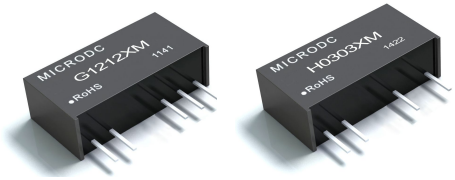
MICRODC
Industry Power Family

H-XM&G-XM Series

1W,Isolated 6000VDC Unregulated Single&Dual Output DC/DC Converters



FEATURES

- RoHS compliant
- Efficiency up to 80%
- Power density up to 0.42W/cm^3
- Wide temperature performance at full 1 Watt load,-40℃～85℃
- Single and dual output
- UV 94V-0 package material
- No heat sink required
- 3.3V,5V,12V,24V input
- Industry standard pin out
- Footprint 1.91cm^2
- 6KVDC isolation
- 3.3V,5V,9V,12V and 15V output
- Single-in-Line Package (SIP7)
- Low coupling capacity
- No external components required
- MTTF up to 1.3 million hours
- Physical Clearance of Isolation Barrier 2.5 mm min.
- Custom solutions available

MODEL SELECTION

H①05②05③X④ M⑤

①Product Series ②Input Voltage
③Output Voltage ④Fixed Input
⑤Mini SIP7 Package

APPLICATIONS

The H-XM&G-XM series are dual and single output DC/DC converters in a 7 pin SIP package style offering pin and functionality compatibility with the E series SIP DC/DC converters.

The H_XM&G_XM series is UI60950 recognized and suitable for applications where safety and miniaturization are of paramount importance.Isolation barrier approved for supplementary/reinforced insulation.

RoHS MICRODC Green Technology

CE REACH

MICRODC RESERVES THE COPYRIGHT

SELECTION GUIDE

Order code	Input Voltage (V)	Output Voltage (V)	Output Current (MA)	Ripple&Noise[2] (MA)	Efficiency (%)	Isolation Capacitate (PF)	MTTF[1] (KHRS)
G0505XM	5	±5	±100	40	60	3.0	4950
G0509XM	5	±9	±55	30	65	3.0	3832
G0512XM	5	±12	±42	20	65	3.0	2770
G0515XM	5	±15	±33	20	65	3.0	1903
G1205XM	12	±5	±100	40	60	3.0	3688
G1209XM	12	±9	±55	30	65	3.0	3029
G1212XM	12	±12	±42	20	65	3.0	2324
G1215XM	12	±15	±33	20	65	3.0	1682
G2424XM	24	±24	±21	20	64	3.0	1580
H0303XM	3.3	3.3	303	70	66	3.0	13780
H0503XM	5	3.3	303	60	64	3.0	13460
H0505XM	5	5	200	50	68	3.0	13360
H0509XM	5	9	111	50	72	3.0	12700
H0512XM	5	12	83	50	71	3.0	11490
H0515XM	5	15	66	50	71	3.0	9980
H1205XM	12	5	200	50	69	3.0	8447
H1209XM	12	9	111	50	73	3.0	8176
H1212XM	12	12	83	50	73	3.0	7660
H1215XM	12	15	66	50	74	3.0	6950
H2424XM	24	24	42	50	74	3.0	6840

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max	Units
Voltage range	Continuous operation,3V input types	2.97	3.3	3.63	V
	Continuous operation,5V input types	4.5	5	5.5	V
	Continuous operation,12V input types	10.8	12	13.2	V
	Continuous operation,24V input types	21.6	24	26.4	V
Input current no load	5 Vin models		55		mA
	12 Vin models		30		mA
Input current full load	5 Vin models		300		mA
	12 Vin models		125		mA
Reverse voltage protection				0.3	A
Input filter	Internal capacitor				

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection[3]	1 second
Lead temperature 1.5mm from case for 10 seconds	300℃
Input voltage VIN,H/G03 types	5V
Input voltage VIN,H/G05 types	7V
Input voltage VIN,H/G12 types	15V
Ripple and noise (20 MHz Bandwidth)	120 mV pk-pk typ.
Voltage set accuracy	± 3 %
Voltage balance (dual output models)	± 1 % max.
Temperature coefficient	± 0.02 % / K
Frequency change over line and load	± 30 % max.
Humidity (non condensing)	95 % rel H max.
Derating above 85℃	5 % / K

1.Calculated using MIL-HDBK-217FN2 calculation model with nominal input voltage at full load.
2.See ripple & noise test method.
3.Supply voltage must be disconnected at the end of the short circuit duration.
All specifications typical at TA=25℃,nominal input voltage and rated output current unless otherwise specified.

