



## Non-Isolated Single Output Dc-Dc Converter



### FEATURES:

- OUTPUT CURRENT UP TO 16A
- INPUT RANGE FROM 8.3VDC TO 14.0VDC
- HIGH EFFICIENCY – 92% @ 3.3V FULL LOAD
- INPUT UNDER-VOLTAGE LOCKOUT
- SIP & SMD PACKAGES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC
- SMALL SIZE AND LOW PROFILE : 50.8X 12.7 X 7.2mm
- OUTPUT VOLTAGE PROGRAMMABLE FROM 0.75VDC TO 5.0VDC VIA EXTERNAL RESISTOR



### APPLICATIONS

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

Specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified

Part Number	ON/OFF Logic	Input Voltage	Output Voltage	Output Current		Efficiency (%) 12Vin,3.3Vdc@16A
				Min. Load	Max. Load	
04D-12-16	Negative	Vo(set) ≅ 3.63V Vin = 8.3-14Vdc	0.75 ~ 5.0Vdc	0A	16A	92%
04D-12-16-SIP						

### Input Specifications

Parameters	Conditions	Min	Typ	Max	Units
Voltage Tolerance	Vo(set) ≅ 3.63V	8.3	Vin(nom)=12V	14	Vdc
	Vo(set) >3.63V	8.3	Vin(nom)=12V	13.2	Vdc
Input Current	Vin=8.3 to 14.0Vdc; Io(max.)			10	A
Input Filter(Note 4)	C filter				
No Load Current (Vin=12V,Io=0,Module enabled)	Vo(set)=0.75Vdc		40		mA
	Vo(set)=5.0Vdc		100		mA
Under Voltage Lockout	Start-up Voltage		7.9		V
	Shutdown Voltage		7.8		V

Input reflected ripple current 5~20MHz, 1uH source impedance:20mA<sub>pp</sub>

### Output Specifications

Parameters	Conditions	Min	Typ	Max	Units
Output current				16	A
Voltage Tolerance	Full load and Vin(nom.)			±2	%
Minimum load				0	A
Line Regulation	Vin=Vin(min) to Vin(max)at Full Load		±0.3		%
Load Regulation	No Load to Full Load		±0.4		%
Ripple and noise (Note2)	20MHz bandwidth			75	mVp-p
Temperature coefficient			±0.4		%
Dynamic load response (Note 2)	ΔIo /Δt = 2.5A/uS ,Vin(nom)	Peak deviation	200		mV
	Load change step (50% to 100% or 100% to 50% of Io(max))	Setting time (Vo<10%peak deviation)	25		uS
Dynamic load Response (Note 3)	ΔIo /Δt = 2.5A/uS ,Vin(nom)	Peak deviation	100		mV
	Load change step (50% to 100% or 100% to 50% of Io(max))	Setting time (Vo<10%peak deviation)	25		uS
Output current limit			200		%
Output short-circuit current			Hiccup, automatic recovery		
External load capacitance	ESR ≥ 1mΩ			1000	uF
	ESR ≥ 10mΩ			5000	uF
Output voltage overshoot-startup	Vin=Vin(min) to Vin(max);F.L.		1		%
Voltage adjustability (see fig.1)		0.7525		5.0	V



## Non-Isolated Single Output Dc-Dc Converter

General Specifications					
Parameters	Conditions	Min	Typ	Max	Units
Efficiency		See table			
Isolation voltage		None			
Switching Frequency			300		KHz
Dimensions		50.8 X 12.7 X 7.2			mm
Weight			6.0		g
MTBF (Note 1)	MIL-HDBK-217F	6.704 x 10 <sup>5</sup>			hrs

ENVIRONMENTAL SPECIFICATIONS					
Parameters	Conditions	Min	Typ	Max	Units
Operating temperature range	with derating	-40		85	°C
Storage temperature range		-55		125	°C
Thermal shock		MIL-STD-810F			
Over temperature protection			125		°C

FEATURE SPECIFICATIONS					
Parameters	Conditions	Min	Typ	Max	Units
Remote ON/OFF					
Negative logic(standard)	ON = 0V<Vr< 0.3V@I <sub>IN</sub>			10	uA
	OFF=2.5V<Vr<Vin(Max)@I <sub>IN</sub>			1	mA
Input current of Remote control pin		0.01		1.0	mA
Remote off state input current Nominal Vin			2.0		mA
Remote sense range				0.5	V
Rise time (Time for Vo to rise from 10% to 90%of Vo(set))				6	ms
Turn-on delay time	Case 1 (Note 5)		3		ms
	Case 2 (Note 6)		3		ms

**Note**

- MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- External with Cout = 1μF ceramic//10μF tantalum capacitors.
- External with Cout = 2 × 150μF polymer capacitors.
- 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 Cin is 6 × 47μF ceramic capacitors at least.
- 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 from 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.

