

Efficiency <b>&gt;91%</b>	<b>165W/in<sup>3</sup></b>	<b>INPUT</b> 2:1/4:1	Remote ON OFF	Full Metal Package
Molded Package	Open Frame Package	<b>OVP</b>	<b>OTP</b>	<b>OCP</b>
<b>6.4Mhrs</b> <b>MTBF</b>				



The N32 series power module provides 50W maximum outputs in 0.91"× 0.91" footprint with industry standard compatible pin assignment. The efficient SR stage is combined with patented "Coupled-inductor SR" topology that would reduce power loss to achieve 165W/in<sup>3</sup> power density. The multi-layer single side circuit board design plus the fully metal-enclosed package would enhance the thermal performance and improve its reliability. The module is designed for Telecom, Servers, Networking equipments and other industry applications that use a 24V or 48V input bus.

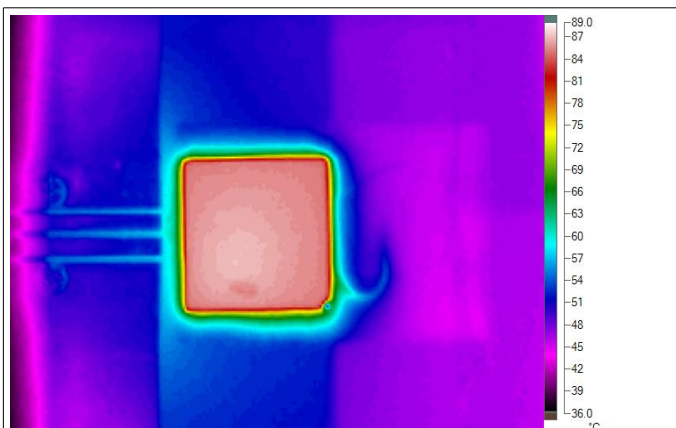
### PART NUMBER SYSTEM (Total height = standoff height + module thickness) *Preliminary Data Sheet*

N32	48	120	a	b	c	d	-	XX	XX	X
Series Name	Rated Input	Rated Output	Enable Logic	Pin Length	Standoff Height	Base-Plate / module thickness		Setting	Suffix	Version
<b>N32</b>	<b>18=9V~36V</b> <b>24=18V~36V</b> <b>36=18V~75V</b> <b>48=36V~75V</b>	<b>Unit: 0.1V</b> <b>Increments</b> <b>120= 12V</b> <b>033= 3.3V</b>	<b>P: Positive</b> <b>N: Negative</b>	<b>--: SMD</b> <b>0: 0.12"</b> <b>1: 0.16"</b> <b>2: 0.20"</b> <b>3: 0.24"</b>	<b>--: SMD</b> <b>0: 0.02"</b> <b>1: 0.08"</b> <b>2: 0.16"</b>	<b>N: Open Frame / 0.35"</b> <b>E: Metal Enclosed / 0.40"</b> <b>M: Molding / 0.40"</b>	-	For customer function only		For marketing purpose only

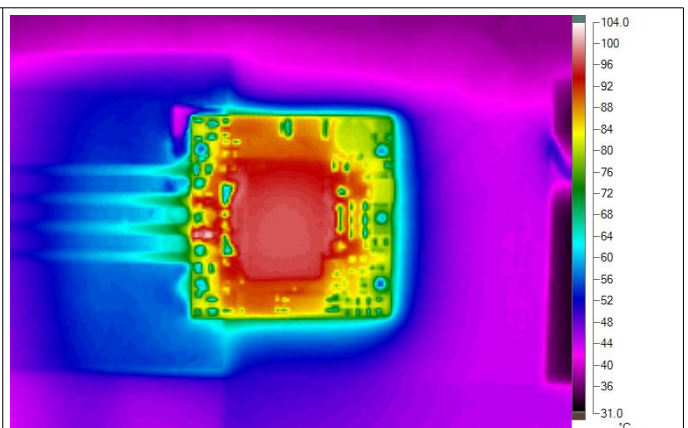
### MODEL LIST (Contact to factory for 4X input models or special specifications)

