

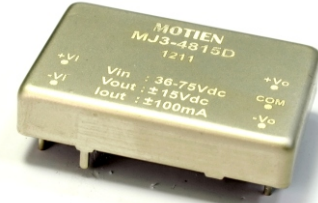
MJ3-3W Series



3W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- 1.37"X0.9"X0.28" metal case size
- Thin Profile
- Full SMD Technology
- 500 VAC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 85%
- -40 ~ 85°C Operation Temperature Range
- Over Voltage Protection
- Without Tantalum Capacitors inside



The MJ3-3W series are a family of high performance 3W single & dual output DC/DC converters. These converters are made with nickel-coated brass case in a 1.37"x0.9"x0.28" with high performance features such as 500 VAC input/output isolation voltage. The high performance features include: high efficiency and tight line/load regulation. Input voltages of 05, 12, 24 and 48 with output voltage of 5, 12, 15, ± 12 , ± 15 . High performance features include high efficiency operation up to 85% and output voltage accuracy of $\pm 1\%$ maximum.

All specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS	
Output Voltage Accuracy	$\pm 1\%$
Maximum Output Current	See table
Line Regulation	$\pm 0.5\%$, max.
Load Regulation($I_o=0\%$ to 100%)	$\pm 1\%$, max(balanced load)
Cross Regulation (Dual Output) (1)	$\pm 5\%$
Ripple&Noise (2)	50mVp-p, max.
Over Voltage Protection	5V output 6.2V
(Zener diode clamp)	12V output 15V
	15V output 18V
	$\pm 12\text{V}$ output $\pm 15\text{V}$
	$\pm 15\text{V}$ output $\pm 18\text{V}$
Short Circuit Protection	Indefinite (Automatic Recovery)
Temperature Coefficient	$\pm 0.02\%/^\circ\text{C}$
Capacitive Load (3)	See table
Transient Response Deviation(4)	$\pm 3\%$, max.

INPUT SPECIFICATIONS	
Voltage Range	See table
Max. Input Current	See table
No-Load Input Current	See table
Start up Time (Minimum V_{in} and constant resistive load)	20mS, max.
Input Filter	PI Type
Input Reflected Ripple Current(5)	20mA pk-pk

GENERAL SPECIFICATIONS	
Efficiency	See table, typ.
I/O Isolation Voltage(60 sec)	
Input/Output	500Vac
Metal Case/Input & Output	500Vac
I/O Isolation Capacitance	500 pF, max.
I/O Isolation Resistance	500VDC 50M Ohms
Switching Frequency	Typical 100kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.6 Mhrs
Safety Standard : (designed to meet)	IEC/EN 60950-1

PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Copper
Pin Material	$\Phi 1.0\text{mm}$ Brass Solder-coated
Weight	16.0g
Dimensions	1.37"x0.9"x0.28"

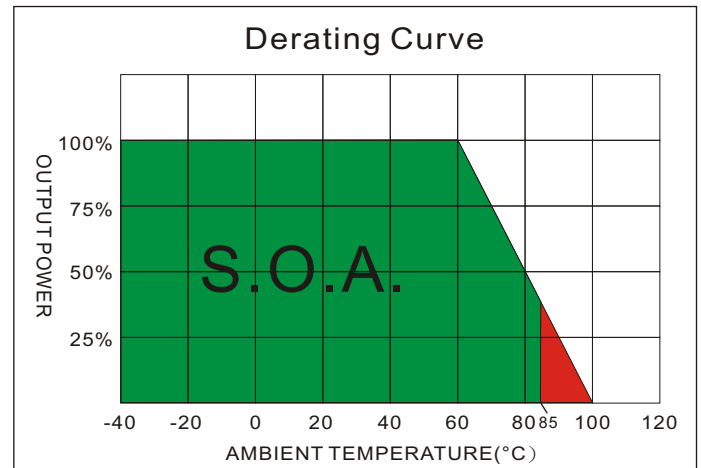
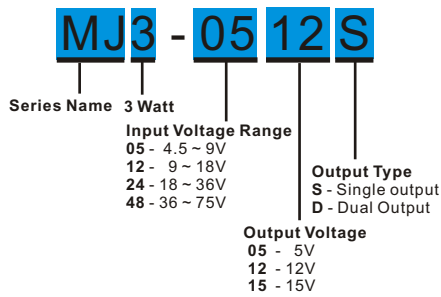
ENVIRONMENT SPECIFICATIONS	
Operating Temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$ (See Derating Curve)
	$-40^\circ\text{C} \sim 60^\circ\text{C}$ (For 100% load)
Maximum Case Temperature	100°C
Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
Cooling	Nature Convection