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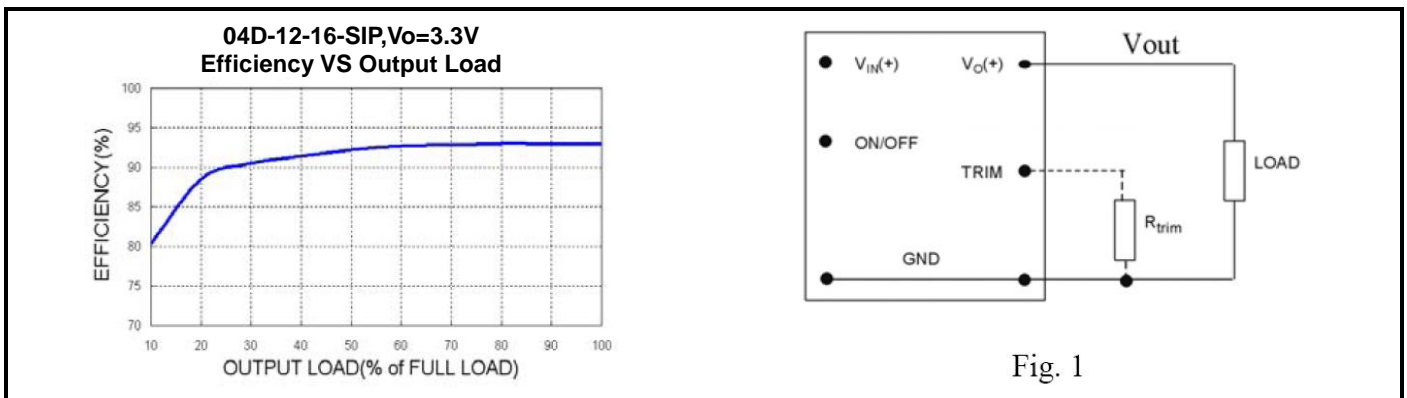
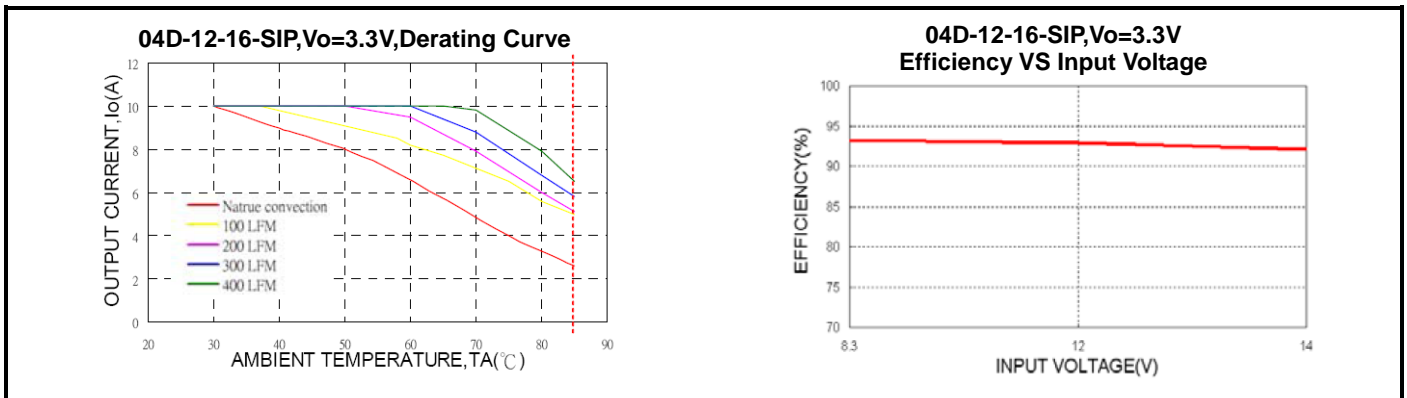
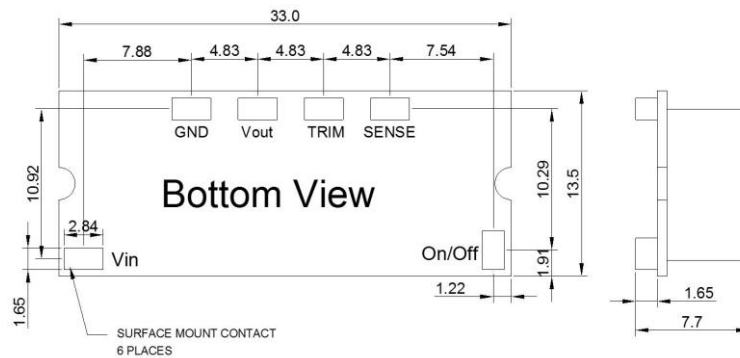


Fig. 1

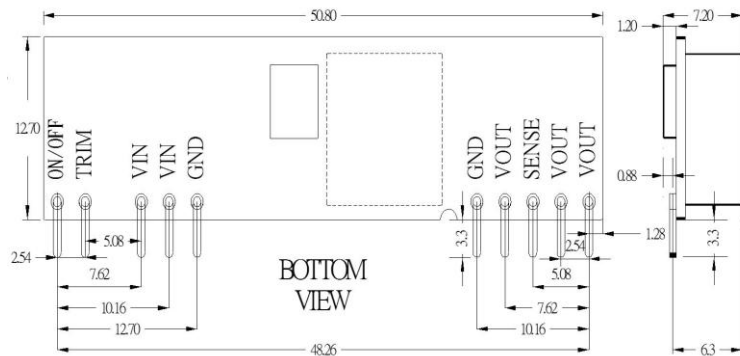
**Markings and Dimensions**

04D-12-16



Unit : mm  
Tolerance : XX.X ± 0.5 · XX.XX ± 0.25

04D-12-16-SIP



Unit : mm  
Tolerance : XX.X ± 0.5 · XX.XX ± 0.25