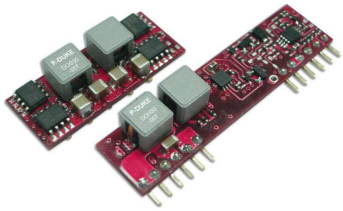
POWER MATE TECHNOLOGY CO., LTD.

DOS30 DOH30 SERIES

DC-DC CONVERTER

UP TO 30 Amps



FEATURES

- **NO MINIMUM LOAD REQUIRED**
- **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
- **SMD PACKAGE QUALIFIED FOR LEADFREE REFLOW SOLDER PROCESS ACCORDING IPC J-STD-020D**
- **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 MARKED**
- **COMPLIANT TO RoHS II & REACH**

APPLICATIONS

- **WIRELESS NETWORK**
- **TELECOM/DATACOM**
- **INDUSTRY CONTROL SYSTEM**
- **DISTRIBUTED POWER ARCHITECTURES**
- **SEMICONDUCTOR EQUIPMENT**
- **MICROPROCESSOR POWER APPLICATIONS**

REMOTE CONTROL	UVP	OCP	SCP	TRACKING	CURRENT SHARE

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

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current Vin(nom),3.3VDC @ No Load	Efficiency Vin(nom),3.3VDC @Full Load	Maximum Capacitor Load (1) ESR≧1mΩ / ESR≧10mΩ
	VDC	VDC	A	mA	%	μF
DOS30-05T	4.5 ~ 5.5 Vin(min.)=Vout(set)+1.5	0.8 ~ 3.63	30	180	93	2000 / 10000
DOH30-05T	4.5 ~ 5.5 Vin(min.)=Vout(set)+1.5	0.8 ~ 3.63	30	180	93	2000 / 10000
DOS30-12T	6 ~ 14 Vin(min.)=Vout(set)+2.4	0.8 ≦Vout≦ 2.75 2.75 <Vout≦ 3.63	30 20	200	92	2000 / 10000
DOH30-12T	6 ~ 14 Vin(min.)=Vout(set)+2.4	0.8 ≦Vout≦ 2.75 2.75 <Vout≦ 5.5	30 25	200	92	2000 / 10000

PART NUMBER STRUCTURE

DOS30 - 05 T - P

Series Name	Input Voltage (VDC)	No Assembly	Assembly Option
DOS30: SMD TYPE **DOH30:** SIP TYPE	**05:** 4.5~5.5 **12:** 6~14		**□:** Remote On/Off Negative Logic **P:** Remote On/Off Positive Logic **S:** Current Share **E:** Extra GND pin 2 extra GND pins only for SMD TYPE **L:** Long Pins 5.08mm±0.25mm only for SIP TYPE

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	5Vin(nom)	Vin(min.)=Vout(set)+1.5VDC	4.5	5	5.5	VDC
	12Vin(nom)	Vin(min.)=Vout(set)+2.4VDC	6	12	14	
Input reflected ripple current	5~20MHz, 1μH source impedance			100		mAp-p
Start-up voltage				4.4		VDC
Shutdown voltage				4.3		VDC
Input filter (2)						Capacitor type

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy		% of Vout(set)	-1.5		+1.5	%
Line regulation	Vin=Vin(min.) to Vin(max.) at Full Load	% of Vout(set)	-0.1		+0.1	%
Load regulation	No Load to Full Load	% of Vout(set)	-0.4		+0.4	%
Voltage adjustability (3)		DOH30-12T	0.8		5.5	VDC
		Others	0.8		3.63	
Ripple and noise	Measured by 20MHz bandwidth, With a 1μF MLCC & a 10μF T/C			75		mVp-p
Temperature coefficient			-0.5		+0.5	%/℃
Dynamic load response	With a 1μF MLCC & a 10μF T/C					
	△Io/△t=5A/μs ,Vin(nom)	Peak deviation		350		mV
	50% load step change	Setting time(Vout<10%peak deviation)		25		μs
Dynamic load response	With 2pcs of 150μF polymer capacitors					
	△Io/△t=5A/μs ,Vin(nom)	Peak deviation		250		mV
	50% load step change	Setting time(Vout<10%peak deviation)		40		μs
Over load protection	% of Iout rated			150		%
Short circuit protection					Hiccup, automatics recovery	
Output voltage overshoot-startup	Vin=Vin(min.) to Vin(max.) at Full Load	% of Vout(set)			3.0	%

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage						None
Switching frequency			261	300	339	kHz
Safety approvals						UL60950-1 EN60950-1 IEC60950-1
Weight		DOS30				6.0g (0.21oz)
		DOH30				7.0g (0.25oz)
MTBF	MIL-HDBK-217F, Full load					1.258 x 10^6 hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature		With derating	-40		+85	℃
Over temperature protection				125		℃
Storage temperature range			-55		+125	℃
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

