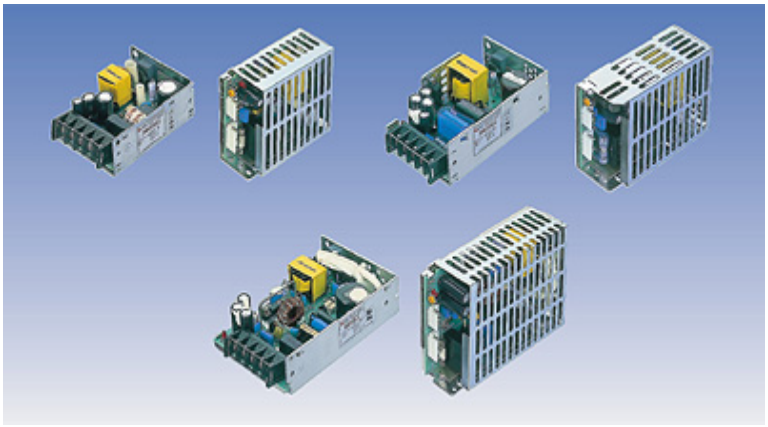
ETA-USA
Your power supply experts

25 WATT AC-DC CONVERTER

MRA-SB SERIES



General Description

MR-Series has been developed as an alternative for WR/ER Series. This open frame switcher has excellent EMI-performance. It is safety approved, compact, and very cost effective.

Features

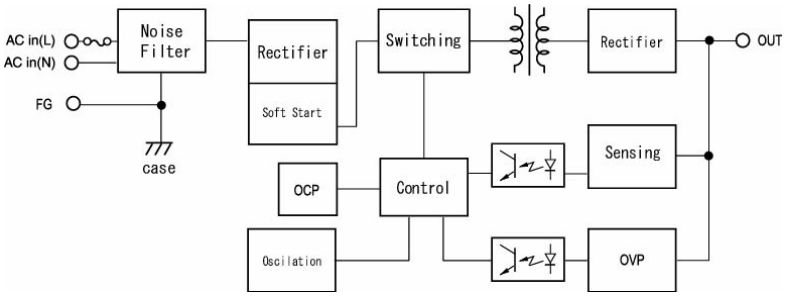
1. Small size
2. High efficiency
3. Connectors: screw type (standard), molex optional

Options

1. Case cover (Add suffix "-P" ex. MRM05SA-PU")
2. Connector type (Add suffix "-S")

Specifications<AC/DC>	Model				
MRA**SB 25WATTS/SINGLE	MRA05SB-U	MRA12SB-U	MRA15SB-U	MRA24SB-U	MRA48SB-U
Input Characteristic					
Input Voltage	AC230V				
Input Current	0.7A				
Input Range	AC170-264V(DC220-350V)				
Input Frequency	50/60Hz				
Input Frequency Range	47-440Hz				
Phase	Single				
Inrush Current *1	20A(maximum)at AC230V				
Efficiency [%] (typical) *2	74	78	81	82	83

