OBSOLETE PRODUCT
Contact factory for replacement model

Murata Power Solutions

WPA50

50 Watt Single Output Eighth Brick DC/DC Converter

- Industry Standard Footprint & Size - 2.3" x 0.9" x 0.35" (58.42mm x 22.86mm x 9.0mm)
- High Efficiency - Up To 91%
- Wide Input Voltage Range: 36 – 75VDC with 100V100mS Input Voltage Transient Protection
- Output Voltages: 1.2 V, 1.5V, 1.8V, 2.2V, 2.5V, 3.3V & 5.0V
- Output Trim Function with Industry Standard Equations
- Remote Output Sense
- Remote ON/OFF (Positive or Negative Logic)
- Output Overvoltage Protection
- Output Overcurrent Protection - Hiccup Mode
- Input Side "L" Filter
- No Minimum Load Required
- No Heatsinks
- Low Profile and Low Weight
- Thermal Shutdown
- Remote On/Off Control
- Isolation Voltage of 1500 VDC
- Soft Start
- High Reliability
- Fixed Frequency Operation
- Safety per UL/CUL 60950, EN 60950, Operational Insulation Meets TNV-SELV Isolation Requirements
- Meets Conducted Emissions Requirements of FCC Class B and EN55022 Class B

The WPA50 Series is a 50 Watt single output, low-profile DC-DC converter in an industry standard package of 2.3" x 0.9" x 0.35" (58.42mm x 22.86mm x 9.0mm). The WPA50 uses unique proprietary technologies to deliver ultra-high efficiencies and excellent thermal performance. It includes extensive control and protection features for maximum flexibility and provides a versatile solution for a whole range of applications with its input voltage range of 36-75 VDC and output voltages between 1.2VDC and 5.0VDC.

The power dissipation of the WPA50 series is so low that a heat sink is not required. The product features fast dynamic response characteristics and low output ripple critical for low voltage applications. WPA DC-DC converter modules are certified to UL/CUL 60950, and VDE to EN60950. It meets CISPR22/EN55022/FCC15J Class B specs for EMI levels with external filtering.

This high quality and highly reliable product is competitively priced and an ideal solution for distributed power, telecoms and datacom applications.

PRODUCT SELECTION CHART

MODEL	NOMINAL INPUT VOLTAGE (VDC)	RATED OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT MIN LOAD(A)	OUTPUT CURRENT RATED OUTPUT (A)	INPUT CURRENT RATED LOAD (A)	EFFICIENCY (%) MIN
WPA50R48S012	48	1.2	0.0	18	0.65	71
WPA50R48S015	48	1.5	0.0	18	0.72	79
WPA50R48S018	48	1.8	0.0	18	0.82	83
WPA50R48S022	48	2.2	0.0	18	0.99	84
WPA50R48S025	48	2.5	0.0	18	1.11	85
WPA50R48S033	48	3.3	0.0	15	1.20	89
WPA50R48S050	48	5.0	0.0	10	1.18	90

ABSOLUTE MAXIMUM RATINGS

Output Short-Circuit Duration	Continuous
Internal Power Dissipation	As low as 5 Watts
Lead Temperature (soldering, 10 seconds max)	+300°C
Continuous Input Voltage	75 VDC
Storage Temperature	+125°C
Input to Output Isolation	1500 VDC

SPECIFICATIONS, ALL MODELS

Specifications are at T_A = +25°C, Airflow = 300LFM (1.5m/s) at nominal input voltage unless otherwise specified.

