

FEATURES

- OUTPUT CURRENT UP TO 30A
- SMALL SIZE AND LOW PROFILE :
DOS30-05T:1.30 X 0.53 X 0.37 INCH , DOH30-05T:2.00 X 0.50 X 0.37 INCH
DOS30-12T:1.30 X 0.53 X 0.31 INCH , DOH30-12T:2.00 X 0.50 X 0.31 INCH
- HIGH EFFICIENCY UP TO 93%@5VIN, 3.3VOUT, FULL LOAD
- DOS(H)30-05T : 4.5VDC TO 5.5VDC INPUT, 0.8VDC TO 3.63VDC OUTPUT
DOS30-12T : 6.0VDC TO 14.0VDC INPUT, 0.8VDC TO 3.63VDC OUTPUT
DOH30-12T : 6.0VDC TO 14.0VDC INPUT, 0.8VDC TO 5.5VDC OUTPUT
- OUTPUT VOLTAGE PROGRAMMABLE VIA EXTERNAL RESISTOR
- SMD PACKAGE QUALIFIED FOR LEADFREE REFLOW SOLDER PROCESS ACCORDING IPC J-STD-020D
- FIXED SWITCHING FREQUENCY (300kHz)
- MONOTONIC START-UP INTO PRE-BIASED OUTPUT
- OUTPUT VOLTAGE SEQUENCING
- PARALLEL OPERATION WITH ACTIVE CURRENT SHARING
- SAFETY MEETS UL60950-1, EN60950-1, & IEC60950-1
- CE MARK MEETS 2006/95/EC, 2011/95/EC and 2004/108/EC
- COMPLIANT TO RoHS II & REACH

OPTIONS

POSITIVE LOGIC REMOTE ON/OFF, CURRENT SHARE, EXTRA GND PIN, LONG PINS

DESCRIPTION

DOS30-□□T (SMD type), DOH30□□T (SIP type) are non-isolated DC/DC converters that can deliver up to 30A of output current with full load efficiency of 93% at 5.0V input and 3.3V output.

APPLICATIONS

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

TECHNICAL SPECIFICATION All specifications are typical at nominal input, 3.3Vo, full load and 25°C otherwise

OUTPUT SPECIFICATIONS		
Output current	DOS30-05T	30A max.
	DOH30-05T	30A max.
	DOS30-12T	30A max.
	DOH30-12T	30A max.
		25A max.
Voltage accuracy	± 1.5%Vout(set)	
Minimum load	0%	
Line regulation	Vin=Vin(min.) to Vin(max.) at Full Load	± 0.1%Vout(set)
Load regulation	No Load to Full Load	± 0.4%Vout(set)
Ripple and noise (Note 2) 20MHz bandwidth	75mVp-p	
Temperature coefficient	±0.5%	
Dynamic load response (Note 2)	$\Delta I_{out}/t = 5A/\mu s$, Vin(nom)	Peak deviation
	Load change step (50% to 100% or 100% to 50% of Iout(max.))	Setting time (Vout<10%peak deviation)
		350mV
		25μs
Dynamic load response (Note 3)	$\Delta I_{out}/t = 5A/\mu s$, Vin(nom)	Peak deviation
	Load change step (50% to 100% or 100% to 50% of Iout(max.))	Setting time (Vout<10%peak deviation)
		250mV
		40μs
Output current limit	150%	
Output short-circuit current	Hiccup, Automatics recovery	
External load capacitance	ESR ≥ 1mΩ	2000μF,max.
	ESR ≥ 10mΩ	10000μF,max.
Output voltage overshoot-startup	Vin=Vin(min.) to Vin(max.) and F.L.	3%Vout(set), max.
Voltage adjustability (see fig.1) (Note 4)	DOS30-05T	0.8VDC ~ 3.63VDC
	DOH30-05T	0.8VDC ~ 3.63VDC
	DOS30-12T	0.8VDC ~ 3.63VDC
	DOH30-12T	0.8VDC ~ 5.5VDC
GENERAL SPECIFICATIONS		
Efficiency	See table	
Isolation voltage	None	
Switching frequency	300kHz±13%	
Safety meets	IEC60950-1, UL60950-1, & EN60950-1	
Dimensions	DOS30-05T	1.30X0.53X0.37 Inch (33.0X13.5X9.4 mm)
	DOS30-12T	1.30X0.53X0.31 Inch (33.0X13.5X7.8 mm)
	DOH30-05T	2.00X0.50X0.37 Inch (50.8X12.7X9.4 mm)
	DOH30-12T	2.00X0.50X0.31 Inch (50.8X12.7X7.8 mm)
Weight	SMD	6.0g(0.21oz)
	SIP	7.0g(0.25oz)
MTBF (Note 1)	MIL-HDBK-217F	1.258 x 10 ⁶ hrs

