

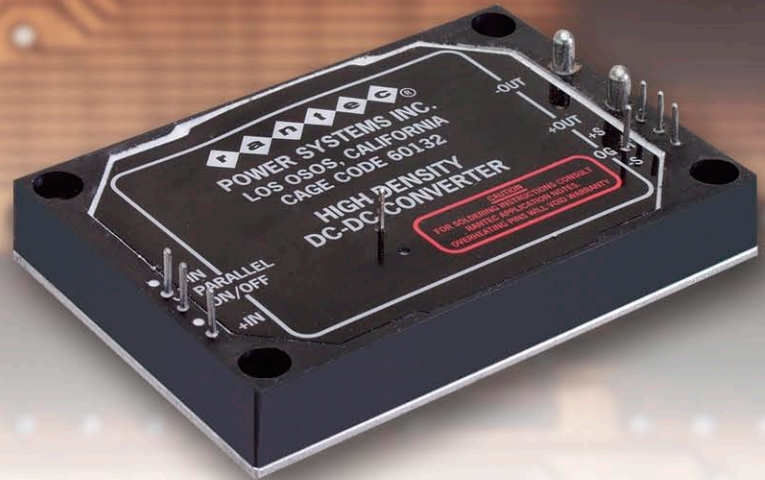
# Power Solutions for Today's Military

Power Systems from **COTS+** Building Blocks

## HDM+

Single Output Series  
270V Input DC-DC Converter

- ◆ 325W output
- ◆ High density 78W/in<sup>3</sup>
- ◆ Fixed frequency operation
- ◆ Parallel with current sharing
- ◆ Output good signal
- ◆ External synchronization capability (optional)
- ◆ Logic On/Off
- ◆ Ruggedized, meets MIL-STD-810C-F
- ◆ Wide operating temperature -55°C to +95°C
- ◆ No aluminum electrolytic capacitors
- ◆ Custom outputs available
- ◆ Consult Rantec for your unique requirements



Rantec's HDM series is the basic building block used to develop performance based "Power System Solutions" in today's military environment. Its compact size and high performance make it an ideal element for a distributed power system. Modules can also be configured in series or parallel combinations to develop custom solutions. Using fixed frequency switching technology, HDM series converters incorporate power MOSFETs, planar magnetics, and surface mount technology onto a metal clad PC board. The forward converter topology employs fewer components, which translates into enhanced reliability.

### SINGLE OUTPUT SERIES MODELS (325W MAX)

3.3V@60A	3.7V@60A	5V@50A	8V@40A	9V@36A	12V@27A	15V@22A	24V@14A	28V@12A	100V@3A
HDM-3S5-3.3-01-	HDM-3S5-3.7-01	HDM-3S5-5-01	HDM-3S5-8-01	HDM-3S5-9-01	HDM-3S5-12-01	HDM-3S5-15-01	HDM-3S5-24-01	HDM-3S5-28-01	HDM-3S5-100-01

*The System Designer's Choice*



**Rantec Power Systems Inc.**

**Rantec Power Team Engineers Offer Technical Assistance to:**  
Evaluate Power System Requirements  
Develop Power System Architecture  
Reduce Time to Market

# HDM+

## Single Output Series

### 270V Input DC-DC Converter

INPUT					
	MIN	TYP	MAX	UNITS	COMMENTS
Voltage	220	270	400	VDC	
Turn on time		250	500	mS	From Power Applied
		40	150	mS	From Enable
Switching Frequency		300		KHz	Fixed
ISOLATION					
Input-Output	10M $\Omega$ minimum @ 1000VDC				
Input-Case					
Output-Case	10M $\Omega$ minimum @ 50VDC				

OUTPUT					
	MIN	TYP	MAX	UNIT	COMMENTS
Set Point		0.5	1.0	$\pm$ %	Full Load
Trim Adjust	10			$\pm$ %	See HDMA-104*
Regulation - Line & Load		0.5	1.0	%	Combined
Dynamic Load			5	$\pm$ %	Deviation from steady state regulation (20-80%, 0.1A/ $\mu$ S Step) 250 $\mu$ S Recovery time to steady state range
Ripple		1.0	2.0	% p-p	20MHz BW
Turn on Overshoot			5	%	
Remote Sense Compensation			10	%	
Temp Coefficient			0.02	%/ $^{\circ}$ C	
Shutdown Control					Open collector compatible, referenced to -In. Low turns unit off, open turns unit on. Consult factory for more information.

