MICRODC
Professional Power Module

TMA-XS&TMA-XD Series

Fixed Input, Isolated 1W Single&Dual Output DC/DC Converters

FEATURES

- ◆RoHS compliant
- ◆I/O isolation voltage 1000VDC
- ◆Operating Temperature: -40℃～ + 85℃
- ◆High efficiency up to 81%
- ◆Fully encapsulated toroidal magnetics
- ◆Internal SMD construction
- ◆Power density up to 0.85W/cm^3
- ◆No electrolytic or tantalum capacitors
- ◆3.3V,5V,12Vand 15V output
- ◆No heat sink required
- ◆Dual output from a single input rail
- ◆UL 94V-0 package material
- ◆No external components required
- ◆Industry standard pin out
- ◆Pin compatible with other Manufacturers
- ◆MTTF up to 3.4 million hours

MODEL SELECTION

TMA①05②05③X④ S(D)⑤

①Product Series ②Input Voltage
③Output Voltage ④Fixed Input
⑤Single (Dual) Output Models

APPLICATIONS

The TMA-XS(D) series of industrial temperature range DC/DC converters are the standard building blocks for on-board distributed power systems.They are ideally suited for providing single rail supplies on primarily digital boards with the added benefit of galvanic isolation to reduce switching noise. Surface mount technology and advanced packaging materials produce rugged reliable performance over an extended temperature range from -40°C～85°C.

RoHS MICRODC Green Technology

CE REACH

SELECTION GUIDE

Order code	Input Voltage (V)	Output Voltage (V)	Output Current (MA)	Input Current (Rated Load) (MA)	Efficiency (%)	Isolation Capacitance (PF)	MTTF[1] (KHRS)
TMA0303XS	3.3	3.3	303	420	72	26	1987
TMA0305XS	3.3	5	200	409	74	26	1979
TMA0505XS	5	5	200	290	69	28	1847
TMA0512XS	5	12	83	268	78	40	987
TMA0515XS	5	15	67	253	79	40	667
TMA1205XS	12	5	200	121	69	36	1485
TMA1212XS	12	12	83	110	76	58	869
TMA1215XS	12	15	67	110	76	56	613
TMA1505XS	15	5	200	93	69	27	2110
TMA1512XS	15	12	83	85	77	58	1790
TMA1515XS	15	15	67	84	78	67	1560
TMA2405XS	24	5	200	60	70	61	1253
TMA2412XS	24	12	83	53	78	98	784
TMA2415XS	24	15	67	52	80	122	566
TMA0505XD	5	±5	±100	289	69	28	3103
TMA0509XD	5	±9	±55	267	75	32	2257
TMA0512XD	5	±12	±42	260	77	34	1579
TMA0515XD	5	±15	±33	256	78	36	1065
TMA1205XD	12	±5	±100	120	69	33	2193
TMA1209XD	12	±9	±55	113	74	46	1734
TMA1212XD	12	±12	±42	111	75	55	1303
TMA1215XD	12	±15	±33	110	76	54	932
TMA1505XD	15	±5	±100	91	71	39	1941
TMA1512XD	15	±12	±42	87	78	68	790
TMA1515XD	15	±15	±33	87	78	68	790
TMA2405XD	24	±5	±100	52	72	65	134
TMA2412XD	24	±12	±42	52	80	65	134
TMA2415XD	24	±15	±33	52	80	95	101

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	Continuous operation,5V input types	4.5	5	5.5	V
	Continuous operation,12V input types	10.8	12	13.2	
	Continuous operation,15V input types	13.5	15	16.5	
	Continuous operation,24V input types	21.6	24	26.4	
Reflected ripple current	5V&12V input types		1.6	2.0	mA p-p
	15V&24V input types		5	10.0	
Input current no load	5 Vin models		30		mA
	12 Vin models		12		
	15 Vin models		12		
	24 Vin models		7		
Input current full load	5 Vin models		260		
	12 Vin models		110		
	15 Vin models		100		
	24 Vin models		55		

ABSOLUTE MAXIMUM RATINGS

Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	550mW
Input voltage(1 sec.max.) 5VIN types	9V
Input voltage(1 sec.max.) 12VIN types	18V
Input voltage(1 sec.max.) 15VIN types	21V
Input voltage(1 sec.max.) 24VIN types	30V

1.Calculated using MIL-HDBK-217FN2 calculation model with nominal input voltage at full load.