Part Number *	Maximum Input	Maximum Output	Efficiency	Part Number *	Maximum Input	Maximum Output	Efficiency		
N3224120abcd-XXXXX	18V~36V	57W	12.0V/4.2A 50W	90%	N3248120abcd-XXXXX	36V~75V	57W	12.0V/4.2A 50W	91%
N3224050abcd-XXXXX	18V~36V	59W	5.0V/10A 50W	89%	N3248050abcd-XXXXX	36V~75V	59W	5.0V/10A 50W	90%
N3224033abcd-XXXXX	18V~36V	47W	3.3V/12A 40W	87%	N3248033abcd-XXXXX	36V~75V	47W	3.3V/12A 40W	88%
N3224025abcd-XXXXX	18V~36V	37W	2.5V/12A 30W	85%	N3248025abcd-XXXXX	36V~75V	37W	2.5V/12A 30W	86%

### REFERENCED THERMAL IMAGES



N3224050N00E-08 (I<sub>o</sub> = 7.0A@50°C/20LFM)



N3236050N20N-06 (I<sub>o</sub> = 5.9A@50°C/20LFM)

**SPECIFICATIONS**

**Absolute Maximum Ratings**

Temperature	Operation Storage	-40°C to +110°C -55°C to +125°C
Input Voltage Range	Operation: 18V/24V Models 36V/48V Models Transient (100mS): 18V/24V Models 36V/48V Models	-0.5V to +40Vdc -0.5V to +80Vdc  50V Maximum 100V Maximum
Isolation Voltage	Input to Output Input to Case Output to Case	2.0KV Minimum 1.0KV Minimum 1.0KV Minimum
Remote Control		-0.5V to +12Vdc

**General Parameters**

Conversion Efficiency	Typical	See table
Switching Frequency	Typical	450KHz
MTBF	Bellcore TR-332 issue 6	6.40×10 <sup>6</sup> hrs @GB/25°C (N3248050abcd-10XXX)
OTP	T <sub>AVG</sub> Or T <sub>C</sub>	110°C ±5°C for standard setting
Weight	Packaging related	7~18g

**Control Functions**

Remote Control	Logic High Logic Low	+3.0V to +6.5V 0V to +1.0V
Input Current of Remote Control Pin		-0.5mA ~ +1.5mA

