

Wall Industries, Inc.

---

## MPQ48S5-100R

---

100 W DC-DC Converter  
36-75 Vdc Input  
5 Vdc Output at 20 A  
Quarter-Brick Package

---



### Features:

- **Over 88% Efficient at Full Load**
- **Fast Transient Response**
- **Operation to No Load**
- **Output Trim +/-10%**
- **Remote ON/OFF (Active Low)**
- **Remote Sense Compensation**
- **Low Output Ripple**
- **Fixed Switching Frequency**
- **Output Over Current Protection**
- **Output Short Circuit Protection**
- **Over Temperature Protection**
- **1500 V Isolation**
- **100% Burn In**
- **Heatsink Available**

### Description:

The MPQ series is a high density, low voltage input quarter brick converter that incorporates the desired features required in today's demanding applications while maintaining low cost. When performance, reliability, and low cost are needed, the MPQ series delivers.

Technical Specifications		Model No.		MPQ48S5-100R			
All specifications are based on 25C, Nominal Line and Full Load unless otherwise noted. We reserve the right to change specifications based on technological advances.							
SPECIFICATION	Related condition			MIN	NOM	MAX	Unit Measured
<b>INPUT</b>							
Turn on at					35		Volt DC
Turn off at					34		Volt DC
Input Over voltage Shutdown							
Turn off at					n/a		Volt DC
Turn on at					n/a		Volt DC
Operating Voltage Range	Rated Input Voltage			36	48	75	Volt DC
Maximum Input Current	Low Line 100% load				3		A
No Load Input Current					94		mA
Input Current under "LOGIC OFF"					1		mA
Inrush Current Transient Rating					1		A <sup>2</sup> Sec
Reflected Ripple Current	12uH / 33 uF input filter				6		mA
<b>OUTPUT</b>							
Output Voltage Set point				4.95	5	5.05	Volt DC
Output Voltage Regulation							
Over Load					± 0.2		%
Over Line					± 0.2		%
Over Temperature					0.02		% / °C
Output Voltage Ripple and Noise							
Basic Ripple					70	150	mV
Spikes P-P					100	150	mV
Output Current Ranges	Rated Output Current			0		20	A
Output Current Limit	Self Resetting			22	26	30	A
Short Term Output Current Surge							A/sec
<b>DYNAMIC CHARACTERISTICS</b>							
Input Voltage Ripple Rejection	120 Hz				60		dB
Output Transient and Load Changes							
Load step / Δ V	X	50 to 75%	50 to 100%		130		mV
Load step / Δ V	X	75 to 50%	100 to 50 %		90		mV
Recovery Time	To within 1% Rated Vo				50		μsec
Turn on Delay	From Vin(nom) to 90% Vout (nom)				25		msec
Overshoot of Output Voltage	Full Load Resistive				0		%
<b>EFFICIENCY</b>							
@ 100% load					91		%
@ 75% load					92		%
@ 50% load					92		%
@ 25% load					87		%
<b>TEMPERATURE CONSIDERATIONS</b>							
Thermal Resistance							
Normal Convection	R0c-a						°C/Watt
100 lfm							°C/Watt
200 lfm							°C/Watt
300 lfm							°C/Watt
400 lfm							°C/Watt
Heatsink Considerations	Available, Contact Factory						
<b>General Technical Data</b>							
Switching Frequency	Fixed				330		KHz
Remote ON OFF Control	Active HIGH or LOW						High/Low TTL
Trimmability				4.5		5.5	Volt DC
Over Temperature Shutdown	PCB Temperature					125	°C
<b>MTBF</b>							
	Bellcore TR-332				1.81 E6		Hours

Note: Positive Remote ON/OFF control is standard. To order negative logic Remote ON/OFF control add the suffix "R" to the part number.