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA=-40°C to 120°C	0.1		1	W
Voltage Set Point Accuracy	See tolerance envelope		±3		%
Line regulation	High VIN to low VIN		1.0	1.2	%%
Voltage balance	(dual output models)			±1	%
Ripple and noise	(20 MHz Bandwidth)			75	mV pk-pk
Short circuit protection	limited			1 sec.	
Regulation - Input variation	±1.2%/1% change Vin			± 10	%
Regulation	Load variation 20-100%				
Temperature coefficient			±0.02		%/℃
Capacitive load	Single output models			220	μF
Capacitive load	Dual output models			100	μF

TEMPERATURE CHARACTERISTICS

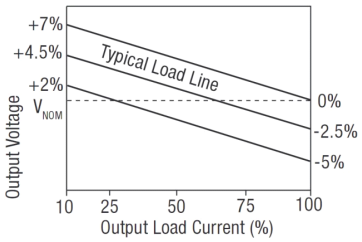
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output types	-40		85	℃
Storage	All output types	-40		105	
Case temperature	All output types			95	
Humidity (non condensing)	95 % rel H max.				
Reliability, calculated MTBF	(MIL-HDBK-217E) >2000000 h @ 25℃				
Isolation capacity	Input/Output		60		pF
Isolation resistance	Input/Output >1000 Mohm				
Switching frequency	(Frequency modulation)		100		kHz
Frequency change over line and load				±30	%

TEMPERATURE CHARACTERISTICS

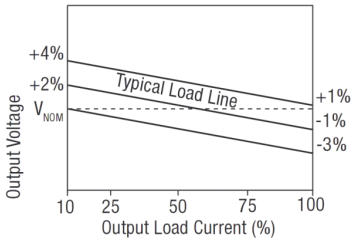
Parameter	Conditions
Package weight	Single output models 2.1 g (0.07 oz)
Package weight	Dual output models 2.6 g (0.09 oz)
Case material	non conductive black plastic(flammability to UL 94-V0)
Soldering temperature	max. 260℃ / 10 sec

TOLERANCE ENVELOPE

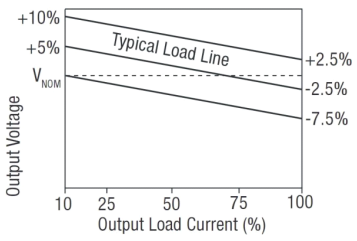
TMA2405



TMA1512,TMA1515,TMA2412,TMA2415



All other types

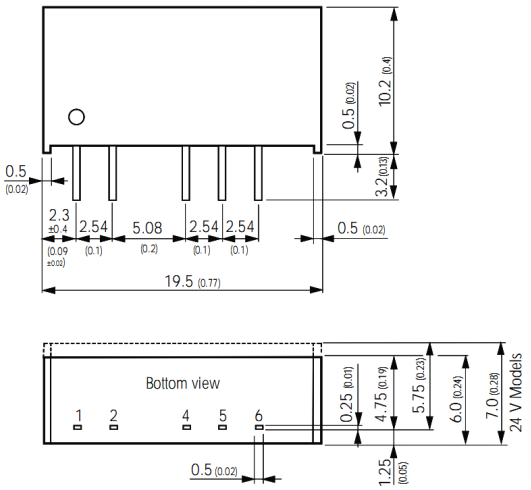


All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.Another 24V& 48V products, please inquire Our technical department!

PACKAGE SPECIFICATIONS

MECHANICAL DIMENSIONS

7 Pin SIP package



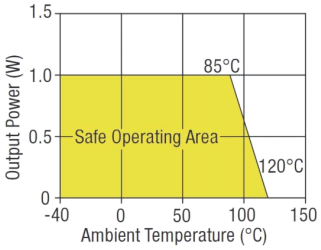
All dimensions in inches ±0.01(mm±0.25mm).

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

FOOTPRINT DETAILS

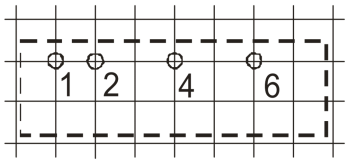
TMA-XS		TMA-XD	
Pin	Function	Pin	Function
1	+Vin(Vcc)	1	+Vin(Vcc)
2	-Vin(GND)	2	-Vin(GND)
4	-Vout	4	-Vout
5	No Pin	5	Common
6	+Vout	6	+Vout

TEMPERATURE DERATING GRAPHS



RECOMMENDED FOOTPRINT DETAILS

TMA-XS



All dimensions in inches ±0.01 (mm± 0.25mm).

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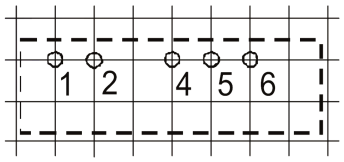
TMA-XD



All dimensions in inches ±0.01 (mm± 0.25mm).

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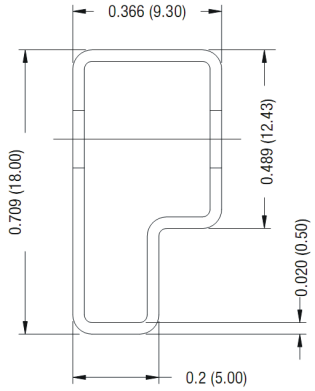
TUBE OUTLINE DIMENSIONS

7 PIN SIP Tube



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

Tube length (7 Pin SIP) : 20.47 (520mm ±2mm). Tube Quantity :25

MICRODC Professional Power Module

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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.