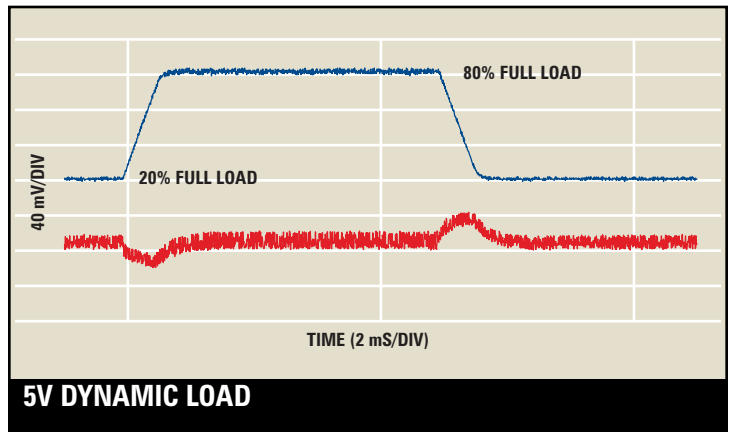
OUTPUT PROTECTION					
Overvoltage	115	120	-	%	Non-Shutdown
Overcurrent	-	120	-	%	Auto Recovery
Auto Temp Shutdown	100	-	-	$^{\circ}$ C	Auto Recovery

OUTPUT STATUS					
Output Good Signal	-	10	-	$\pm$ %	Active Low

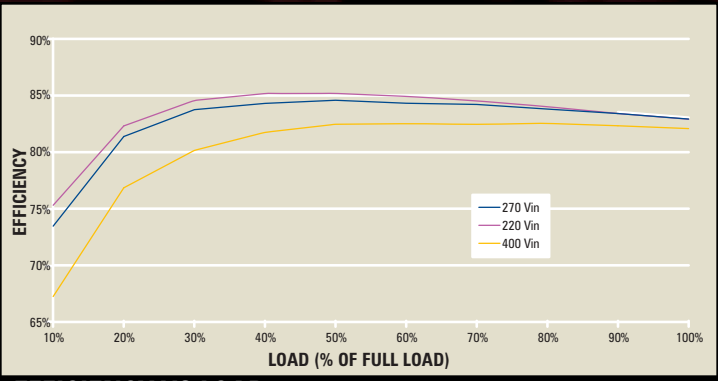
FREQUENCY SYNC					
Frequency	330	350	370	KHz	See HDMA-102*
Width	50	100	150	nS	
Amplitude	1.0	1.5	2.0	V	

MECHANICAL	
I/O Connection	Wave solderable or inserted into mated sockets
Weight	7 oz. max.
Construction	Fully encapsulated
ENVIRONMENTAL	
Cooling	Conductively cooled +95 $^{\circ}$ C max
Operating Temperature	-55 $^{\circ}$ C to +95 $^{\circ}$ C, baseplate
Storage Temperature	-55 $^{\circ}$ C to +125 $^{\circ}$ C
Humidity	MIL-STD-810C, Method 507.1, Proc. IV MIL-STD-810F, Method 507.4
Altitude	up to 70,000 ft
Shock	MIL-S-901C-D, Grade A, Type A, Class 1 High Impact Shock
Vibration	MIL-E-5400T, Curve IVa, 5Hz to 2KHz
Salt Fog	MIL-STD-810C, Method 509.1, Proc. I MIL-STD-810F, Method 509.4
MTBF	1,300,000 hours @ 55 $^{\circ}$ C baseplate (demonstrated, ground benign)
*Consult factory for application notes (also available online at <a href="http://www.rantec.com">www.rantec.com</a> )	