INPUT SPECIFICATIONS			
Input voltage range	DOS30-05T	Vin(nom) =5VDC	4.5 ~ 5.5VDC
	DOH30-05T	Vin,min.=Vout(set)+1.5VDC	
	DOS30-12T	Vin(nom) =12VDC	6.0 ~ 14.0VDC
	DOH30-12T	Vin,min.=Vout(set)+2.4VDC	
Input filter (Note 5)	C filter		
Input under-voltage lockout	Start-up voltage	4.4VDC	
	Shutdown voltage	4.3VDC	
Input reflected ripple current	5~20MHz, 1uH source impedance	100mA _{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			
Sequencing delay time (Note 6)	10ms, min.		
Tracking accuracy	V _{SEQ} - V _{out}		
	Power-up (2V/ms)	Vin(min) to Vin(max), Iout(min.)	100mV
	Power-down (1V/ms)	to Iout(max.), V _{SEQ} < V _{out} .	200mV
Active load share (option) (Note 7)	Accuracy	10% Iout	
	Number of units in parallel	5pcs,max.	
Remote ON/OFF (Note 8)			
Negative logic(standard)	ON = Open or -0.3V < Vr < 1.2V	I _{IN} =200μA,max.	
	OFF = 3.0V < Vr < Vin(max.)	I _{IN} =3.3mA,max.	
Positive logic(option)	ON = Open or 3.0V < Vr < Vin(max.)	I _{IN} =200μA,max.	
	OFF = -0.3V < Vr < 1.2V	I _{IN} =3.3mA,max.	
Remote sense range	0.5V, max.		
Rise time	Time for Vout to rise from 10% to 90%of Vout(set)	10ms, max.	
Turn-on delay time	Case 1 (Note 9)	2.5ms	
	Case 2 (Note 10)	2.5ms	

Model Name	Package	Input Voltage	Output Voltage	Output Current		No Load Current Vin(nom),3.3VDC	Efficiency Vin(nom),3.3VDC, Full Load
				Min. Load	Max. Load		
DOS30-05T	SMD	4.5 ~ 5.5VDC Vin,min.=Vout(set)+1.5V	0.8 ~ 3.63VDC	0A	30A	180mA	93%
DOH30-05T	SIP			0A	30A		
DOS30-12T	SMD	6.0 ~ 14.0VDC Vin,min.=Vout(set)+2.4V	0.8 ≤ Vout ≤ 2.75VDC 2.75 < Vout ≤ 3.63VDC	0A	30A	200mA	92%
					20A		
DOH30-12T	SIP			0A	30A	200mA	92%
					25A		

Note

- MIL-HDBK-217F @Tc=70 °C, Full load.
- External with C_{out} = 1μF ceramic//10μF tantalum capacitors.
- External with C_{out} = 2×150μF polymer capacitors.
- Output voltage programmable from 0.8V to 5.0V 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:

$$R_{trim} = \left[\frac{1200}{V_{out} - 0.80} - 100 \right] \Omega$$
- To make sure the module is stable, input external capacitors is necessary that minimize input ripple voltage of the module.
- Delay from Vin,min. to application of voltage on SEQ pin.
- Selecting current share function that the regulations may not meet listed specification.
- The On/Off signal is referenced to ground. The standard remote On/Off logic of the device is negative logic. Adding a device code suffix "-P" is option for positive logic of remote On/Off.
- 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 V_{out}=10% of V_{out}(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 V_{out}=10% of V_{out}(set))