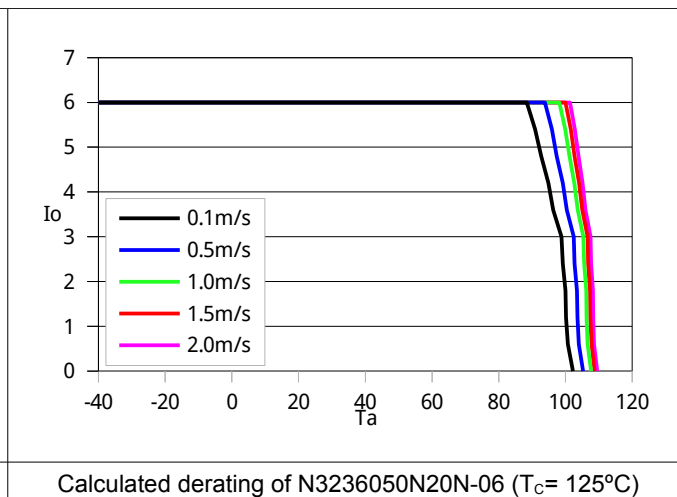
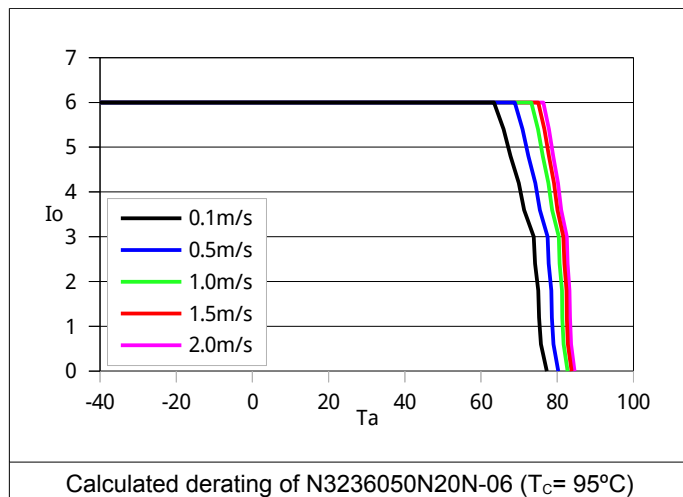
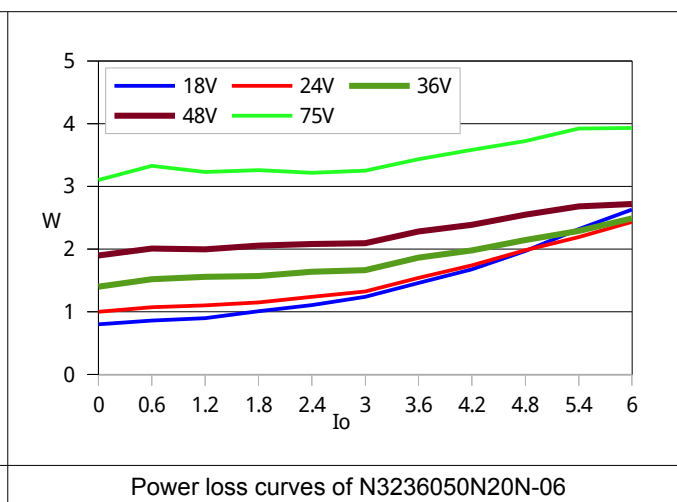