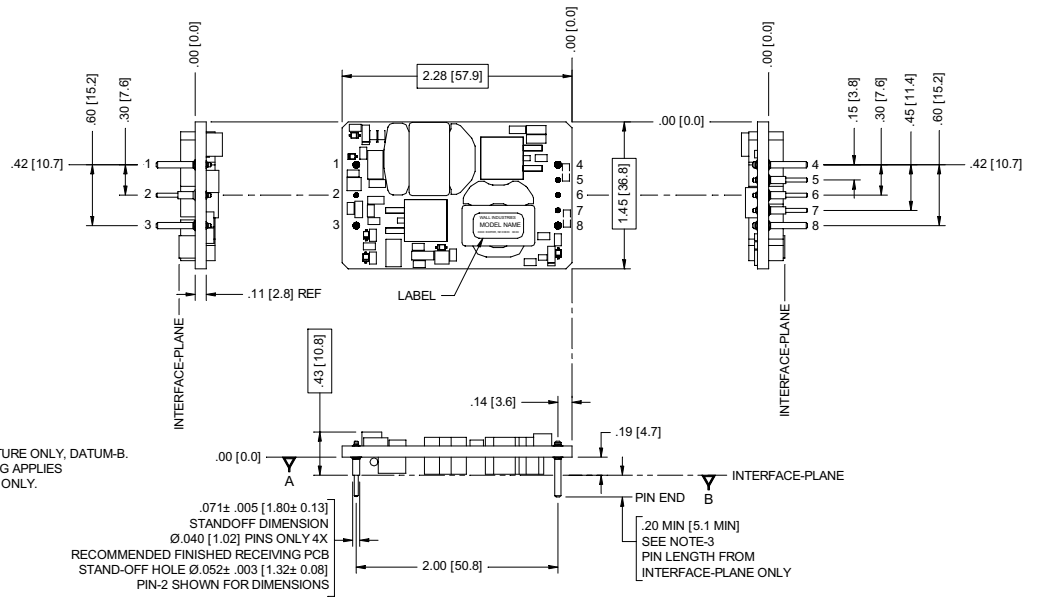
Table 1: Pin Assignments

Pin #	Pin Name	Function	Comments
1	+Vin	Positive Input	
2	Enable	Remote On/Off	If not used, leave open for standard unit, short to -Vin on 'R' units.
3	-Vin	Negative Input	
4	+Vout	Negative Output	
5	+SENSE	Negative Remote Sense	If not used, short to -Vo.
6	TRIM	Output Voltage Trim	If not used, leave open.
7	-SENSE	Positive Remote Sense	If not used, short to +Vo.
8	-Vout	Positive Output	

Figure 1: Mechanical Dimensions

Unit: inches [mm]

(Open Frame - no suffix)



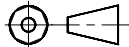
PIN DESIGNATION	PIN Ø
1 +Vin	Ø.062 [1.57]
2 ON/OFF	Ø.040 [1.02]
3 -Vin	Ø.062 [1.57]
4 +Vout	Ø.062 [1.57]
5 +SENSE	Ø.040 [1.02]
6 TRIM	Ø.040 [1.02]
7 -SENSE	Ø.040 [1.02]
8 -Vout	Ø.062 [1.57]

NOTES:

- PIN TO PIN TOLERANCE: ± .010 [± 0.25] MEASURED AT STANDOFF FEATURE ONLY, DATUM-B.
- PIN DIAMETER TOLERANCE OF: ± .005 [± 0.13] MEASUREMENT READING APPLIES TO AREA FROM INTERFACE-PLANE SURFACE DATUM-B TO END OF PIN ONLY.
- UNLESS OTHERWISE SPECIFIED.

UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE IN INCHES  
[XX] ARE IN MILLIMETERS  
APPLIED TOLERANCES:  
ANGLES: ± 1°  
.XX± .02 [0.5] XXX± .01 [0.25]  
DO NOT SCALE DRAWING  
INTERPRET DIMENSION AND TOLERANCE  
PER ASME Y14.5M - 1994