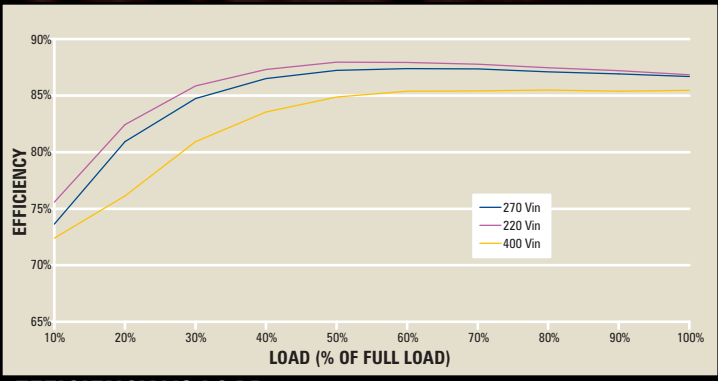
POWER			EFFICIENCY %			
VDC	AMPS	MAX. WATTS	150W	200W	250W	300W
3.3	60	198	73	75	—	—
3.7	60	222	73	75	—	—
5	50	250	85	84	83	—
8	40	320	86	85	84	83
9	36	324	86	86	85	84
12/15	27/22	330	86	87	87	86
24/28	14/12	336	88	87	87	86
100	3.0	300	89	90	89	88



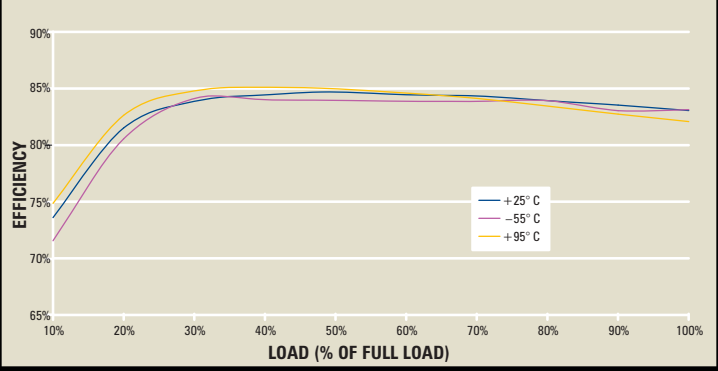
*The System Designer's Choice*



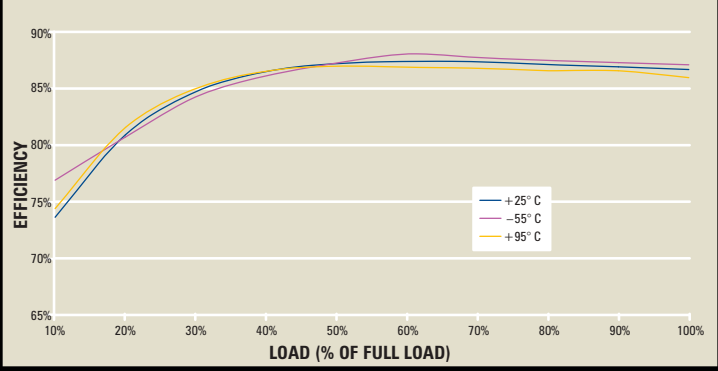
**EFFICIENCY VS LOAD**  
5V / 50A HDM+ @ 25°C



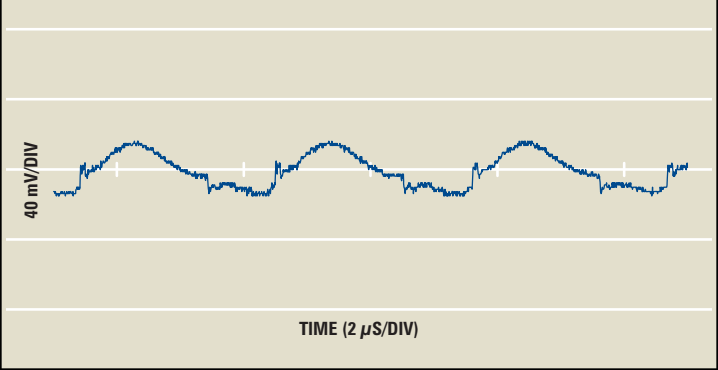
**EFFICIENCY VS LOAD**  
12V / 27A HDM+ @ 25°C