ABSOLUTE MAXIMUM RATINGS(6)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage(100mS)	
05 Models	15 Vdc, max.
12 Models	25 Vdc, max.
24 Models	50 Vdc, max.
48 Models	100 Vdc, max.
Soldering Temperature (1.5mm from case 10 sec. max.)	260°C, max.

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MJ3 - 3W 2:1 Regulated Single & Dual output

PART NUMBER STRUCTURE



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
MJ3-0505S	4.5-9	50	896	5	0	600	67	100
MJ3-0512S	4.5-9	50	857	12	0	250	70	100
MJ3-0515S	4.5-9	50	857	15	0	200	70	100
MJ3-0512D	4.5-9	50	780	±12	0	±130	82	±220
MJ3-0515D	4.5-9	50	750	±15	0	±100	82	±100
MJ3-1205S	9-18	25	357	5	0	600	70	100
MJ3-1212S	9-18	25	338	12	0	250	74	100
MJ3-1215S	9-18	25	338	15	0	200	74	100
MJ3-1212D	9-18	25	317	±12	0	±130	84	±220
MJ3-1215D	9-18	25	301	±15	0	±100	85	±100
MJ3-2405S	18-36	15	176	5	0	600	71	220
MJ3-2412S	18-36	15	167	12	0	250	75	220
MJ3-2415S	18-36	15	167	15	0	200	75	220
MJ3-2412D	18-36	15	159	±12	0	±130	84	±220
MJ3-2415D	18-36	15	151	±15	0	±100	85	±100
MJ3-4805S	36-75	10	90	5	0	600	71	220
MJ3-4812S	36-75	10	82	12	0	250	76	220
MJ3-4815S	36-75	10	82	15	0	200	76	220
MJ3-4812D	36-75	10	79	±12	0	±130	84	±220
MJ3-4815D	36-75	10	76	±15	0	±100	84	±100

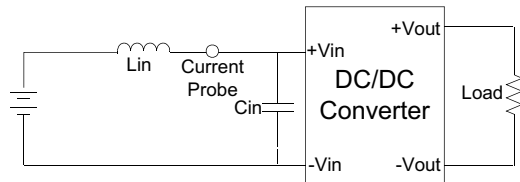
NOTE

1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
3. Test by nominal input voltage and constant resistive load.
4. Tested by normal Vin and 50% load step change (100%-50% of Io,50%-0% of Io).
5. Measured Input reflected ripple current with a simulated source inductance of 12uH.
6. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

TEST CONFIGURATIONS

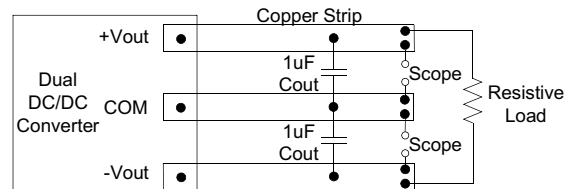
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (4.7uH) and a source capacitor C_{in} (47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.

