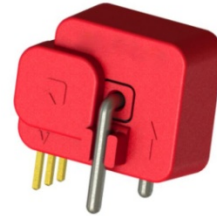


Based on Magtron Quadracore ASIC Solution



Features

- ◆ Ultra small packaging
- ◆ Magtron Quadracore technology
- ◆ Open loop programmable solution
- ◆ Single 5V supply voltage
- ◆ Printed circuit board mounting
- ◆ Casing and materials UL-listed
- ◆ Appearance patented
- ◆ Stable accuracy
- ◆ Low temperature coefficient
- ◆ High immunity to external interference
- ◆ Programmable analog output
- ◆ Low insertion loss
- ◆ Integration frequency filter
- ◆ Easy to mount with automatic handling system

Applications

- ◆ Inverter and Servo
- ◆ Home appliance
- ◆ Shunt solution replacement
- ◆ Uninterruptible Power Supply

Standards

- ◆ EN50178 : 1997
- ◆ IEC61010-1 : 2010
- ◆ UL508 : 2010

Select Part List

Part Number	Primary current measuring range	Accuracy	Quantity/Carton
MS20A	20A	3%	480 pcs
MS20B	20A	5%	480 pcs

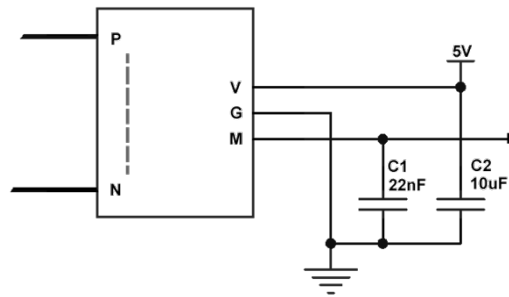
Overview

The MS series device is a high performance current sensor based on Magtron ASIC Quadracore technology with high accuracy in the full temperature range, adjustable analog output.

It's suitable for the application of industrial products, such as the inverter, UPS, servo motor driver and other industrial products. The ultra-small package is designed for the high power density application and easy to use.

MS series is designed for the replacement of shunt solution and the transformer solution with high cost effective.

Application circuit



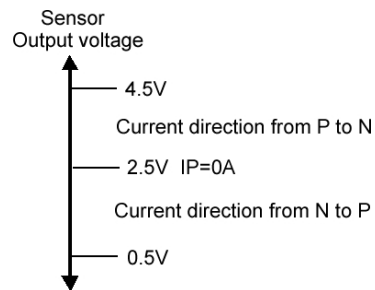
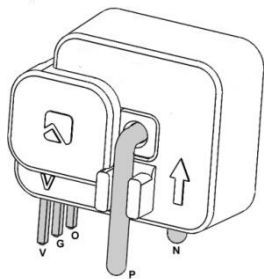
Note: C1, C2 should be close to the current sensor's pin
 Component selection reference:

Designator	Description
C1	TDK,X7R,22nF/16V,±10%,0603
C2	TDK,X5R,10uF/16V,±10%,0603

Pin Definition

Symbol	Description
V	Power supply pin
G	Power GND pin
O	Signal output pin

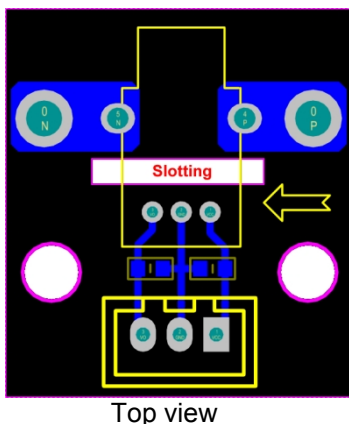
Assembly PIN output:



Relationship between IP and output voltage

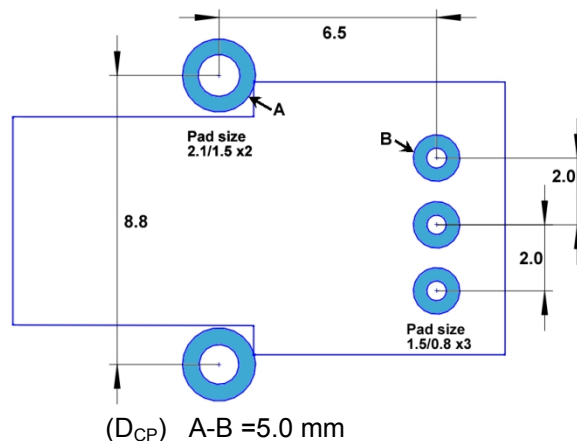
- ① N,P: The primary side Pin
- ② V,G,O: Secondary side Pin

MS Demo board PCB Layout Reference



Top view

MS20 Series, PCB Footprint (in mm. Tolerance ±0.2mm)



(D_{CP}) A-B = 5.0 mm

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage(not operating)	V _C			9	V
Jumper temperature	T _J		120		
Ambient operating temperature	T _A	-40		+85	
Ambient storage temperature	T _A	-40		+105	
ESD rating, Human Body Model(HBM)	U _{ESD}		2		kV

