

FEATURES

- RoHS Compliant
- 2.5V & 3.3V Dual Output
- 2.3" x 1.5" x 0.5"
- 90% Efficiency
- Low Output Noise
- Input Filtering
- Remote On/Off, Input Side
- Output Voltage Trim, +/-10%
- Fixed Frequency Operation
- -40C° to +100C° Baseplate Temp.
- Output Current Limit, Self-Start
- 1,500 Vdc Isolation, Input to Output
UL/CUL 1950, EN60 950
- 36 to 75 Vdc Input Models
- Continuous Short Circuit Protection
- Non-latching Protection:
Input Undervoltage
Input Overvoltage
- Output Overvoltage
- Overtemperature
- Output Voltage Tracking at
Turn-on and Turn-off
- No Minimum Load Current

OBSOLETE PRODUCT



VSX60

VSX60-U



APPLICATIONS

- Distributed Power Architectures
- Workstations
- EDP Equipment
- Telecommunications

OPTIONS

- Choice of Remote On/Off logic Configuration
- Heatsink Available for Extended Operation

ADDITIONAL INFORMATION

See Application Note DCAN-40 at www.murata-ps.com

PRODUCT OVERVIEW

The VSX60 series are dual output converters having two input ranges, either 18-36V or 36-75V. The units' dual asymmetric output voltages are 5V and 3.3V. The converter features an industry-standard quarter-brick size (2.3" x 1.5" x 0.5") coupled with 90% efficiency.

These converters utilize Vx high density technology. This technology has been featured in our highly efficient VKP and VKA series now successfully in use worldwide.

The very high efficiency minimizes the requirement for heat-sinking and the low output ripple minimizes the need for additional filtering. For maximum flexibility, power can be traded between outputs as required. The VSX60 series feature virtually all of the options required by design engineers but not at the competition's typical additional price for each option. This multitude of features are standard on the VSX60 series.

Absolute Maximum Rating

Parameter	Symbol	Min	Max	Unit
Input Voltage:				
VSX60LD35C	Vi		100	Vdc
VSX60MD35C	Vi		75	Vdc
I/O Isolation Voltage			1500	Vdc
I/P to case			1500	Vdc
O/P to case			200	Vdc
Operating Case Temperature	T	-40	100	°C



INPUT	PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS
	Operating Input Voltage					
	VSX60LDC	V_i	18	24	36	VDC
	VSX60MDC	V_i	36	48	75	VDC
	Maximum Input Current ($V_i=0V$ to V_i max, $I_o=I_o$ max)					
	VSX60LDC	I_i max			5.0	A
	VSX60MDC	I_i max			2.25	
	I/P Reflected Ripple Current				400	mA p-p
	No Load Input Current	I_{iNL}		50		mA
	On/Off Activated Input Current	I_{iQ}		17		mA

OUTPUT	Under any conditions, the voltage of V1 will always be greater or equal to that of V2.					
	Output voltage (Note 1) Over all conditions of I/P voltage, load and temperature)					
	3.3 Vout (V2)	3.3 V_o	2.375	—	2.555	Vdc
	5.0 Vout (V1)	5.0 V_o	3.225	—	3.450	Vdc
	Output Voltage Setpoint ($V_i=48V$, $I_{o2}=9A$, $I_{o3}=6A$, $T_c=25^\circ C$)					
	3.3 (V2)	3.3 $V_{o,set}$	2.450		2.510	Vdc
	5.0 (V1)	5.0 $V_{o,set}$	3.310		3.390	Vdc
	Output Ripple and Noise Voltage (peak-to-peak, 100 MHz BW)					
	3.3 (V2)	—	—	—	60	mv p-p
	5.0 (V1)	—	—	—	80	mv p-p
	Output Current (Total module O/P power should not exceed 60 Watts)					
	3.3 (V2)	I_{o2}	—	—	15	A
	5.0 (V1)	I_{o1}	—	—	12	A
	Output Current Limit Inception ($V_o=95\%$ of V_o nom)					
	3.3 (V2)	$I_{o2,cli}$	19.0	21.0	23.0	A
	5.0 (V1)	$I_{o1,cli}$	12.5	13.5	15.0	A
	Output Short Ckt Current (Max impedance across short circuit = 65m Ω)		16	19	22	A
	3.3 V_o		16	19	22	A
	5.0 V_o		11	14	17	A
	Efficiency ($V_i=48V$, $I_{o3}=9A$, $I_{o5}=6A$, $T_c=70^\circ C$)	η	90	90	—	%
	Dynamic Response ($\Delta I_o/\Delta t=0.2A/\mu sec$, $V_i=48V$, $T_c=25^\circ C$, either O/P) Load change of 50% I_o max; at any operating load up to I_{omax} or P_{omax} Peak Deviation outside settling point	—	—	2	—	% V_o nom

NOTE: 1. Worst case voltage conditions occur with full load drawn from one output only, zero being drawn from the other.
For worst case voltages at less extreme loading conditions, consult the factory.