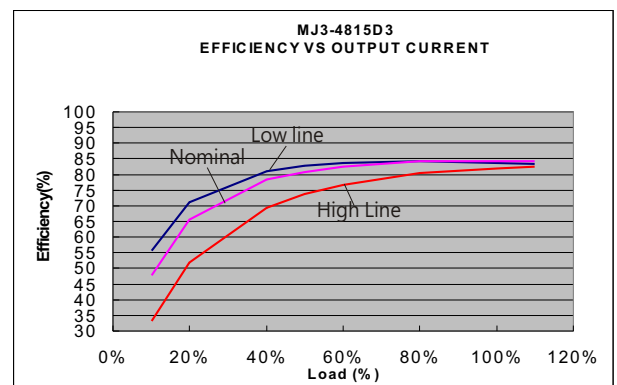
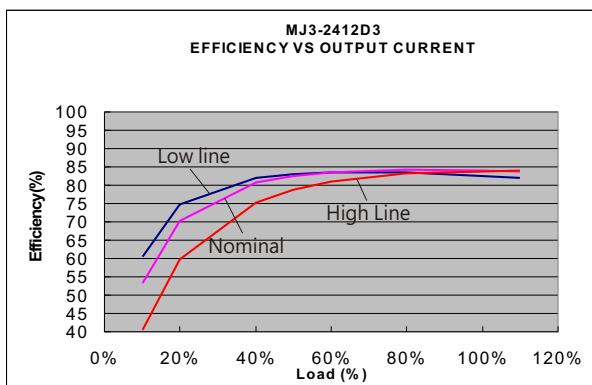
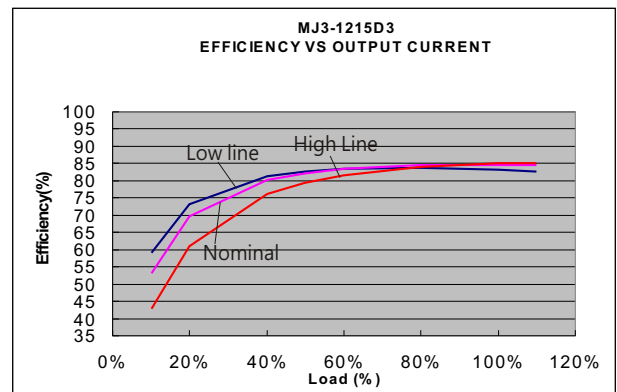
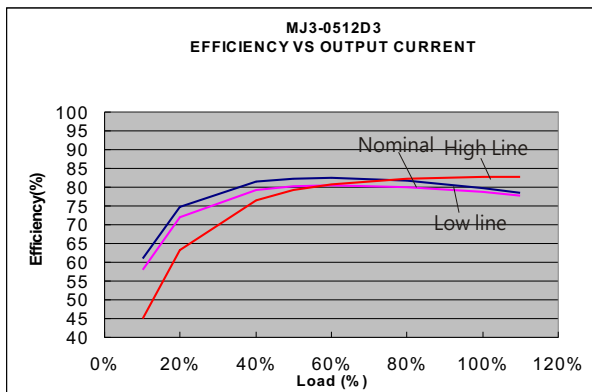


Output Ripple & Noise Measurement Test

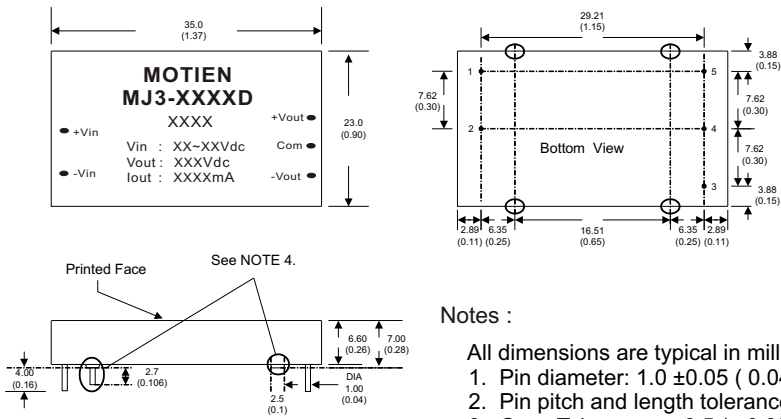
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



EFFICIENCY VS OUTPUT CURRENT CURVES



MECHANICAL SPECIFICATIONS



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	-V Input	-V Input
2	+V Input	+V Input
3	+V Output	+V Output
4	N.P	Common
5	-V Output	-V Output

Notes :

- All dimensions are typical in millimeters (inches).
1. Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 3. Case Tolerance: ± 0.5 (± 0.02)
 4. The converter is in contact with the slanted area of the P.C.B To keep isolation, adequate wiring on the mounted side is required.