Isolation Characteristics

Parameter	Symbol	Min	Unit	Comment
RMS Voltage for AC Insulation test 50/60Hz/1 min	V _D	3	kV	
Through hole conductor isolation distance suggestion	D _{CP}	5	mm	
Distance between source side lead and secondary side pin	D _{SS}	6	mm	

Electrical data MS20A(3% Accuracy)

At Ta=25°C,Vc=5V,RL=100KΩ, unless otherwise noted

Parameter	Symbol	Min	Typ	Max	Unit	Comment
Primary nominal RMS current	I _{PN}		10		A	
Primary current , measuring range	I _{PM}		20		A	
Supply voltage	V _C	4.75	5	5.25	V	
Number of primary turns	N _P		1			
Resistance of primary jumper	R _P		0.75		mΩ	@+25°C
Current consumption	I _C		18	25	mA	
Output Voltage range @I _{PM}	V _O		2.5±2		V	
Temperature coefficient of V _O @I _p =0A	TCV _O		±200		PPM/K	@-40~+85°C
Theoretical Sensitivity	G _{TH}		100		mV/A	
Gain error	ε _G		3		%	@+25°C
Temperature coefficient of Gain	TCG		±500		PPM/K	@-40~+85°C
Linearity error 0~I _{PM}	ε _L		0.4		% of I _{PM}	
Magnetic offset voltage	V _{OM}		10		mV	
Total Accuracy @I _{PM}	X		3		% of Vom	@+25°C
Frequency bandwidth(-3 dB)	BW		150		kHz	
Reaction time @10% of I _{PN}	T _{RA}		2.5		uS	
Reaction time @90% of I _{PN}	T _A		2.9		uS	

Electrical data MS20B(5% Accuracy)

At Ta=25°C,Vc=5V,RL=100KΩ, unless otherwise noted

Parameter	Symbol	Min	Typ	Max	Unit	Comment
Primary nominal RMS current	I _{PN}		10		A	
Primary current , measuring range	I _{PM}		20		A	
Supply voltage	V _C		5		V	
Number of primary turns	N _P		1			
Resistance of primary jumper	R _P		0.75		mΩ	@+25°C
Current consumption	I _C		18	25	mA	
Output Voltage range @I _{PM}	V _O		2.5±2		V	
Temperature coefficient of V _O @I _p =0A	TCV _O		±300		PPM/K	@-40~+85°C
Theoretical Sensitivity	G _{TH}		100		mV/A	
Gain error	ε _G		5		%	@+25°C
Temperature coefficient of Gain	TCG		±500		PPM/K	@-40~+85°C
Linearity error 0~I _{PM}	ε _L		0.4		% of I _{PM}	
Magnetic offset voltage	V _{OM}		10		mV	

MS20 Series

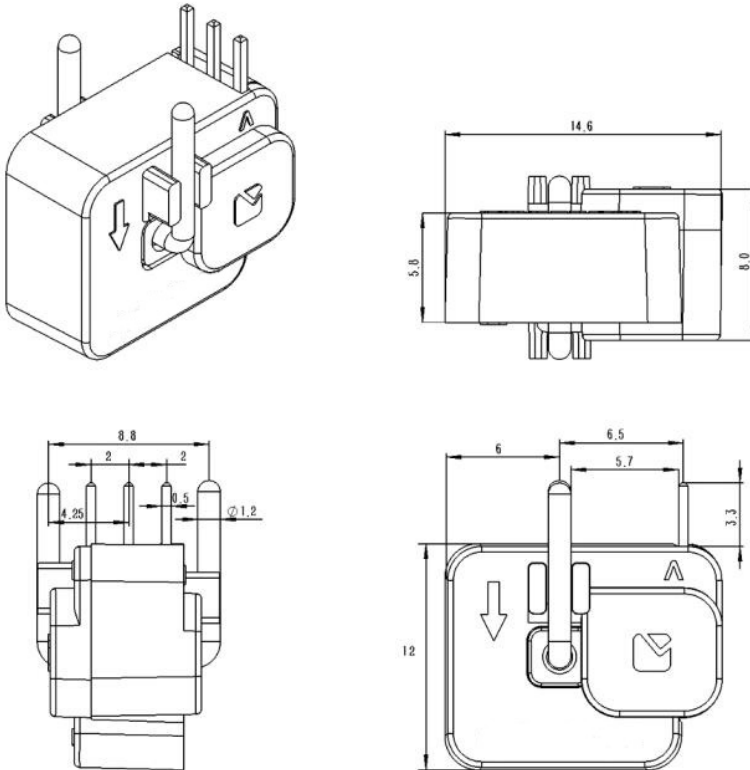
High Performance Current Sensor

CHCS® Transducer
中霍传感®

Total Accuracy @I _{PM}	X	5	% of Vom	@+25°C
Frequency bandwidth(-3 dB)	BW	150	kHz	
Reaction time @10% of I _{PN}	T _{RA}	2.5	uS	
Reaction time @90% of I _{PN}	T _A	2.9	uS	

Dimensions in MS series

Mechanical Characteristics (Unit :mm, Tolerance in +-0.25)



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