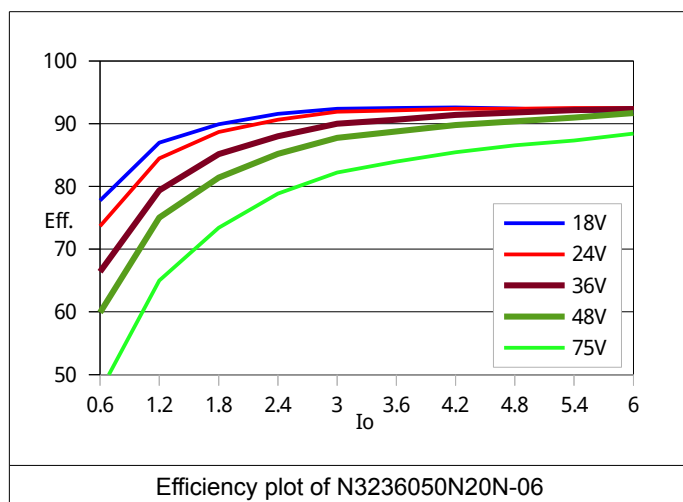
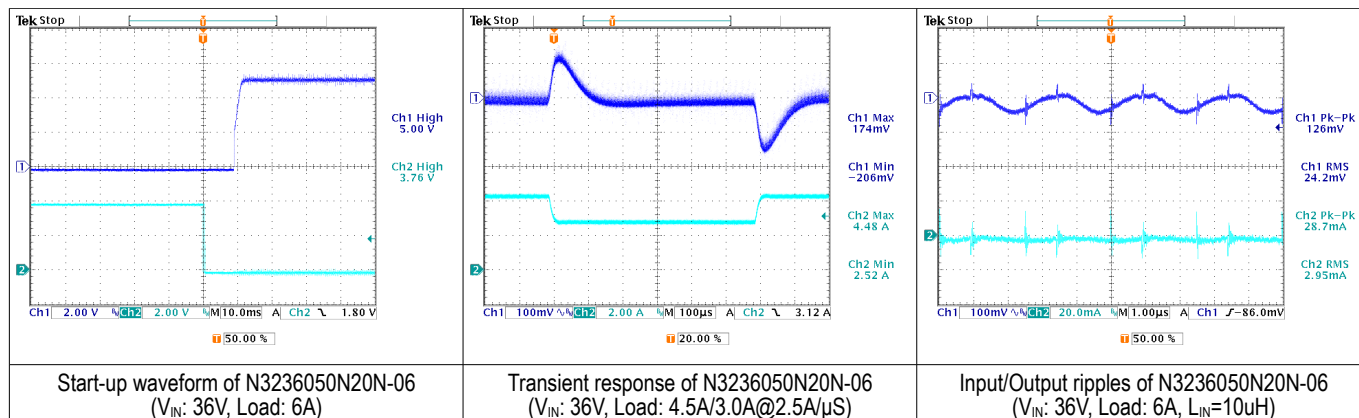
**Input**

