

MJ1.5- Series



1.5W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- 1.08"x0.7"x0.28" metal case size
- Thin Profile
- Full SMD Technology
- 500 VAC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 83%
- -40 ~ 85°C Operation Temperature Range
- Over Voltage Protection
- Without Tantalum Capacitors inside



The MJ1.5-1.5W series are a family of high performance 1.5W single & dual output DC/DC converters. These converters are made with nickel-coated brass case in a 1.07"x0.7"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 83% and output voltage accuracy of $\pm 1\%$ maximum.

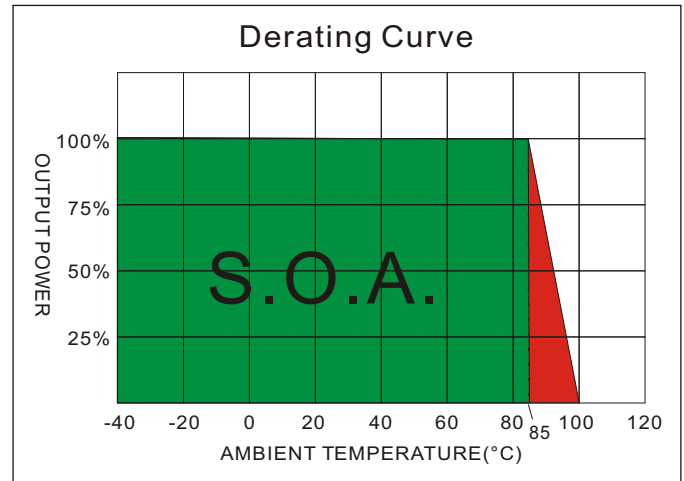
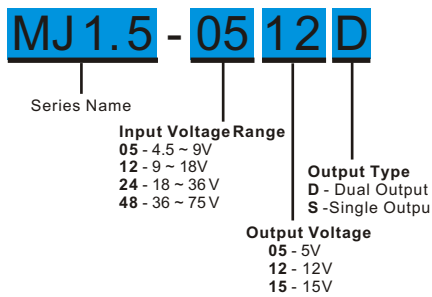
All specifications typical at $T_a = 25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS		PHYSICAL SPECIFICATIONS	
Output Voltage Accuracy	$\pm 1\%$	Case Material	Nickel-coated Copper
Maximum Output Current	See table	Pin Material	$\varnothing 1.0\text{mm}$ Brass Solder-coated
Line Regulation	$\pm 0.5\%$, max.	Weight	10.0g
Load Regulation($I_o = 0\%$ to 100%)	$\pm 1\%$, max(balanced load)	Dimensions	1.08"x0.7"x0.28"
Cross Regulation (Dual Output) (1)	$\pm 5\%$	ENVIRONMENT SPECIFICATIONS	
Ripple & Noise (2)	50mVp-p, max.	Operating Temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$ (See Derating Curve)
Over Voltage Protection	5V output 6.2V	Maximum Case Temperature	100°C
(Zener diode clamp)	12V output 15V	Storage Temperature	$-40^\circ\text{C} \sim 125^\circ\text{C}$
	15V output 18V	Cooling	Nature Convection
	$\pm 12\text{V}$ output $\pm 15\text{V}$	ABSOLUTE MAXIMUM RATINGS(6)	
	$\pm 15\text{V}$ output $\pm 18\text{V}$	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Short Circuit Protection	Indefinite (Automatic Recovery)	Input Surge Voltage(100mS)	
Temperature Coefficient	$\pm 0.02\%/^\circ\text{C}$	05 Models	15 Vdc, max.
Capacitive Load (3)	See table	12 Models	25 Vdc, max.
Transient Response Deviation(4)	$\pm 3\%$, max.	24 Models	50 Vdc, max.
		48 Models	100 Vdc, max.
INPUT SPECIFICATIONS		Soldering Temperature	260°C, max.
Voltage Range	See table	(1.5mm from case 10sec. max.)	
Max. Input Current	See table	GENERAL SPECIFICATIONS	
No-Load Input Current	See table	Efficiency	See table, typ.
Start up Time (Minimum V_{in} and constant resistive load)	20mS, max.	I/O Isolation Voltage(3 sec)	
Input Filter	LC Type	Input/Output	500Vac
Input Reflected Ripple Current(5)	20mA pk-pk	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

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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)		
MJ1.5-0505S	4.5-9	60	410	5	0	300	73	100
MJ1.5-0512S	4.5-9	60	400	12	0	130	78	100
MJ1.5-0515S	4.5-9	60	384	15	0	100	78	100
MJ1.5-0512D	4.5-9	60	390	±12	0	±65	82	±100
MJ1.5-0515D	4.5-9	60	379	±15	0	±50	81	±100
MJ1.5-1205S	9-18	50	166	5	0	300	75	100
MJ1.5-1212S	9-18	50	163	12	0	130	80	100
MJ1.5-1215S	9-18	50	154	15	0	100	81	100
MJ1.5-1212D	9-18	20	160	±12	0	±65	83	±100
MJ1.5-1215D	9-18	30	154	±15	0	±50	83	±100
MJ1.5-2405S	18-36	40	84	5	0	300	74	100
MJ1.5-2412S	18-36	40	83	12	0	130	78	100
MJ1.5-2415S	18-36	40	79	15	0	100	79	100
MJ1.5-2412D	18-36	20	81	±12	0	±65	81	±100
MJ1.5-2415D	18-36	15	78	±15	0	±50	82	±100
MJ1.5-4805S	36-75	30	43	5	0	300	73	100
MJ1.5-4812S	36-75	30	42	12	0	130	78	100
MJ1.5-4815S	36-75	30	40	15	0	100	78	100
MJ1.5-4812D	36-75	10	40	±12	0	±65	80	±100
MJ1.5-4815D	36-75	10	41	±15	0	±50	79	±100