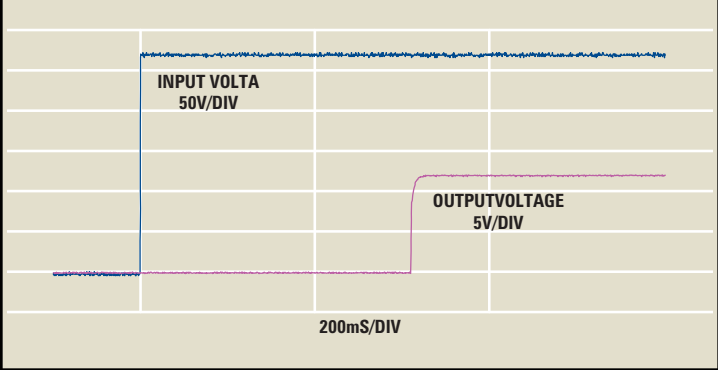
**EFFICIENCY VS TEMPERATURE @ NOMINAL LINE**  
5V HDM+



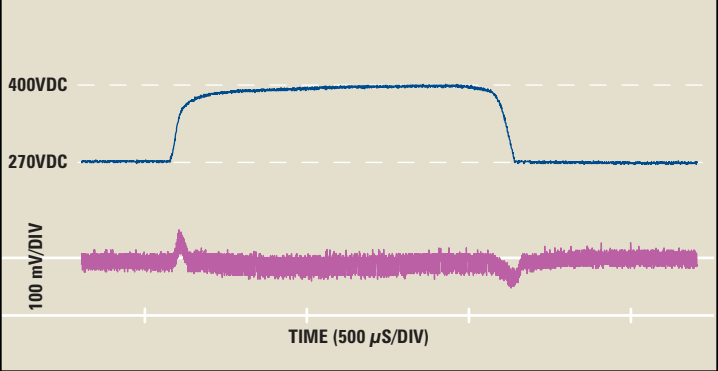
**EFFICIENCY VS TEMPERATURE @ NOMINAL LINE**  
12V HDM+



