Weight		2.8g(0.1oz)
MTBF (Note 1)	MIL-HDBK-217F	9.277×10^6 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	$V_{in}=V_{in(min)}$; $I_o=I_o(max)$	4.5A
Input filter (Note 5)		C filter
Input no load current ($V_{in}=12V, I_o=0$, module enabled)	$V_{out(set)} = 0.75VDC$	17mA
	$V_{out(set)} = 5.0VDC$	100mA
Input under voltage lockout	Start-up voltage	7.9VDC
	Shutdown voltage	7.8VDC
Input reflected ripple current	5~20MHz, 1 μH source impedance	30mA 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% ~ 95% RH
Lead-free reflow solder process		IPC J-STD-020D
Moisture sensitivity level(MSL)		IPC J-STD-033B Level 2a
Over temperature protection		140°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 $\mu A \sim 1.0mA$
Remote off state input current	Nominal Input	1.2mA
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@6A
					Min. Load	Max. Load	
DOS06-12T	Negative	SMD	$V_{out(set)} \leq 3.63V$ $V_{in} = 8.3-14VDC$	0.75 ~ 5.0VDC	0A	6A	89%
DOS06-12T-P	Positive						
DOH06-12T	Negative	Vertical Mounting SIP	$V_{out(set)} > 3.63V$ $V_{in} = 8.3-13.2VDC$	0.75 ~ 5.0VDC	0A	6A	89%
DOH06-12T-P	Positive						
DOH06-12TA	Negative	Horizontal Mounting SIP	$V_{out(set)} > 3.63V$ $V_{in} = 8.3-13.2VDC$	0.75 ~ 5.0VDC	0A	6A	89%
DOH06-12TA-P	Positive						

Note

1. MIL-HDBK-217F @Ta=25 °C, Full load.
2. External with $C_{out} = 1\mu F$ ceramic//10 μF tantalum capacitors.
3. External with $C_{out} = 2$ pcs of 150 μF polymer capacitors.
4. 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:

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

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 2pcs of 47 μF 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 $V_{in}=V_{in(min)}$ until $V_{out}=10\%$ of $V_{out(set)}$)
8. Case 2 :Input power is applied for at least one second and then the ON/OFF input is set to logic low (delay from instant at which $V_{on/off}=0.3V$ until $V_{out}=10\%$ of $V_{out(set)}$)
- 9.

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

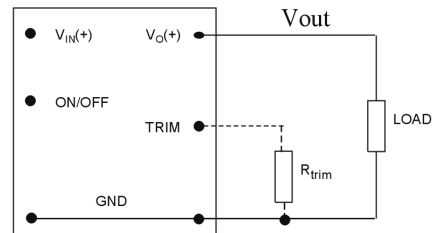
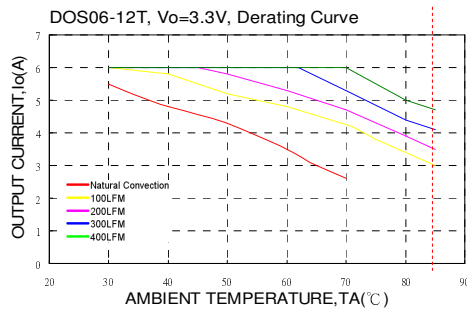


Fig. 1

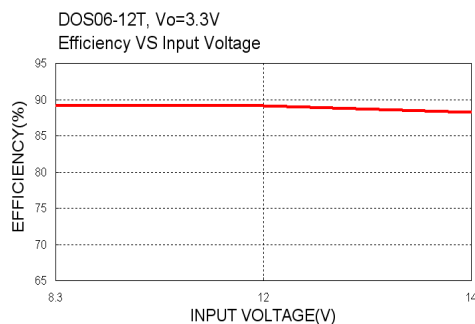
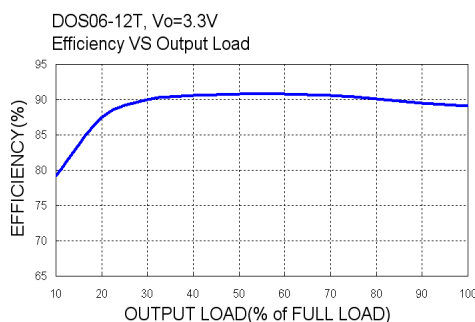
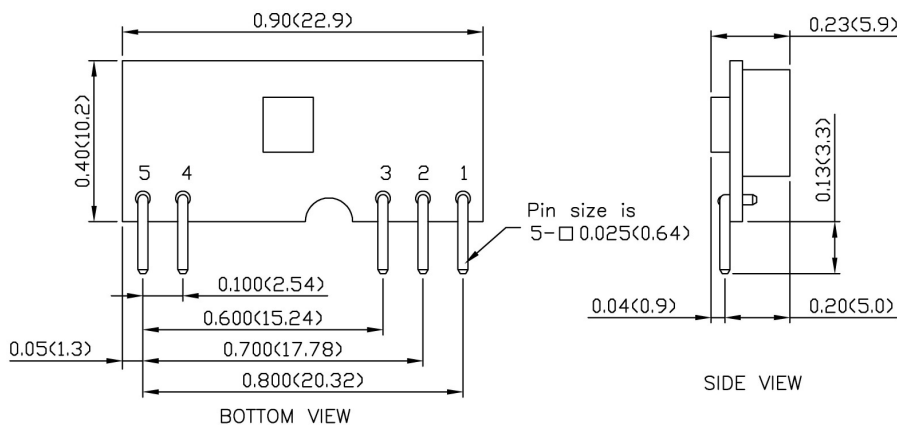