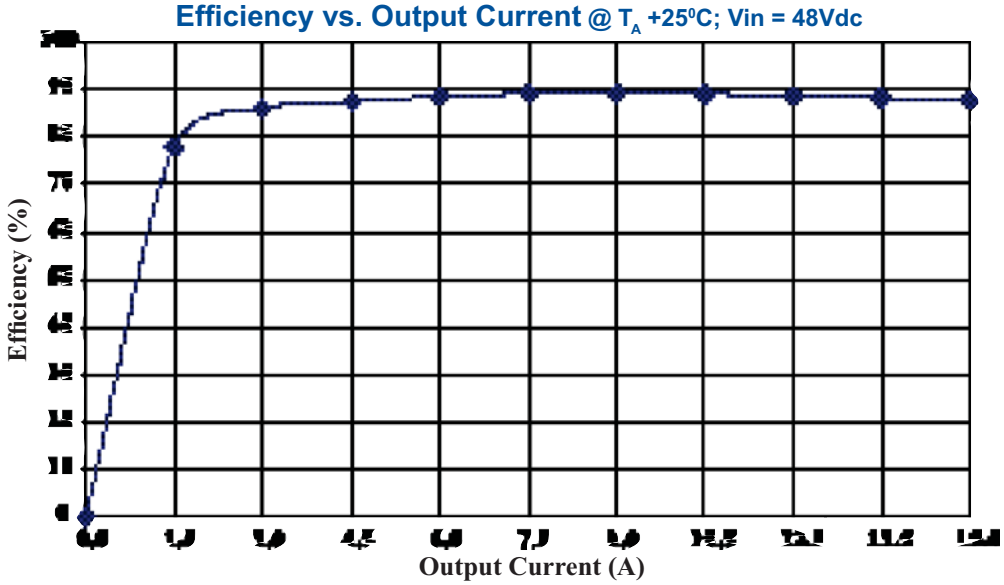
	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT	**INPUT**					
	Voltage Range	Vin = 48V, Io=I Rated	36	48	75	VDC
	Reflected Ripple Current	Vin = 48V, Io=I Rated		420	550	mApk-pk
	Transient Withstand (Susceptibility)	100ms			100	V
	Inrush Charge			42		mC
	Maximum Input Current	Vin=36V				
	1.2 Vout			0.75		A
	1.5 Vout			0.925		A
	1.8 Vout			1.10		A
	2.2 Vout			1.31		A
	2.5 Vout			1.5		A
	3.3 Vout			1.6		A
	5.0 Vout			1.55		A
	INPUT CONTROL					
	Temperature Shutdown				115	°C
	Temperature Hysteresis				5	°C
	Quiescent Standby Current	Vin = 48V		3	4	mA
	Power Dissipation	No Load, Remote On/Off Disabled, Vin = 48Vdc			300	mW
	Undervoltage Shutdown		31.50	32.5	35.0	V
	Undervoltage Hysteresis		0.50	2	3.00	V
OUTPUT	**ISOLATION**					
	Input/Output Isolation Voltage			1500	2250	VDC
	Resistance			10		MW
	Capacitance			1.5		nF
	Leakage Current	240 Vrms, 50Hz		100		mA
	OUTPUT					
	Rated Power	WPA50R48S012		22		W
		WPA50R48S015		27		W
		WPA50R48S018		33		W
		WPA50R48S022		40		W
		WPA50R48S025		45		W
		WPA50R48S033		50		W
		WPA50R48S050		50		W
	Voltage Setpoint Accuracy			1.0	1.5	% of VNOM
	Output Voltage Trim Range	WPA50R48S012	1.08		1.32	V
		WPA50R48S015	1.35		1.65	V
		WPA50R48S018	1.62		1.98	V
		WPA50R48S022	1.98		2.42	V
		WPA50R48S025	2.25		2.75	V
		WPA50R48S033	3.00		3.63	V
		WPA50R48S050	4.50		5.50	V
	Temperature Coefficient			±0.002	±0.005	%/°C
	Output Voltage Regulation					
	Line Regulation	Vin = 36V - 75V, Iout = Max		0.1	0.2	%
	Load Regulation	Vin = 48V, Iout = 0-Max		0.1	0.2	%
	Ripple & Noise (NOTE 1)	Vin = 48V, ≤ 20Mhz bandwidth			75	mVp-p
	Transient Response	Step change in output current (50%-100% Step @ 1A/mS)				
	1.2 Vout	Vin = 48V		100		mV
	5.0 Vout	Vin = 48V		100		mV
	Turn-On Time	Vin = 48V		200	500	mS
	Remote Sense Compensation				10	%
	Overcurrent Protection	Vin = 48V	105		140	%
	GENERAL					
	Switching Frequency		380	400	420	KHz
	MTTF per ML-HDBK-217 Ground Benign	Circuit Stress Method TA = +25°		TBD		Hrs

NOTE 1: Measured at 20 MHz bandwidth across a 6mf multi layer ceramic capacitor located approximately 1" from output terminals.