Operation Voltage Range	18V(24V) Models 36V(48V) Models	+9V(+18V) to +36Vdc +18V(+36V) to +75Vdc
Reflected Ripple Current	L <sub>EXT</sub> = 10uH	20mA rms/60mA <sub>p-p</sub>
Power ON Voltage Ranges	18V Models 24V/36V Models 48V Models	+8.5V to + 9.0Vdc +17.0V to +18.0Vdc +34.0V to +36.0Vdc
Power OFF Voltage Ranges	18V Models 24V/36V Models 48V Models	+7.8V to 8.3Vdc +15.6V to +16.6Vdc +31.2V to +33.2Vdc
Off State Input Current	V <sub>NOM</sub>	6mA Max
Latch-State Input Current	V <sub>NOM</sub>	8mA Max
Input Capacitance	18V/24V Models 36V/48V Models	20.0uF Max 14.0uF Max

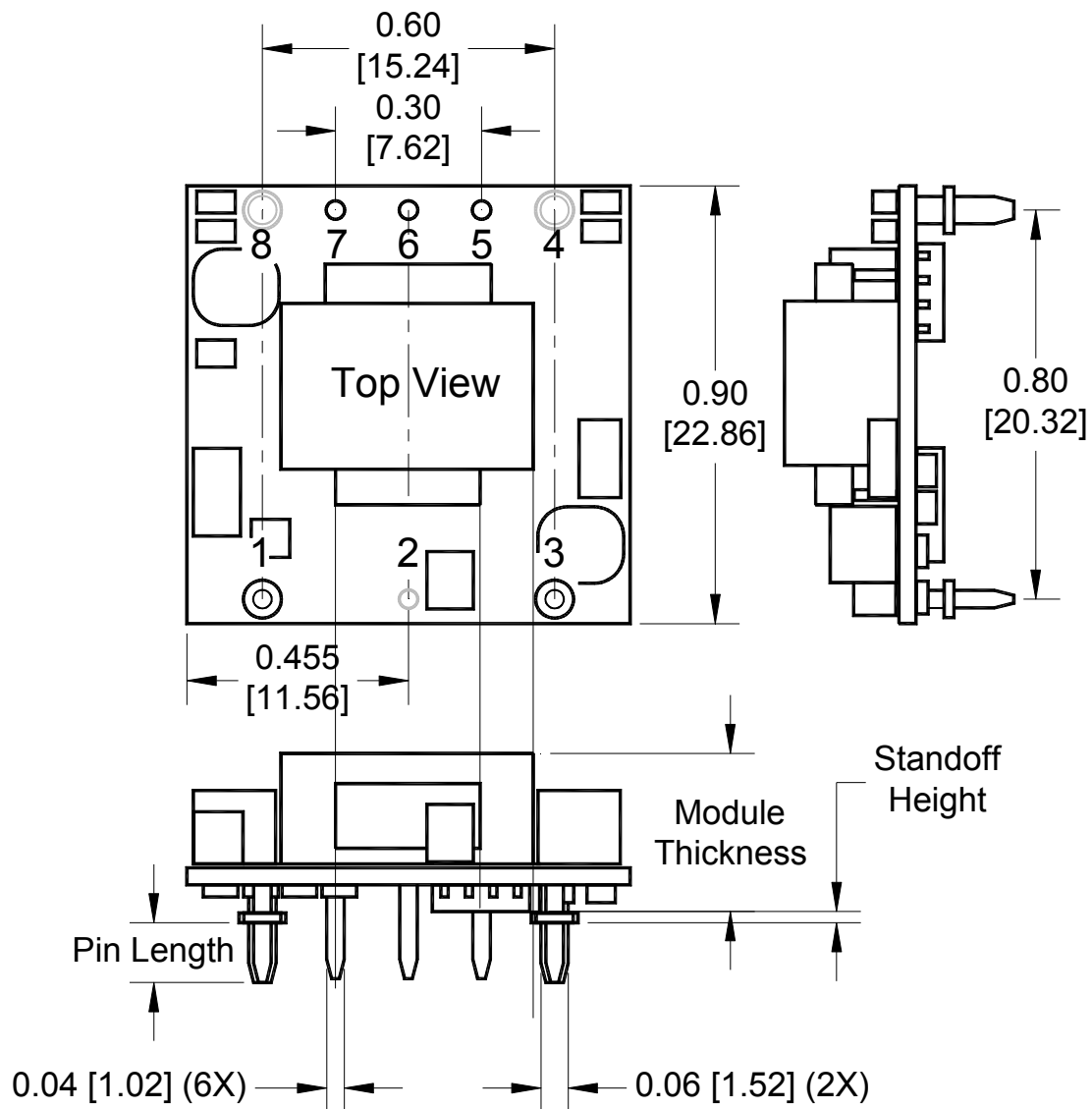
**Output**

Voltage Accuracy	Typical	±1.0%
Line Regulation	Full Input Range	±0.2%
Load Regulation	0%~100%	±0.2%
Temperature Drift	-40°C ~100°C	±0.03%/°C
Output Tolerance Band	All Conditions	±4%
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) V <sub>O</sub>
Over Voltage Protection	V <sub>NOM</sub> , 10% Load	115~130 %V <sub>O</sub>
Output Current Limits	V <sub>NOM</sub>	108%~125%
Voltage Trim	V <sub>NOM</sub> , 10% Load	±10%
Input Ripple Rejection (<1KHz)	V <sub>NOM</sub> , Full Load	-50dB
Step Load (2.5A/μS)	50%~75% Load	±6%Vo/500μS
Start-Up Delay Time	V <sub>NOM</sub> , Full Load	20mS/250mS