THIRD ANGLE PROJECTION

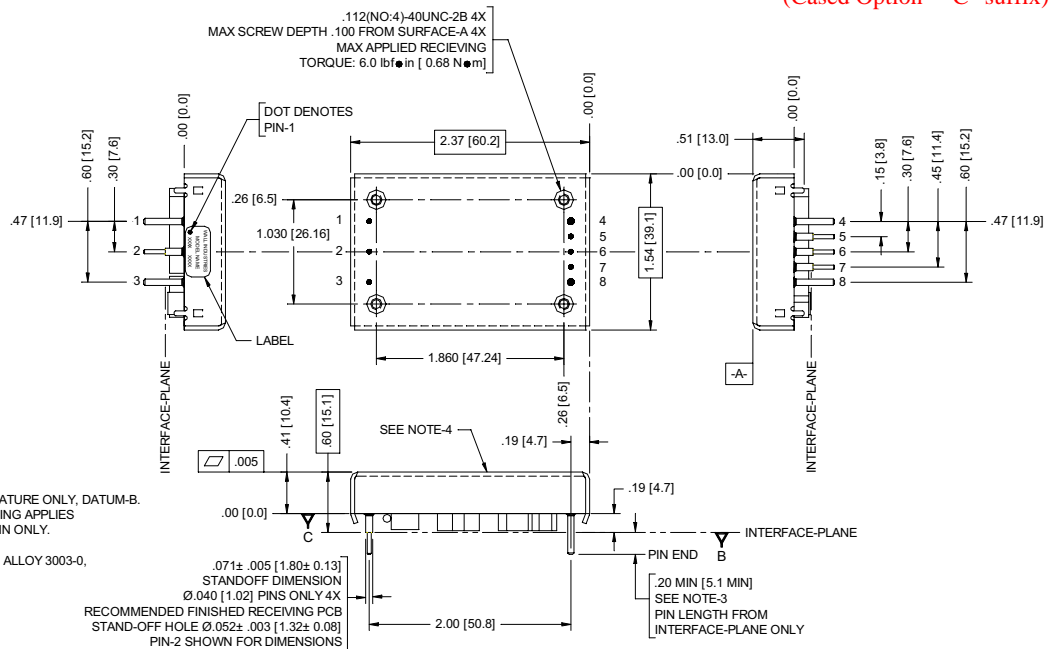


PIN DESIGNATION	PIN Ø
1 +Vin	Ø.062 [1.57]
2 ON/OFF	Ø.040 [1.02]
3 -Vin	Ø.062 [1.57]
4 +Vout	Ø.062 [1.57]
5 +SENSE	Ø.040 [1.02]
6 TRIM	Ø.040 [1.02]
7 -SENSE	Ø.040 [1.02]
8 -Vout	Ø.062 [1.57]

NOTES:

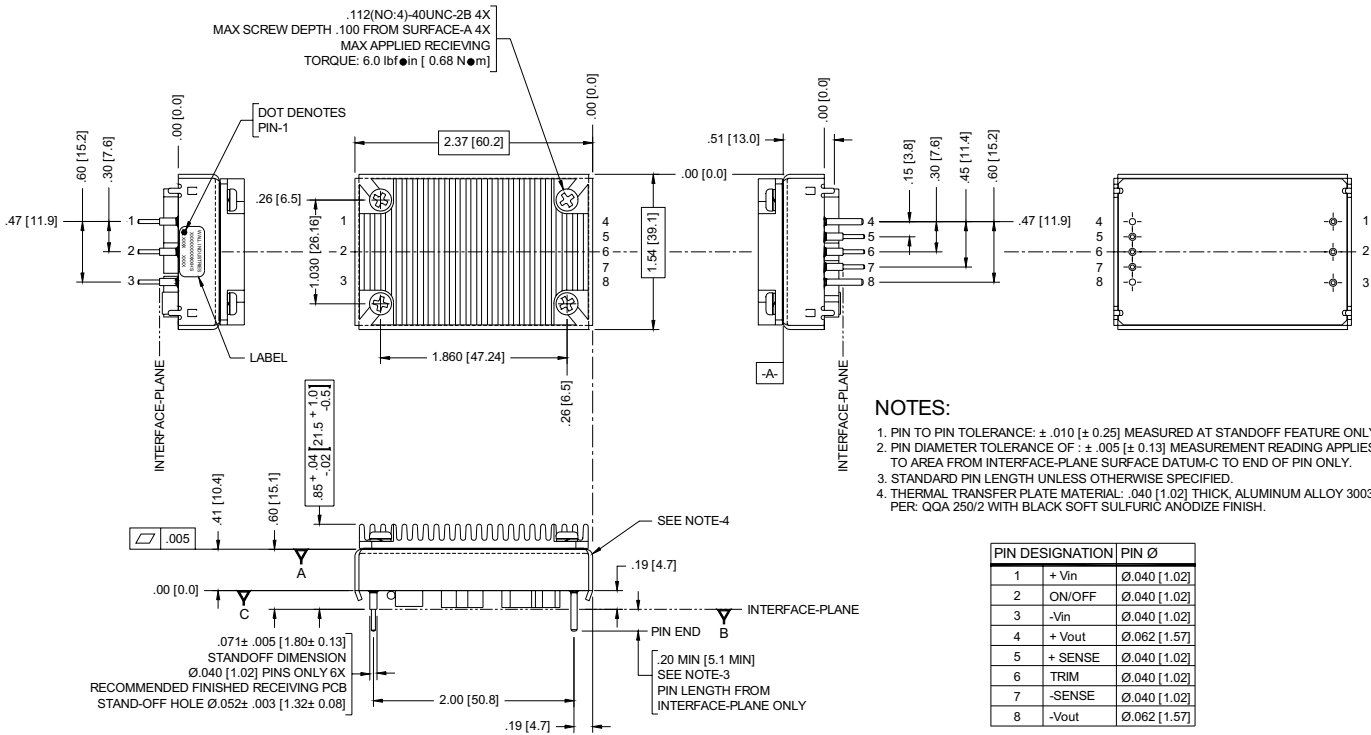
- PIN TO PIN TOLERANCE: ± .010 [± 0.25] MEASURED AT STANDOFF FEATURE ONLY, DATUM-B.
- PIN DIAMETER TOLERANCE OF: ± .005 [± 0.13] MEASUREMENT READING APPLIES TO AREA FROM INTERFACE-PLANE SURFACE DATUM-C TO END OF PIN ONLY.
- UNLESS OTHERWISE SPECIFIED.
- THERMAL TRANSFER PLATE MATERIAL: .040 [1.02] THICK, ALUMINUM ALLOY 3003-0, PER: QQA 250/2 WITH BLACK SOFT SULFURIC ANODIZE FINISH.

(Cased Option - "C" suffix)