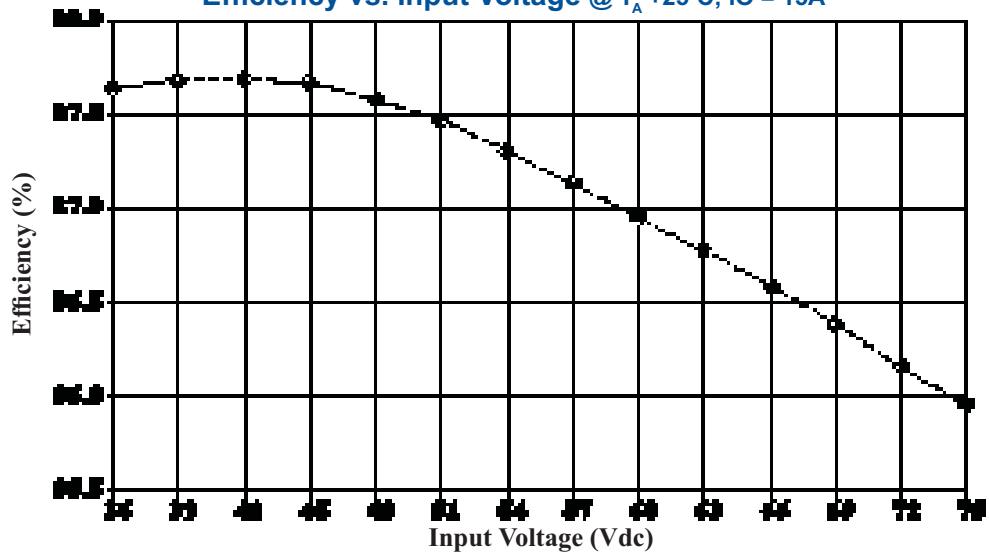
PERFORMANCE CURVES: MODEL WPA50R48033

MODEL WPA50R48033

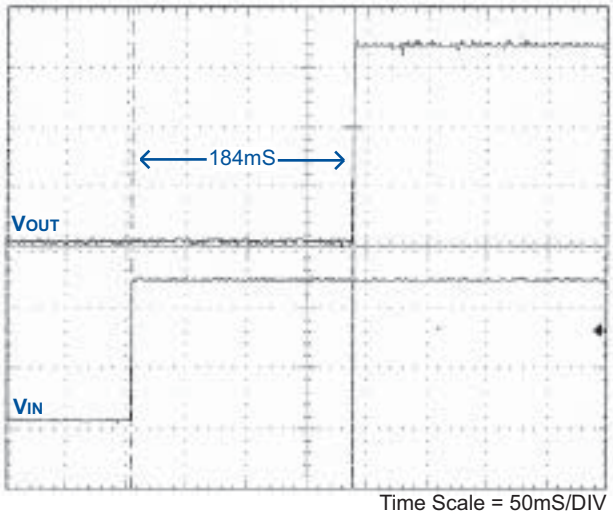
Efficiency vs. Output Current @ T_A +25°C; Vin = 48Vdc



Efficiency vs. Input Voltage @ T_A +25°C; IO = 15A

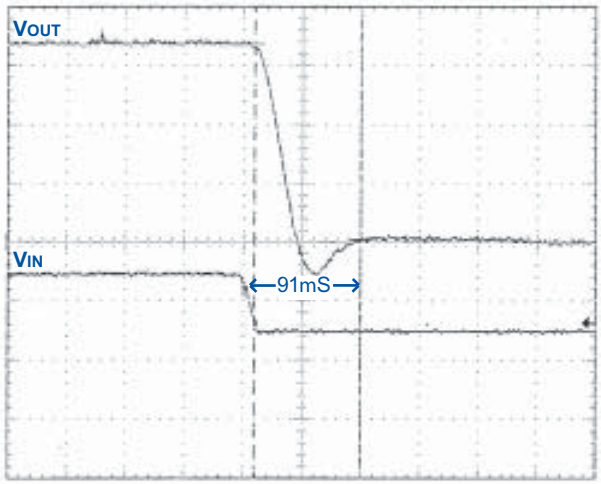


Turn On Time (VIN to VOUT)



