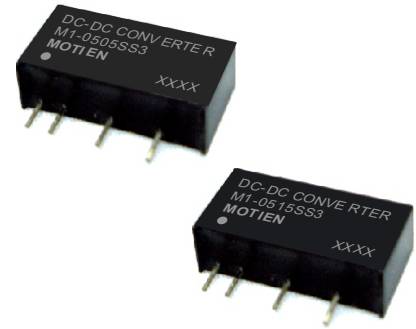


M1 Series

3W Semi-regulated Single & Dual output

Features

- 7 Pin SIL Package
- Semi-regulated output
- 1000 VDC Isolation
- Up to 3000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 90%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case



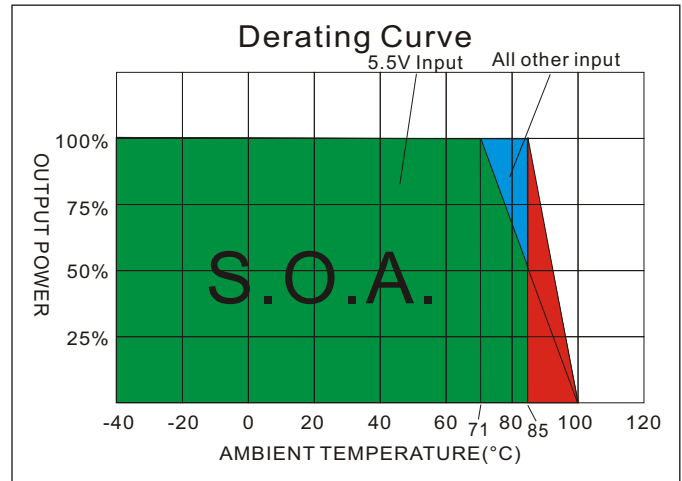
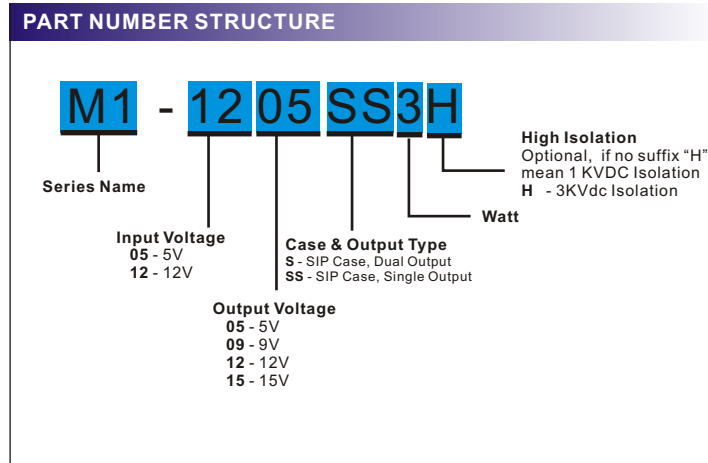
The M1 series is a family of cost effective 3W single & dual output DC-DC converters. These converters achieve low cost, high efficiency, semi-regulated and ultra-miniature SIP 7 pin size. Devices are encapsulated using flame retardant resin. The models operate from input voltage of 5, 12Vdc with output voltage of 5, 9, 12, 15, ±5, ±9, ±12, ±15 Vdc. High efficiency operation and output voltage accuracy of +2%~-4% maximum. Standard features include an input range of ±10% tolerance and low output noise and ripple.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS			EMC SPECIFICATIONS		
Voltage accuracy		+2~-4%	Radiated Emissions	EN55032	CLASS B
Line regulation		±1.2% / Per 1% Vin Change	Conducted Emissions (3)	EN55032	CLASS B
Load regulation(From 10% to 100% Load)		See table	ESD	IEC 61000-4-2	Perf. Criteria A
Ripple & noise (20 MHz bandwidth)(1)		50mV pk-pk	RS	IEC 61000-4-3	Perf. Criteria A
Temperature coefficient		±0.02%/°C	EFT(4)	IEC 61000-4-4	Perf. Criteria A
Capacitor load(2)		See table	CS	IEC 61000-4-6	Perf. Criteria A
			PFMF	IEC 61000-4-8	Perf. Criteria A
INPUT SPECIFICATIONS			PHYSICAL SPECIFICATIONS		
Voltage Range		±10%	Case Material	Non-conductive Black Plastic(UL94V-0 rated)	
Max. Input Current		See table	Pin Material	C5191R-H Solder-coated	
No-Load Input Current		See table	Potting Material	Epoxy (UL94V-0 rated)	
Input Filter		Capacitors	Weight	2.8g,typ.	
Input Reflected Ripple Current	5V	25mA pk-pk	Dimensions	SIP Case 0.76"x0.28"x0.39"	
	12V	25mA pk-pk			
GENERAL SPECIFICATIONS			ENVIRONMENT SPECIFICATIONS		
Efficiency		See table	Operating Temperature	-40°C~85°C(See Derating Curve)	
I/O Isolation Voltage(60 sec)		1000~3000Vdc	Maximum Case Temperature	100°C	
Input/Output			Storage Temperature	-40°C~125°C	
I/O Isolation Capacitance		60 pF typ.	Cooling	Nature Convection	
I/O Isolation Resistance		1G Ohm			
Switching Frequency		Variable 70kHz			
Humidity		95% rel H			
Reliability Calculated MTBF(MIL-HDBK-217 F)		>1.8 Mhrs			
Safety Standard : (designed to meet)		IEC 60950-1			
			ABSOLUTE MAXIMUM RATINGS(5)		
			These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.		
			Input Surge Voltage(100mS)		
			5 Models	9 Vdc, max.	
			12 Models	18 Vdc, max.	
			Soldering Temperature	260°C	
			(1.5mm from case 10sec max.)		