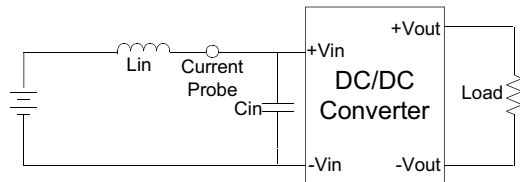
NOTE

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

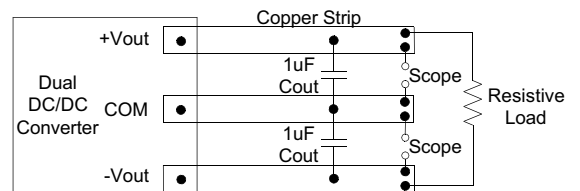
Input Reflected Ripple Current Test Step

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.

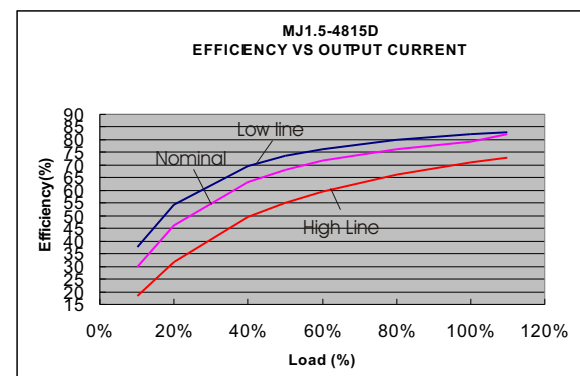
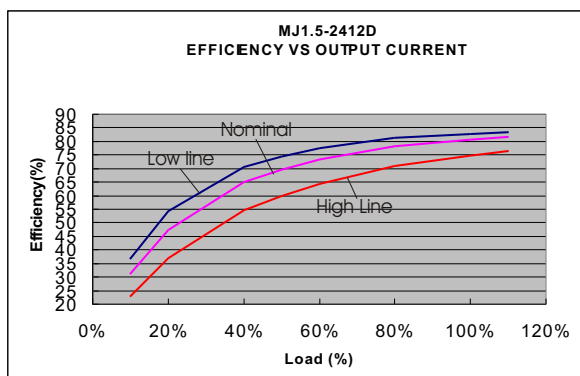
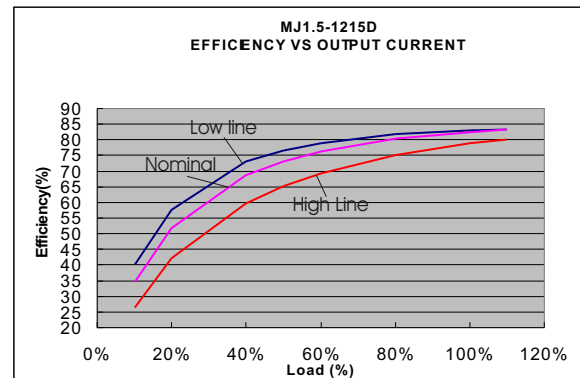
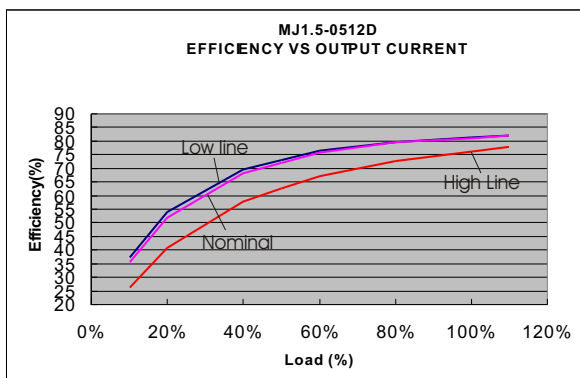


Output Ripple & Noise Measurement Test

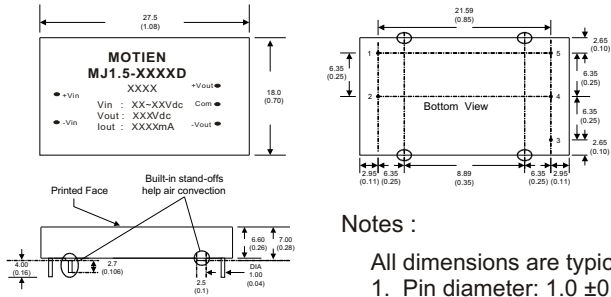
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



EFFICIENCY VS OUTPUT CURRENT CURVES



MECHANICAL SPECIFICATIONS



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.

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