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

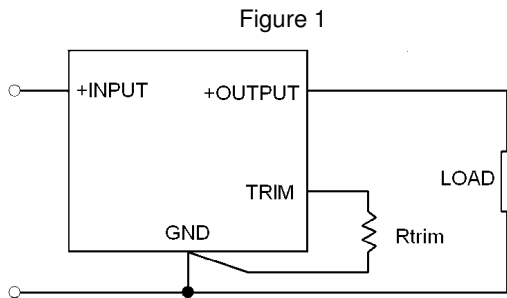


Figure 1

Table 1. Trim Table

Vout(set) (V)	Rtrim (Ω)
0.8	Open
1.2	2900
1.5	1614
1.8	1100
2.5	605
3.3	380
5.0	185

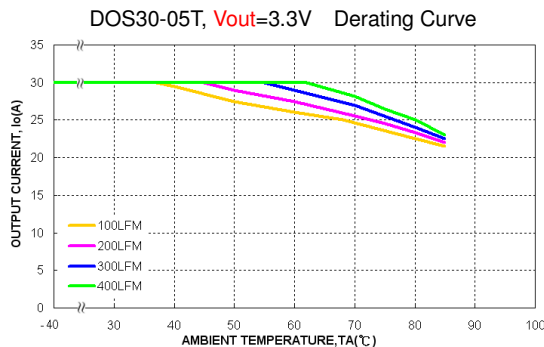
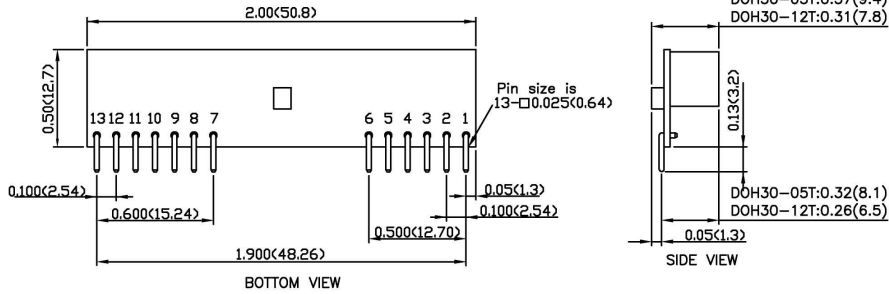


Table 2. Device Options

Option	Suffix
Remote On/Off Positive Logic	-P
Current Share	-S
Extra GND pin 2 extra GND pins only for SMD TYPE	-E
Long Pins 5.08mm±0.25mm only for SIP TYPE	-L

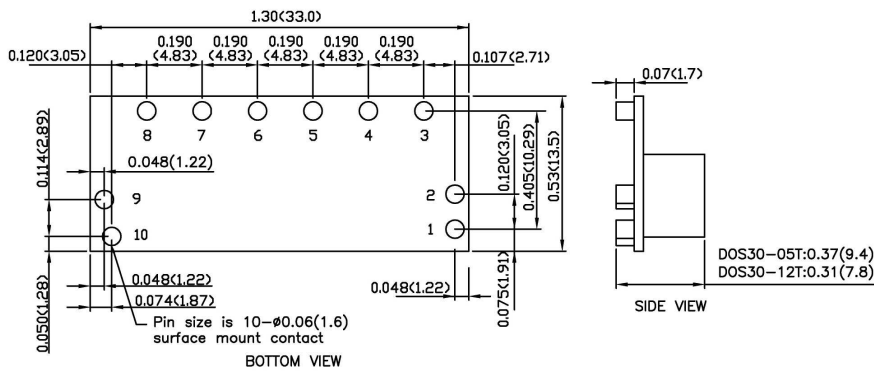
MECHANICAL DRAWING :

SIP TYPE



PIN CONNECTION	
PIN	DEFINE
1	+OUTPUT
2	+OUTPUT
3	+SENSE
4	+OUTPUT
5	GND
6	GND
7	SHARE(option)
8	GND
9	+ INPUT
10	+ INPUT
11	SEQ
12	TRIM
13	CTRL

SMD TYPE



PIN CONNECTION	
PIN	DEFINE
1	CTRL
2	GND(option)
3	SHARE(option)
4	+SENSE
5	TRIM
6	+OUTPUT
7	GND
8	SEQ
9	GND(option)
10	+ INPUT

- All dimensions in Inch (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin pitch tolerance ±0.01 (0.25)
- Pin dimension tolerance ±0.004 (0.1)