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, MOTIEN Technologies accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice. No rights under any patent accompany the sale of any such product(s) or information contained herein.

M1 - 3W Semi-regulated Single & Dual output



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	LOAD Regulation %	EFFICIENCY @FL (% , typ.)	Capacitor Load @FL (μF, max.)
		No-Load (mA, max.)	Full Load (mA, max.)					
M1-0505S3	5	80	741	±5	±300	7	81	±100
M1-0509S3	5	70	706	±9	±166.67	6	85	±100
M1-0512S3	5	70	706	±12	±125	6	85	±47
M1-0515S3	5	80	714	±15	±100	5	84	±47
M1-1205S3	12	25	294	±5	±300	5	85	±100
M1-1209S3	12	25	284	±9	±166.67	4	88	±100
M1-1212S3	12	25	281	±12	±125	3	89	±47
M1-1215S3	12	20	278	±15	±100	3	90	±47
M1-0505SS3	5	80	769	5	600	8	78	220
M1-0509SS3	5	70	714	9	333.33	7	84	220
M1-0512SS3	5	80	714	12	250	6	84	100
M1-0515SS3	5	80	714	15	200	6	84	100
M1-1205SS3	12	25	298	5	600	6	84	220
M1-1209SS3	12	25	287	9	333.33	4	87	220
M1-1212SS3	12	25	284	12	250	4	88	100
M1-1215SS3	12	20	278	15	200	3	90	100

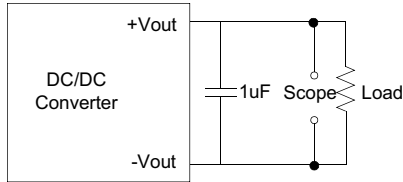
NOTE

1. Ripple/Noise measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
2. Tested by minimal Vin and constant resistive full load.
3. Input filter components (C1, L) are used to help meet conducted emissions requirement for the module.
These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.
4. An external filter capacitor is required if the module has to meet IEC61000-4-4
The filter capacitor Motien suggest: Nippon chemi-con KY series, 220uF/100V.
5. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
6. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

TEST CONFIGURATIONS

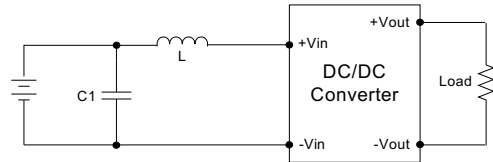
Output Ripple & Noise Measurement Test

Use a capacitor Cout(1.0uF) measurement.
The Scope measurement bandwidth is 0-20MHz.



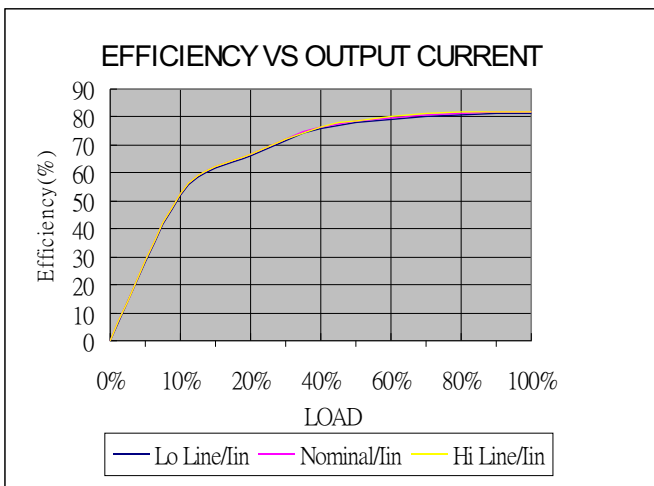
EMI Filter

Input filter components (C1, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