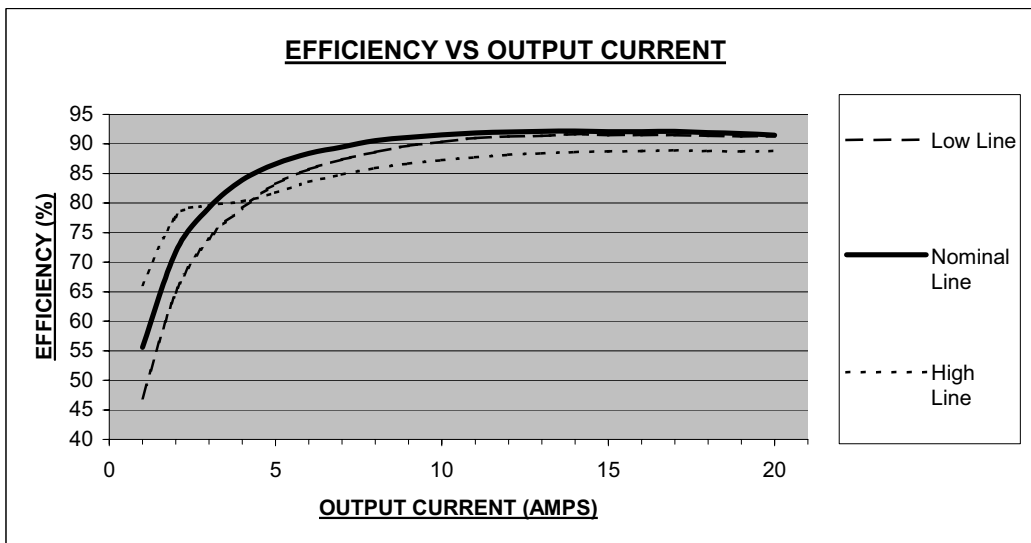
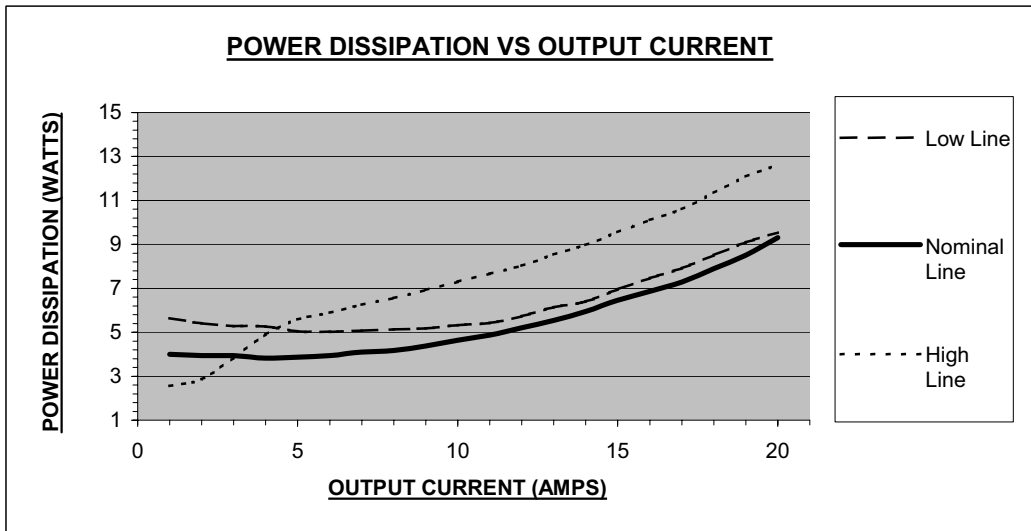
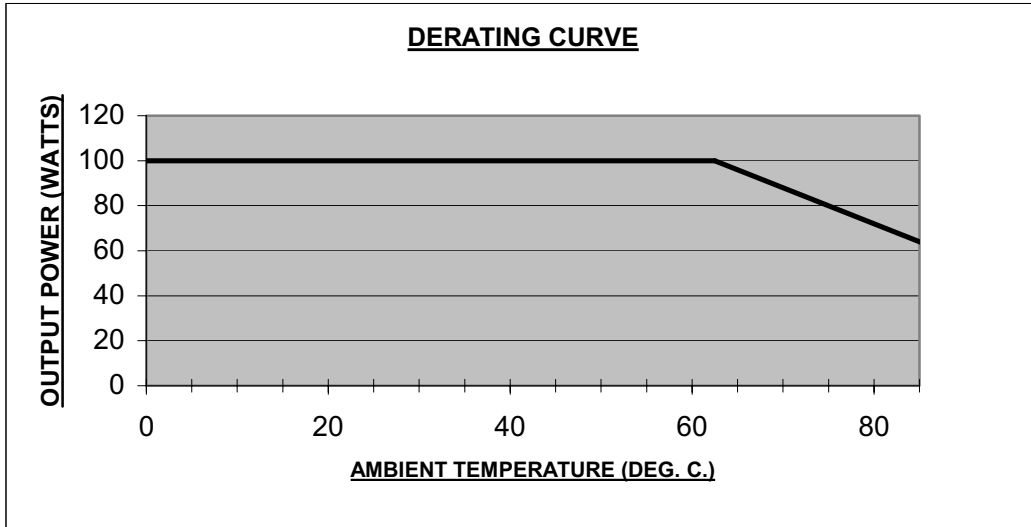