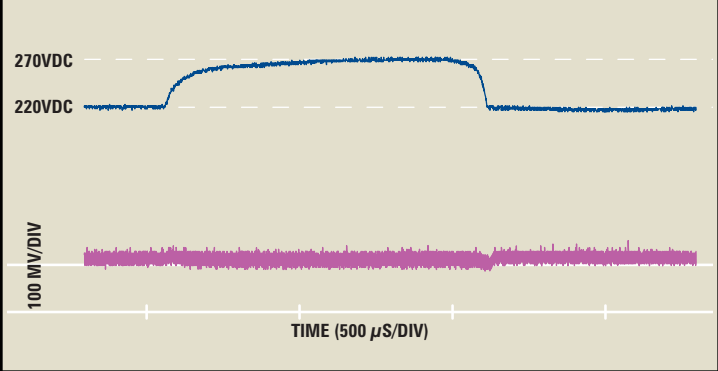
**5V HDM+ RIPPLE**



**5V HDM+ TURN-ON TIME FROM APPLIED VOLTAGE**



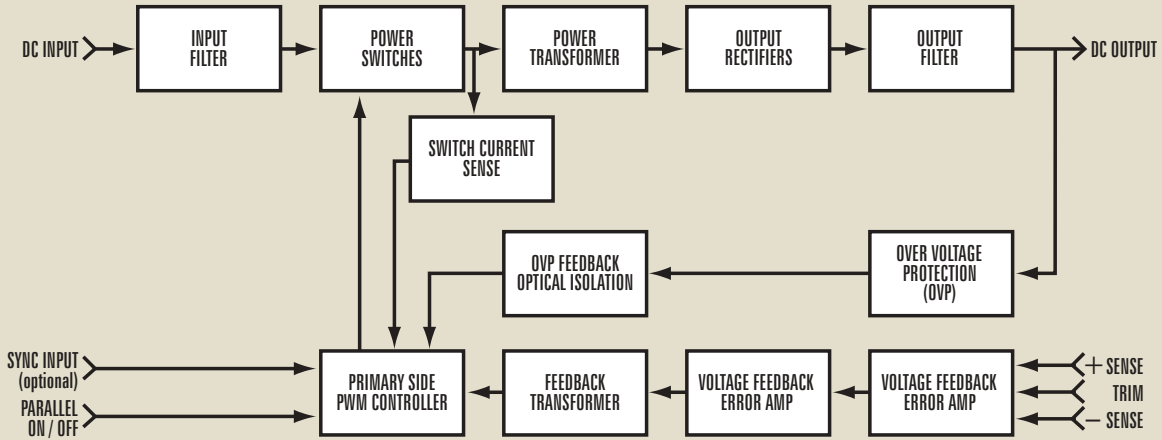
**5V HDM+ LINE TRANSIENT**  
Nominal Line To High Line



**5V HDM+ LINE TRANSIENT**  
Low Line to Nominal Line

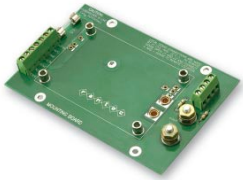
# HDM+

Single Output Series  
270V Input DC-DC Converter



**FUNCTIONAL BLOCK DIAGRAM**

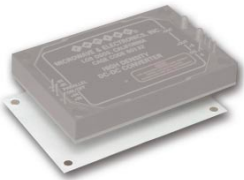
## HDM ACCESSORIES



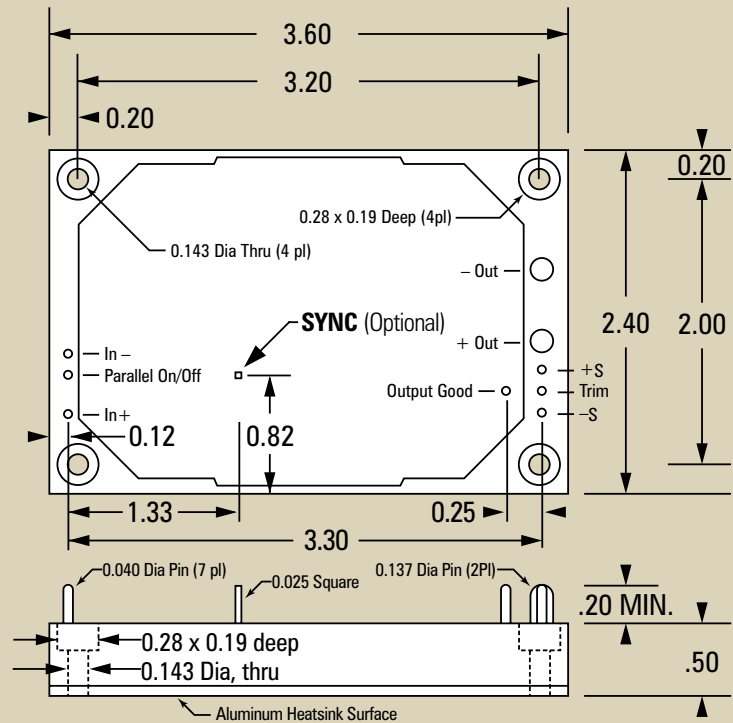
**HDM-MB**  
Mounting Board  
for Evaluation &  
Prototypes



**HDM-SK**  
Socket Kit



**HDM-TI**  
Thermal Interface



## OUTLINE & MOUNTING DIAGRAM

Dimensions in inches, for reference only

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