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power[1]	TA=-40℃～60℃			1	W
Voltage Set Point	See tolerance envelope				
Line regulation	High Vin to low Vin		1.0	1.2	%%
Load regulation Single outputs	10% load to rated load,xx03		10.0	15.0	%
	10% load to rated load,0505		7.0	10.0	
	10% load to rated load,0509,0512,0515		6.0	10.0	
	10% load to rated load,12xx		5.0	7.0	
Load regulation Dual outputs	10% load to rated load,5V output types		10.0	15.0	
	10% load to rated load,9V output types		6.0	10.0	%
	10% load to rated load,12V output types		6.0	10.0	
	10% load to rated load,15V output types		6.0	10.0	
Zero Load Power	All types		250		MW

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Flash tested for 1 second	6000			VDC
Resistance	Viso=500VDC		1		GΩ
Isolation voltage	I/O isolation voltage	3000			VAL rms
Isolation capacity	Input/Output		10		pF
Isolation resistance	Input/Output		>1000		M ohm

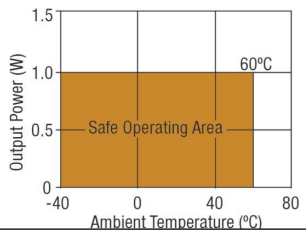
GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	Single output		50		kHz
	Dual output		70		
Package weight	Single/Dual models			4.0(0.14)	g (oz)

TEMPERATURE CHARACTERISTICS

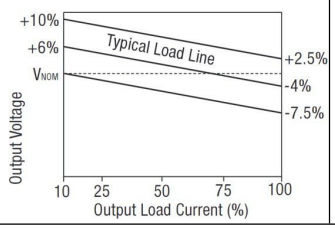
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output types	-40		60	℃
Storage		-55		130	
Case Temperature above	All output types			33	

TEMPERATURE DERATING GRAPH

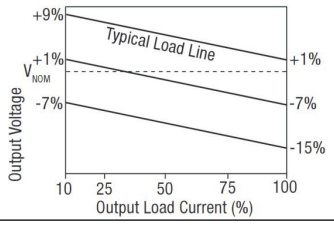


TOLERANCE ENVELOPE

H-XM/G-XM



3.3V in,3V out type only



1.See derating graph.
All specifications typical at TA=25° C, nominal input voltage and rated output current unless otherwise specified.Another 24V& 48V products, please inquire Our technical department!

TECHNICAL NOTES

ISOLATION VOLTAGE

"Hi Pot Test","Flash Tested","Withstand Voltage","Proof Voltage","Dielectric Withstand Voltage"&"Isolation Test Voltage" are all terms that relate to the same thing, a test voltage. Applied for a specified time, across a component designed to provide electrical isolation, to verify the integrity of that isolation.
Professional Power Module H_XM&G_XM series of DC/DC converters are all 100% production tested at their stated isolation voltage. This is 6KVDC for 1 second.

A question commonly asked is,"What is the continuous voltage that can be applied across the part in normal operation?"

The H_XM&G_XM series has been recognized by Underwriters Laboratory to 300Vrms for Supplementary Insulation and 150Vrms for Reinforced Insulation.

REPEATED HIGH-VOLTAGE ISOLATION TESTING

It is well known that repeated high-voltage isolation testing of a barrier component can actually degrade isolation capability, to a lesser or greater degree depending on materials. Construction and environment. We therefore strongly advise against repeated high voltage isolation testing. but if it is absolutely required, that the voltage be reduced by 20% from specified test voltage.

OUTPUT RIPPLE REDUCTION

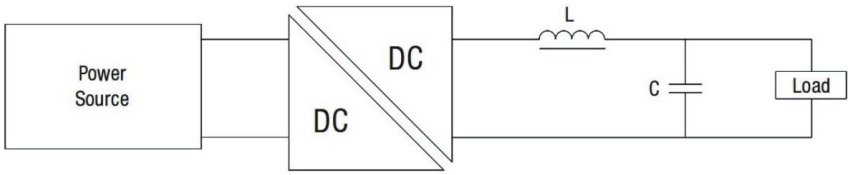
By using the values of inductance and capacitance stated, the output ripple at the rated load is lowered to 5mV p-p max.

Component selection

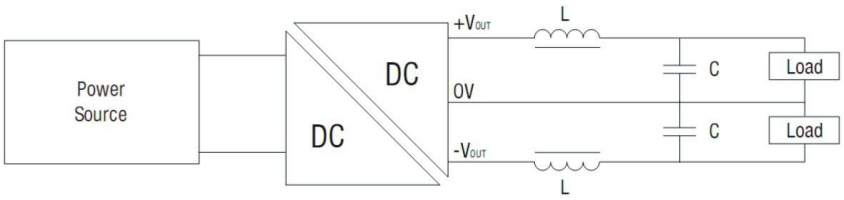
Capacitor: Ceramic chip capacitors are recommended. It is required that the ESR(Equivalent Series Resistance)should be as low as possible.X7R types are recommended. The voltage rating should be at least twice(except for 15V output),the rated output voltage of the DC/DC converter.