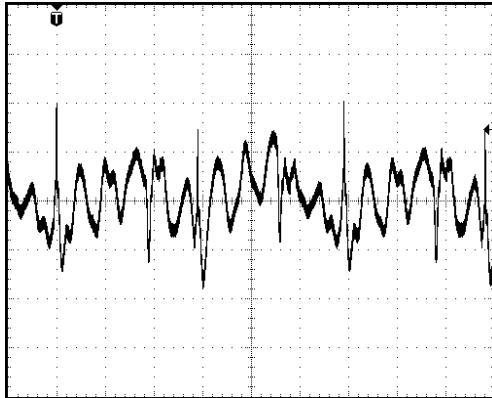
### Mechanical Dimensions (Heatsink Option - "HS" suffix)

Unit: inches [mm]

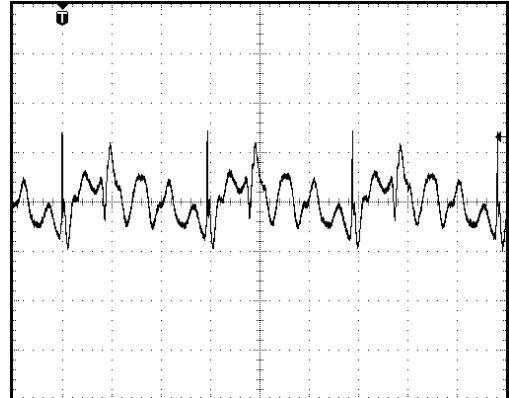


PIN DESIGNATION	PIN Ø
1 +Vin	Ø.040 [1.02]
2 ON/OFF	Ø.040 [1.02]
3 -Vin	Ø.040 [1.02]
4 +Vout	Ø.062 [1.57]
5 +SENSE	Ø.040 [1.02]
6 TRIM	Ø.040 [1.02]
7 -SENSE	Ø.040 [1.02]
8 -Vout	Ø.062 [1.57]

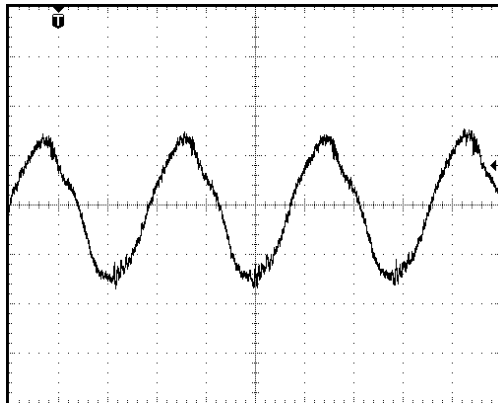




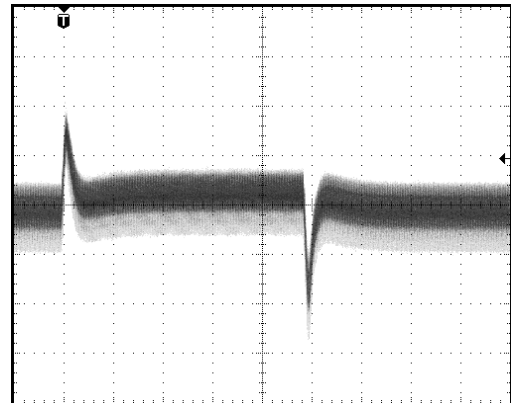
TYPICAL OUTPUT RIPPLE  
20mV/div, 1uS/div, full load, 36Vin  
10uF // 0.1uF decoupling caps room temp



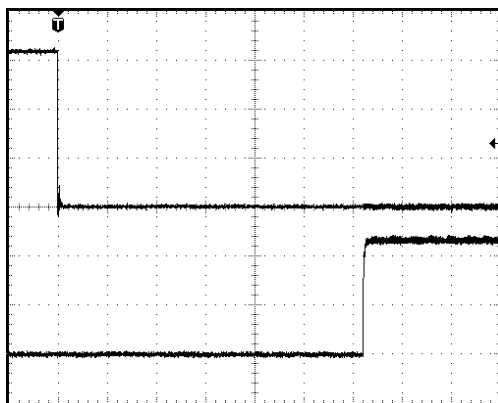
TYPICAL OUTPUT RIPPLE  
50mV/div, 1uS/div, full load 75Vin  
10uF // 0.1uF decoupling cap room temp