GENERAL	Isolation Specifications						
	Isolation Capacitance		—		1000	—	pF
	Isolation Resistance		—	10	—	—	MΩ
	Feature Specifications						
	Remote On/Off (open collector equivalent, signal referenced to -Vin terminal)						
	VSX60MD35C Preferred Logic (negative)						
	Logic Low - Module On						
	Logic High - Module Off						
	VSX60MD35-1C - Optional Logic (positive)						
	Logic Low - Module Off						
	Logic High - Module On						
	Logic Low: At Von/off = 0V		Von/off	0	—	50	Vdc
			Ion/off		—	200	μA
	Turn On Time (Vo within 1% of steady state)						
	From Application of Vin		—	—	7	10	mSecs
	From Remote On/Off Activation)		—	—	3	4	mSecs
	Input Undervoltage Lockout (Turn Off & Turn On Voltages Track)						
	Turn On		—	30	33	36	Vdc
	Turn Off		—	27	30	33	Vdc
	Input Overvoltage Lockout (Turn Off & Turn On Voltages Track)						
	Turn Off		—	76	80	84	Vdc
	Turn On		—	74.5	78.5	82.5	Vdc
	Output Overvoltage Set Point (Non-latching independent control loop)						
	2.5 Vo			2.7	2.9	3.2	Vdc
	3.3 Vo			3.6	3.9	4.2	Vdc
	Overtemperature Shutdown		Tc	105	115	125	°C
	Hysteresis				10		°C
	Weight						
	VSX60MD35C, VSX60MD35-1C				67		Grams
	VSX60MD35-UC, VSX60MD35-1UC						
	Output Trim						
	Tie Trim to +2.5 Vo for trim down		2.5 V2	—	-10	—	%
			3.3 V1	—	-10	—	%
	Tie Trim to O/P RTN for trim up		2.5 V2	—	10	—	%
			3.3 V1	—	10	—	%

THROUGH-HOLE SOLDERING INFORMATION

These devices are intended for wave soldering or manual soldering.

They are not intended to be subject to surface mount processes under any circumstances.

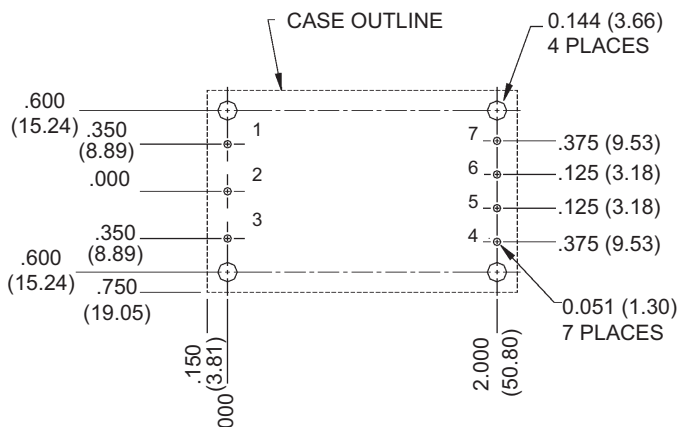
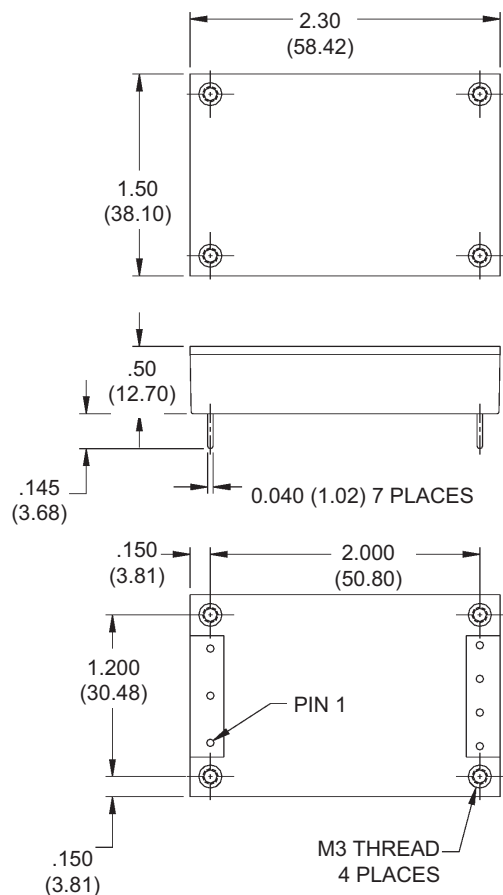
The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of 260°C for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and internal temperatures within the converter will not exceed 175°C. Care should be taken to control manual soldering limits identical to that of wave soldering.

MECHANICAL

Dimensions are in inches (millimeters).

Tolerances: x.xx in. ± 0.02 in.

x.xxx in. ± 0.01 in.



Pinout Key	
1	+Vin
2	On/Off
3	-Vin
4	+2.5 Vout
5	O/P RTN
6	Trim
7	+3.3 Vout

NOTES:

1. Marked with: specific model ordered, date code, job code.
2. MATERIAL: Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance and electrical properties in high humidity environments and over a wide operating temperature range. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is solder plated to allow ease of solderability.
3. IMPORTANT: When utilizing the PEM nuts for board mounting, it is required to follow guidelines in application note DCAN-41 available on the web at www.murata-ps.com.

ORDERING INFORMATION

To Find Model Number

Device Family VSX60 -1 U C
 VSX60MD35 (Quarter Brick, 60 Watt DC/DC)
 Logic: No Number = Preferred Logic (Negative);
 1 = Optional Logic (Positive)
 Package U
 No Letter = Encapsulated; U = Unencapsulated
 RoHS Compliant C

Model Numbers

VSX60MD35C
VSX60MD35-UC
VSX60MD35-1C
VSX60LD35C