## TYPICAL WAVES AND CURVES



**OPEN FRAME**

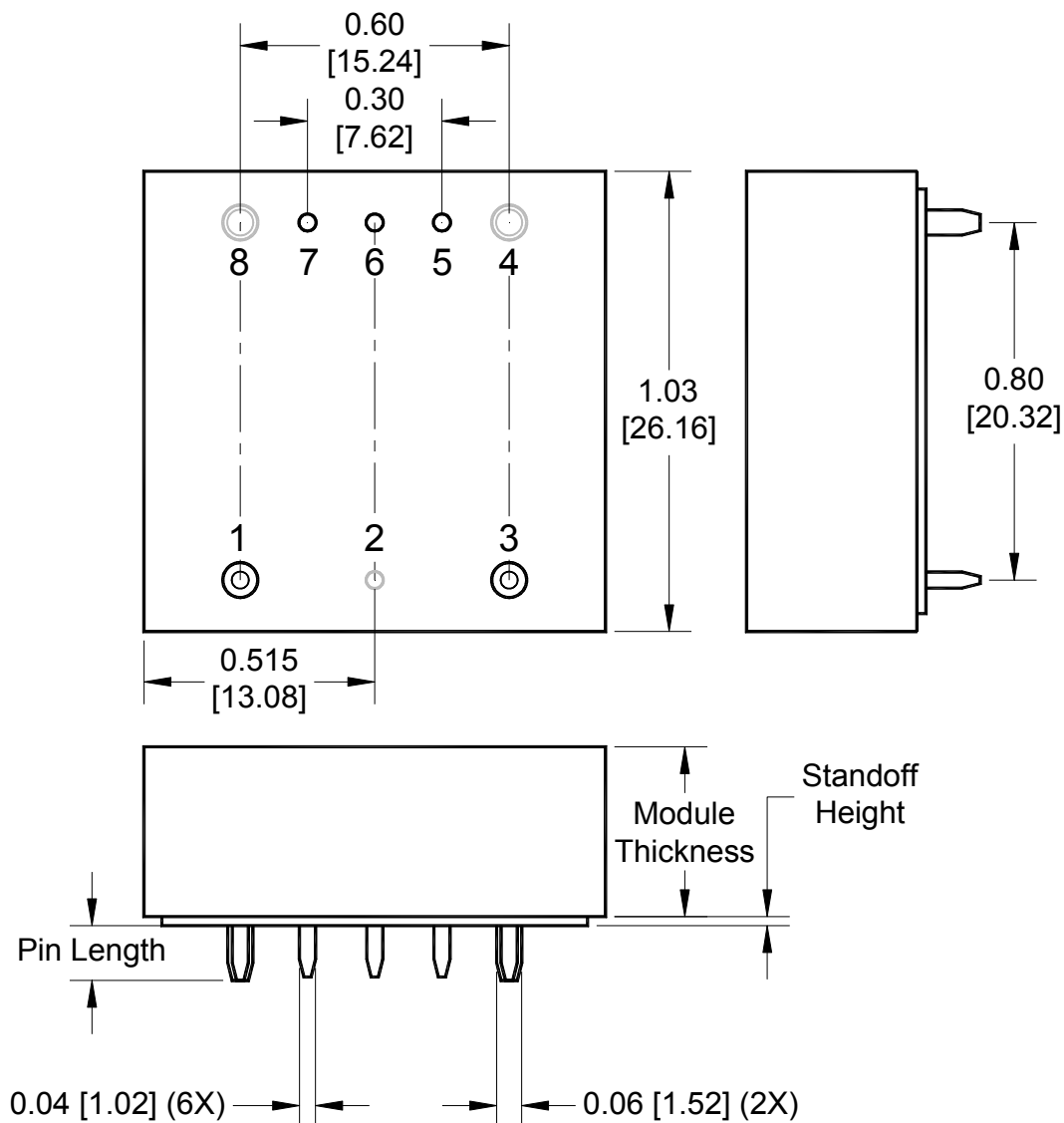


**Dimensions and Pin Connections**

Designation	Function Description	Pin #
+IN	Positive input	1
PC	Remote control. To turn-on and turn-off output.	2
-IN	Negative input	3
-Vo	Negative output	4
-S	Negative remote sense	5
TRIM	Output voltage adjust	6
+S	Positive remote sense	7
+Vo	Positive output	8

**Dimensions:** inches (mm)  
**Tolerances:** .xx±0.02 (.x±0.5)  
 .xxx±0.01 (.x±0.25)  
**Weight:** 7g / Sixteenth Brick  
**Base-plate:** None  
**Maximum torque:** NA  
**Pin material:** Copper alloy or Brass  
**Pin plating:** Golden over Nickel