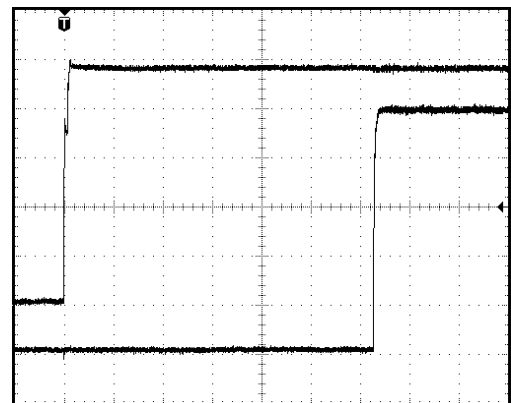
TYPICAL INPUT RIPPLE CURRENT  
2mA/div, 1uS/div, full load 48Vin at  
room temp with a 12 uH / 33 uF input filter



TYPICAL TRANSIENT RESPONSE  
50mV/div, 200uS/div, 50% full load  
to 100% full load 48Vin room temp



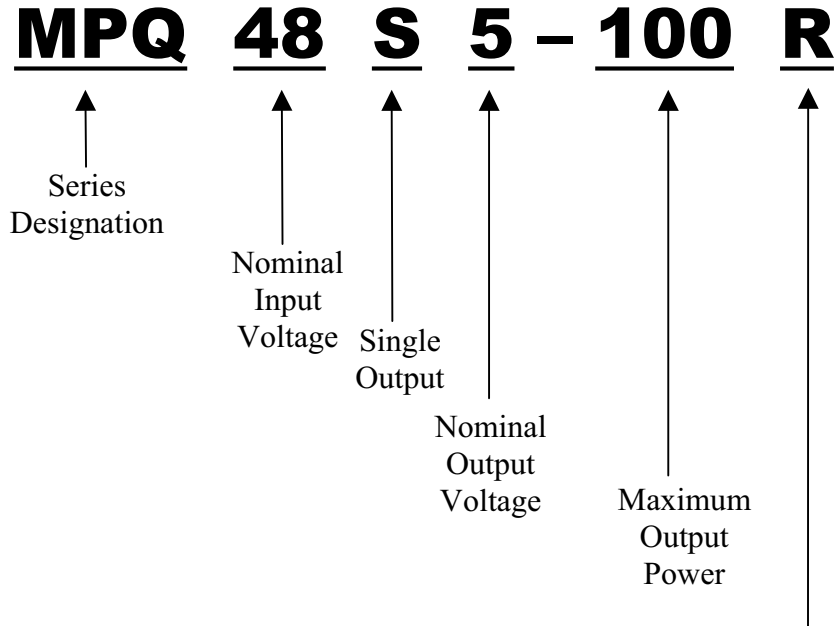
TYPICAL RISE TIME & TURN-ON DELAY  
USING LOGIC ENABLE  
2V/div, 4mS/div (Vout), 1V/div 4mS/div (logic  
enable) 36Vin, full load at room temp



TYPICAL RISE TIME & TURN-ON DELAY  
WITH Vin 0-48V  
1V/div, 4mS/div (Vout), 10V/div, 4mS/div (Vin)  
at room temp

### Ordering Information:

Part Number Example:



Options	
	Leave Blank for no Options
R	Active Low
C	Case
HS	Heatsink

### Company Information:

Wall Industries, Inc. has created custom and modified units for over 40 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2000 certification is just one example of our commitment to producing a high quality, well documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

Phone: ☎ (603)778-2300  
Toll Free: ☎ (888)587-9255  
Fax: ☎ (603)778-9797  
E-mail: [sales@wallindustries.com](mailto:sales@wallindustries.com)  
Web: [www.wallindustries.com](http://www.wallindustries.com)  
Address: 5 Watson Brook Rd.  
Exeter, NH 03833