Table 1	
Vout(set) (V)	Rtrim (K Ω)
0.7525	Open
1.2	22.46
1.5	13.05
1.8	9.024
2.5	5.009
3.3	3.122
5	1.472



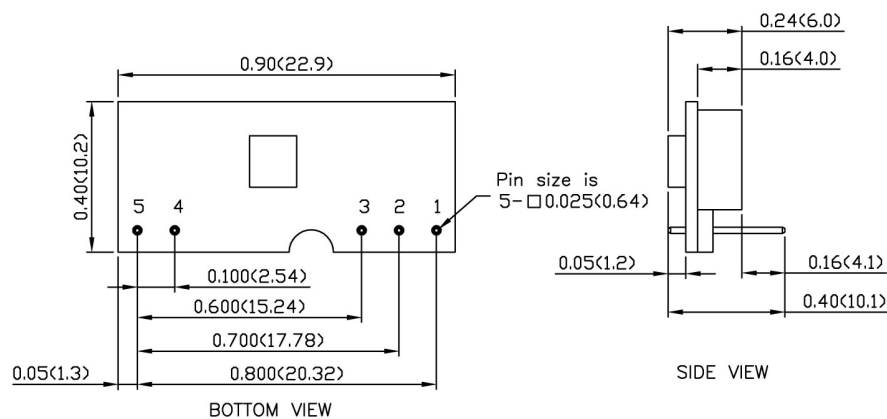
MECHANICAL DRAWING :

DOH06-12T TYPE



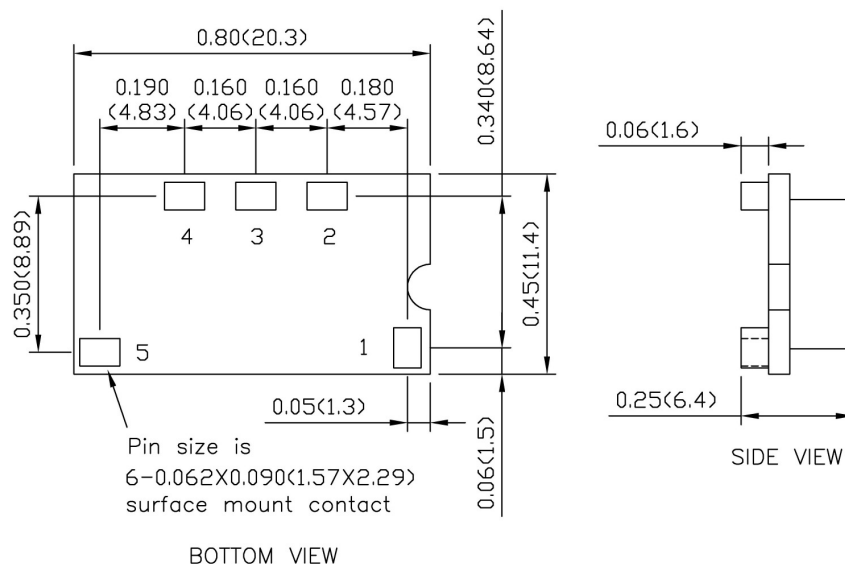
PIN CONNECTION	
PIN	DEFINE
1	+OUTPUT
2	TRIM
3	GND
4	+ INPUT
5	CTRL

DOH06-12TA TYPE



PIN CONNECTION	
PIN	DEFINE
1	+OUTPUT
2	TRIM
3	GND
4	+ INPUT
5	CTRL

DOS06-12T TYPE



PIN CONNECTION	
PIN	DEFINE
1	CTRL
2	+OUTPUT
3	TRIM
4	GND
5	+ INPUT

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