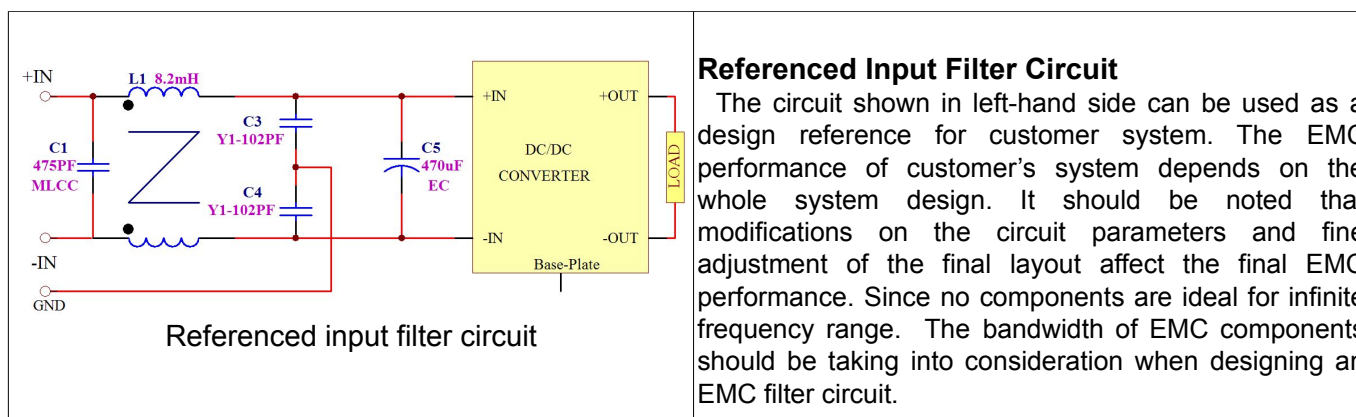
**METAL ENCLOSED**



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-S	Negative remote sense	5
TRIM	Output voltage adjust	6
+S	Positive remote sense	7
+Vo	Positive output	8

**Dimensions:** inches (mm)  
**Tolerances:** .xx±0.02 (.x±0.5)  
 .xxx±0.01 (.x±0.25)  
**Weight:** 18g  
**Base plate:** None-conductive  
**Mounting inserts:** None  
**Maximum torque:** NA  
**Pin material:** Copper alloy or Brass  
**Pin plating:** Gold over Nickel

**REFERENCED EMC CIRCUIT****EXTERNAL OUTPUT CAPACITANCE**

For reducing the ripple/noise voltage on the load or the peak voltage deviation caused by a step load, additional capacitor is required for decoupling the unwanted voltage components from the load. Since the step load performance is mainly dominated by the feedback loop performance, which also affected by the additional output capacitance. To put some low-bandwidth high capacitance Electrolytic capacitors very close to the power module help nothing and even introduces unwanted effects on the feedback performance, sinking or sourcing surge current damaging the power module. Glary suggest to put a low ESR capacitor with simply sufficient capacitance to handle the short duration high frequency component of ripple/noise or voltage peak deviation, and the capacitor needs to be as close as possible to the load. Do not add capacitor for no reason.

**NOTE:**

1. It is recommended that the input should be protected by fuses or other protection devices.
2. All specifications are typical at nominal input, full load and 25°C unless otherwise noted.
3. Specifications are subject to change without notice.
4. Printed or downloaded datasheets are not subject to Glary document control.
5. Product labels shown, including safety agency certificates, may vary based on the date of manufacture.
6. Information provided in this documentation is for ordering purposes only.
7. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications, which necessitate specific safety and regulatory standards other than the ones listed in this datasheet.

**IMPORTANT**

- ✘ General specifications and the performances are related to standard series only, no special customer specification display here except requested items.
- ✘ In order to secure effective usage of converter and the validity of Glary's service and warranty coverage, please refer to the application notes for general usage. For needs of usage beyond the application notes, please contact to Glary headquarter or our regional sales representative office for help.