Time Scale = 50mS/DIV

Turn Off Time (VIN to VOUT)

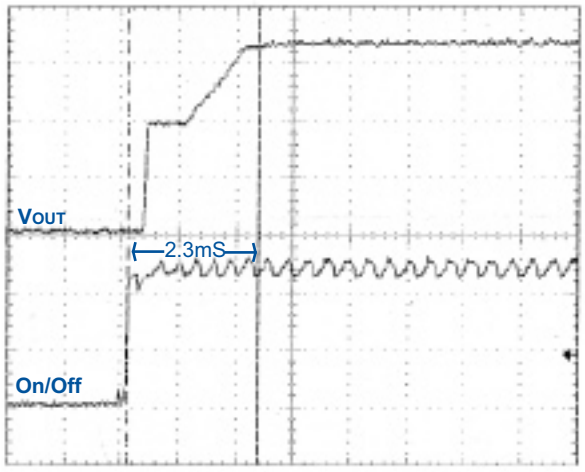


Time Scale = 50mS/DIV

PERFORMANCE CURVES: MODEL WPA50R48033

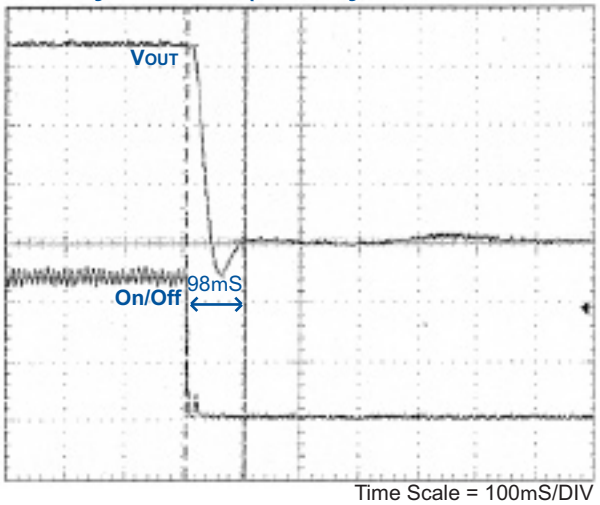
MODEL WPA50R48033

Primary On Time (Primary Remote to VOUT)



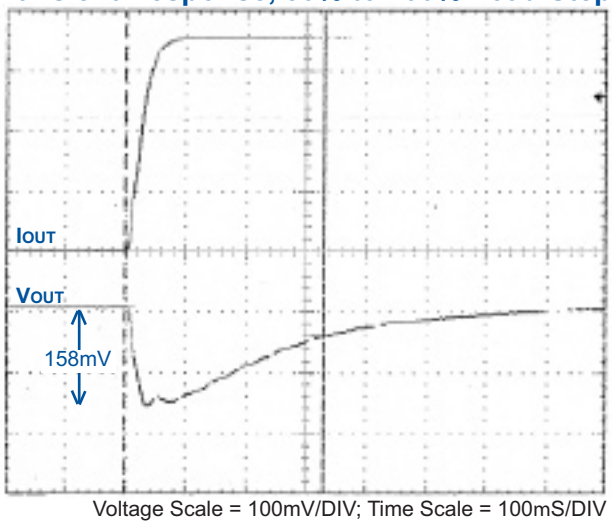
Time Scale = 1mS/DIV

Primary Off Time (Primary Remote to VOUT)