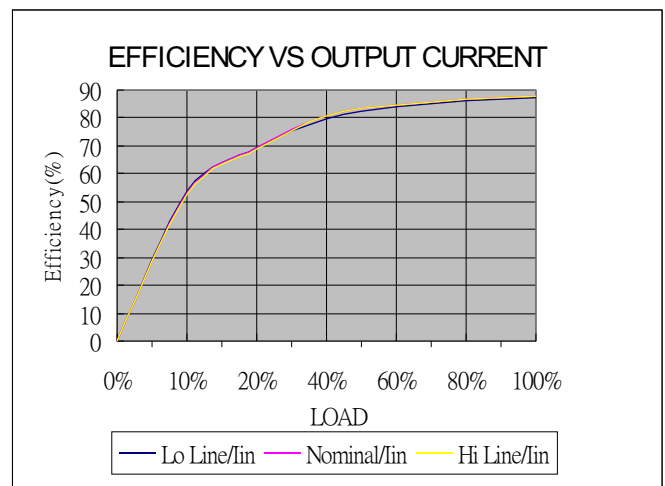


	C1	L
M1-05XXXXX	1210, 2.2uF/100V	18uH
M1-12XXXXX	1210, 2.2uF/100V	18uH

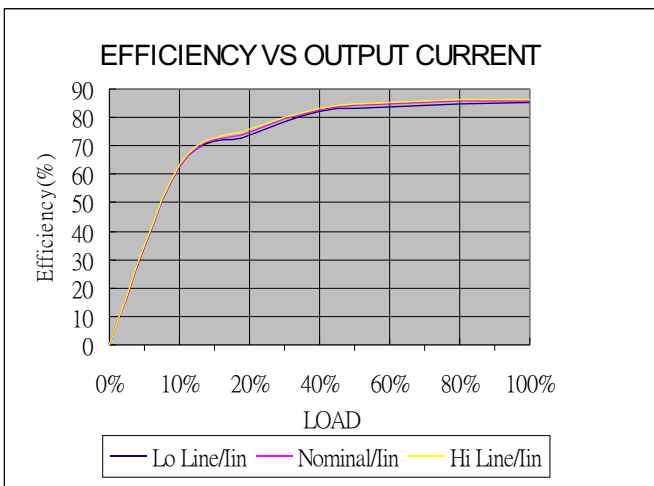
ELECTRICAL CHARACTERISTIC CURVES



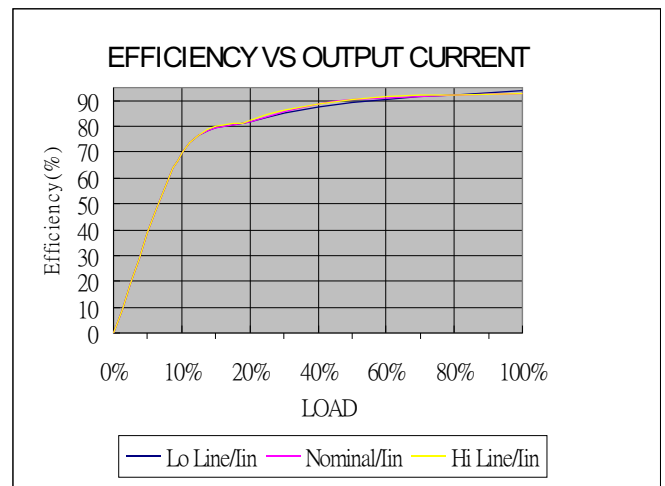
M1-0505SS3



M1-0515S3



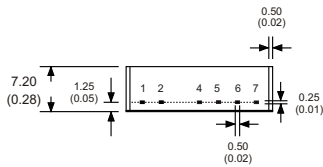
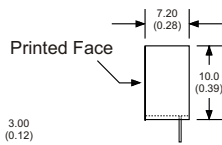
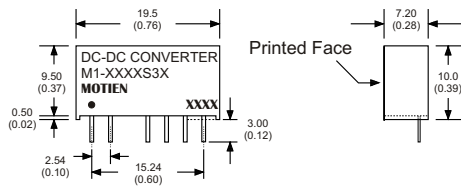
M1-1205SS3



M1-1215S3

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

MECHANICAL SPECIFICATIONS



7 Pin SIL Package

- Notes : All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 3. Case Tolerance: ± 0.5 (± 0.02)

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