Block Diagram



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MRB**SA Specification

Specifications<AC/DC>	Model				
MRB**SA 50WATTS/SINGLE	MRB05SA-U	MRB12SA-U	MRB15SA-U	MRB24SA-U	MRB48SA-U
Output Characteristic					
Output Voltage [V]	5	12	15	24	48
Output Current [A]	10.0	4.2	3.4	2.1	1.1
Voltage Adjust Range	+/- 10% of Rated Output Voltage(at no load within the input range)				
Ripple and Noise [mVp-p](maximum) *3	150	220	250	340	580
Regulation					
a.Statistic Line Regulation [mV](maximum)	40	96	120	192	384
b.Statistic Load Regulation [mV](maximum)	50	120	150	240	480
c.Temperature Coefficient *4	0.03%/℃				
d.Drift[mV](maximum) *5	40	75	90	135	255
e.Dynamic Load Regulation [mV](typical) *6	150	360	450	720	1440
f.Recovery Time *6	0.3mS(Typical)				
Rise up time	500mS(maximum) at 25℃and rated input/output				
Hold up time	20mS(minimum) at 25℃and rated input/output				
Functions					
Overcurrent Protection ≧10% of Rated Output Current[A]	Current Limiting with automatic recovery				
	11.0	4.62	3.74	2.31	1.21
Overvoltage Protection ≧10% of Rated Output Voltage[V]	output shutdown(to reset,leave 2minutes after shut-off)				
	5.50	13.2	16.5	26.4	52.8
Remote Sense	not available				
Remote On/Off	not available				
Environmental					
Operating Temperature *7	-5 to +50℃enclosed type: -5 to +40℃				
Operating Humidity	30 to 85%RH(non-condensing)				
Storage Temperature	-20 to +85℃				
Storage Humidity	10 to 85%RH(non-condensing)				
Withstanding Voltage	Primary-Secondary AC2,000V for 1minute				
	Primary-Frame Ground AC1,500V for 1minute				
	Secondary-Frame Ground AC500V for 1minute				
Isolation Resistance	Primary-Secondary-Frame Ground 50MΩ(minimum) by DC500V insulation tester				
Vibration	5-10Hz:10mm double amplitude,10-55Hz:19.6m/s^2,20minutes' period for 60minutes each along X,Y,Z axes(non-operating)				
Shock	294m/s^2				
Cooling	Convection				
? Leakage Current	1mA(maximum) at 25℃rated input/output and rated input frequency				
? Conducted line noise	Built to meet FCC Part15-B Class B				
	Built to meet VCCI Class B				
? Safety	UL:UL1950				
	C-UL:CSA C22.2 No.234(Level 3)				
Weight (typical)	250g/enclosed type:300g				
? MTBF [H]	600,000				
? Switching Frequency[kHz](typical)	140				

Conditions:
*1 at cold start
*2 at DC130V input and rated output
*3 measured by a bayonet probe at the end of a pair of 20cm long wires terminated with a 47uF electrolytic capacitor and a 0.1uF film capacitor in parallel at a 0 to 100MHz bandwidth
*4 at -5 to +50℃enclosed type: at -5 to +40℃
*5 for 7hour period after 1hour warm-up at 25℃and rated input/output
*6 when output current changed from 25% to 75% of rated output current rapidly at AC100V input
*7 safety approved at 40℃

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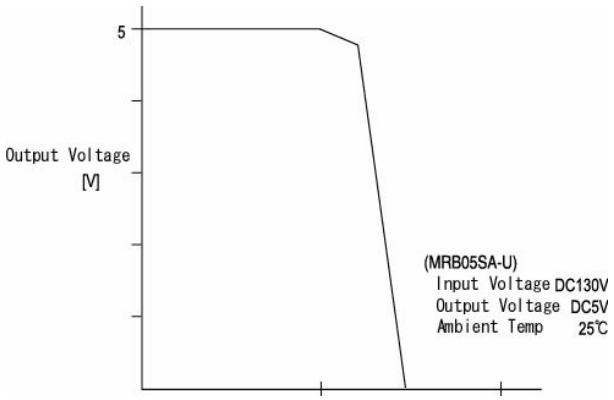
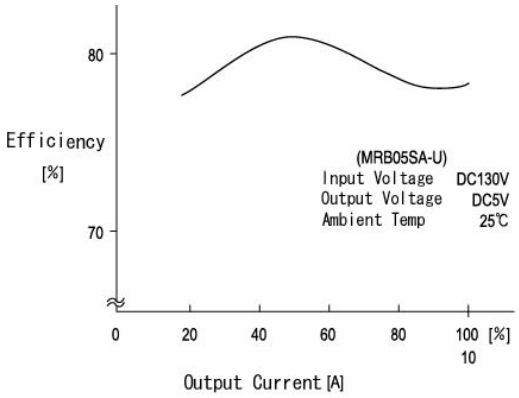
OCP Curve



Efficiency Curve



Dimension (mm)