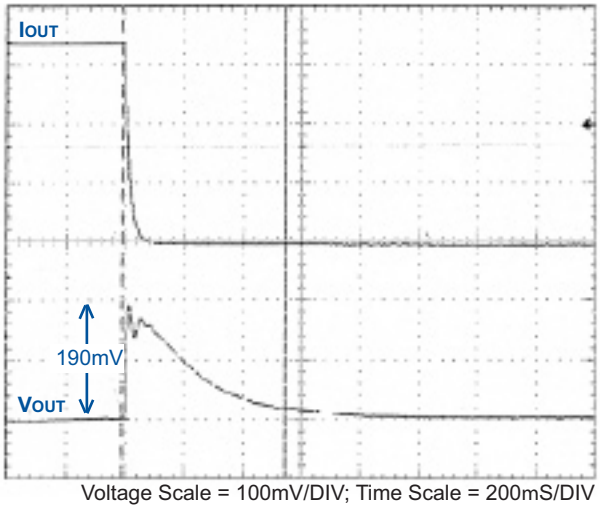
Time Scale = 100mS/DIV

Transient Response, 50% to 100% Load Step



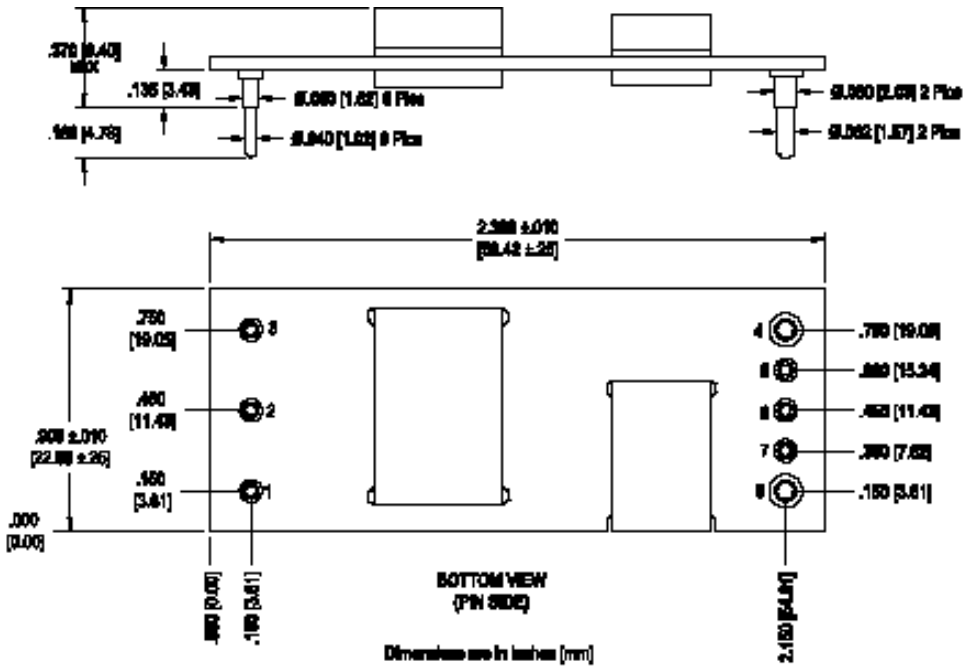
Voltage Scale = 100mV/DIV; Time Scale = 100mS/DIV
Settling Time = 330mS; Rate Change in IOUT = 0.18A/mS;
Voltage Transient = 158mV

Transient Response, 100% to 50% Load Step



Voltage Scale = 100mV/DIV; Time Scale = 200mS/DIV
Settling Time = 556ms; Rate Change in IOUT = 0.19A/mS
Voltage Transient = 190mV

MECHANICAL



PIN FUNCTIONS	
1	+Vin
2	Remote On/Off
3	-Vin
4	-Vout
5	- Sense
6	Trim
7	+ Sense
8	+Vout

NOTES:

Pin placement tolerance: ±.010

Pin material: Brass

Pin Finish: Tin/Lead over Nickel

Converter weight: [16g]

ORDERING INFORMATION

To Find Model Number

WPA5048S y -

Device Family
- 50 Watt, Single Output,
- Eighth Brick, 48VDC Input Range

Model Number
- Selected from Product Selection Chart (above)
- y = 012 = 1.2V, 015 = 1.5V, 018 = 1.8V, 022 = 2.2V, 025 = 2.5V, 033 = 3.3V, 050 - 5.0V,

Remote On/Off Logic
- No Number = Positive Logic
- 1 = Negative Logic

Model Numbers	Part Numbers
WPA50R48S012	6064958
WPA50R48S015	6064959
WPA50R48S018	6064960
WPA50R48S022	6064961
WPA50R48S025	6064962
WPA50R48S033	6064963
WPA50R48S050	6064964
WPA50R48S012-1	6064967
WPA50R48S015-1	6064968
WPA50R48S018-1	6064969
WPA50R48S022-1	6064970
WPA50R48S025-1	6064971
WPA50R48S033-1	6064972
WPA50R48S050-1	6064973

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