FEATURE SPECIFICATIONS

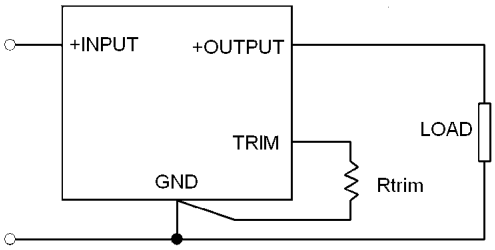
Parameter	Conditions			Min.	Typ.	Max.	Unit
Sequencing delay time	Delay from Vin,min. to application of voltage on SEQ pin			10			ms
Tracking accuracy	Vin(min.) to Vin(max.), Iout(min.) to Iout(max.), V_{SEQ} < Vout						
| V_{SEQ} -Vout |		Power-up (2V/ms)			100		mV
		Power-down (1V/ms)			200		mV
Active load share (option) (4)	% of Iout rated	Accuracy			10		%
		Number of units in parallel				5	pcs
Remote ON/OFF	Referred to –Vin pin	Negative logic (Standard)	DC-DC ON		Open or -0.3 ~ 1.2VDC		
			DC-DC OFF		3.0VDC ~ Vin(max.)		
		Positive logic (Option)	DC-DC ON		Open or 3.0VDC ~ Vin(max.)		
			DC-DC OFF		-0.3 ~ 1.2VDC		
		Input current of Ctrl pin				0.2	mA
		Remote off input current				3.3	mA
Remote sense range						0.5	VDC
Rise time	Time for Vout to rise from 10% to 90%of Vout(set)					10	ms
Turn-on delay time		Case 1 (5), Case 2 (6)			2.5		ms

Note:

1. Test by minimum input and constant resistive load.
2. To make sure the module is stable, input external capacitors is necessary that minimize input ripple voltage of the module.
3. Output voltage programmable from 0.8V to 5.0V by connecting a single resistor (shown as Trim Table) between the Trim and GND pins of the module. To calculate the value of the resistor Rtrim for a particular output voltage Vout, use the following equation:

$$Rtrim = \left[\frac{1200}{Vout - 0.80} - 100\right]\Omega$$

Trim Figure



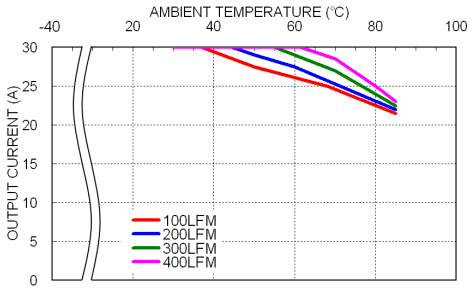
Trim Table

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

4. Selecting current share function that the regulations may not meet listed specification.
5. 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))
6. 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=0.3VDC until Vout=10% of Vout(set))

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

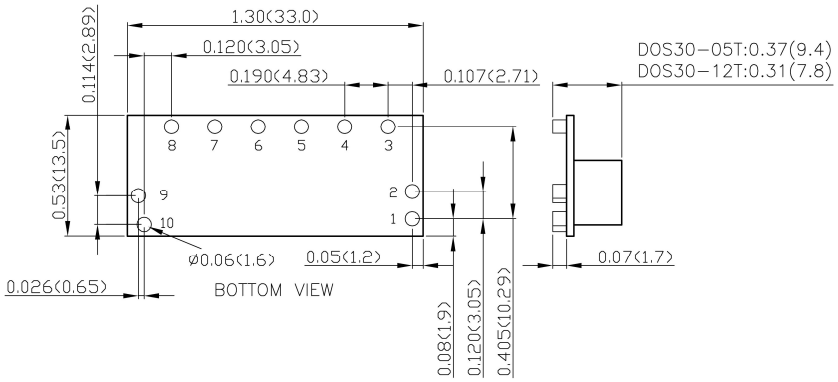
CHARACTERISTIC CURVE



DOS30-05T, Vout=3.3V Derating Curve

MECHANICAL DRAWING

DOS30

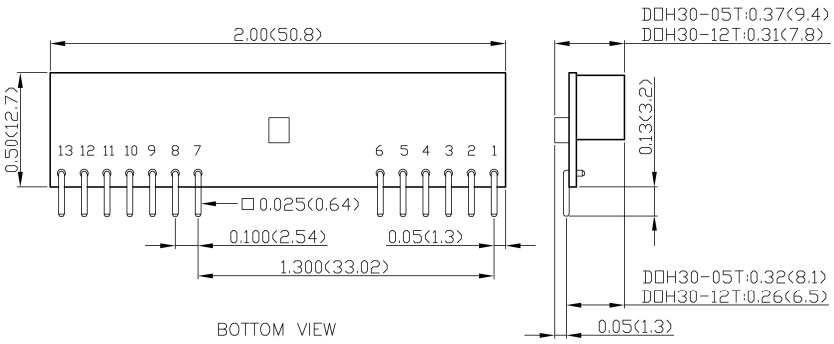


PIN CONNECTION

PIN	DEFINE
1	Ctrl
2	GND (option)
3	Share (option)
4	+Sense
5	Trim
6	+Vout
7	GND
8	Seq
9	GND (option)
10	+Vin

1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
   x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)

DOH30



PIN CONNECTION

PIN	DEFINE
1	+Vout
2	+Vout
3	+Sense
4	+Vout
5	GND
6	GND
7	Share (option)
8	GND
9	+Vin
10	+Vin
11	Seq
12	Trim
13	Ctrl