Inductor: The rated current of the inductor should not be less than of the output of the DC/DC converter. At the rated current, the DC resistance of the inductor should be such that the voltage drop across the inductor is <2% of the rated voltage of the DC/DC converter. The SRF(Self Resonant Frequency) should be >20MHz.

Single output types



Dual output types



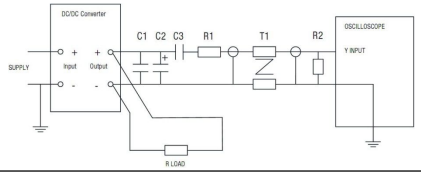
OUTPUT RIPPLE REDUCTION

Ripple & Noise Characterisation Method

Ripple and noise measurements are performed with the following test configuration.

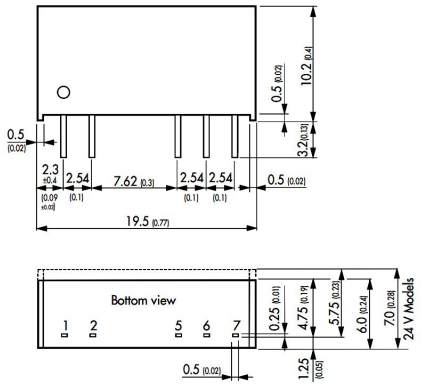
C1	1uF X7R multilayer ceramic capacitor, voltage rating to be a minimum of 3 times the output voltage of the DC/DC converter
C2	10uF tantalum capacitor, voltage rating to be a minimum of 1.5 times the output voltage of the DC/DC converter
C3	100nF multilayer ceramic capacitor, general purpose
R1	450Ω resistor, carbon film,±1% tolerance
R2	50Ω BNC termination
T1	3T of the coxa cable through a ferrite toroid
RLOAD	Resistive load to the maximum power rating of the DC/DC converter. Connections should be made via twisted wires
R3	50Ω resistor, carbon film,±1%
Measured values are multiplied by 10 to obtain the specified values.	

Differential Mode Noise Test Schematic



MECHANICAL DIMENSIONS

SIP package



*Pin not fitted on single output variants.

All dimensions in inches ±0.01(mm±0.25mm).All pins on a 0.1(2.54) pitch and within ±0.01(0.25)of true position.

Weight: 4.0g

PIN CONNECTIONS

SINGLE OUTPUT

PIN CONNECTIONS-7 PIN SIP	
pin	Function
1	+VIN
2	-VIN
5	-VOUT
7	+VOUT

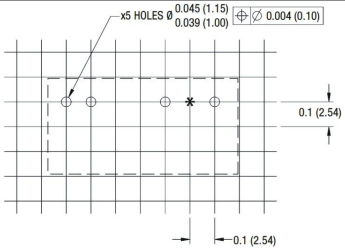
DUAL OUTPUT

PIN CONNECTIONS-7 PIN SIP	
pin	Function
1	+VIN
2	-VIN
5	-VOUT
6	0V(COMMON)
7	+VOUT

PACKAGE SPECIFICATIONS

RECOMMENDED FOOTPRINT DETAILS

7 Pin SIP Package

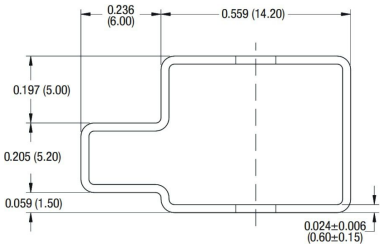


*Hole not required for single output variants.

Unless otherwise stated all dimensions in inches ±0.01(mm ±0.25mm).

TUBE OUTLINE DIMENSIONS

7 Pin SIP Tube



Unless otherwise stated all dimensions in inches ±0.02(mm ±0.5mm).

Tube length(7 Pin SIP):20.669(525mm±2mm).

Tube Quantity:25

MICRODC Industry Power Family

Microdc Professional Power Module,Inc.

Tel:0086-20-86000646 E-mail:tech@microdc.cn

Website:http://www.microdc.cn

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RoHS COMPLIANT INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds.
The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems.

REACH COMPLIANT INFORMATION

This series has proven that this product does not contain harmful chemicals, it also has harmful chemical substances through the registration, inspection and approval.