

Model CMR-25

Magneto-Resistive

Current Sensors

Description

The CMR-25 current sensor builds on patented company technology to offer superior sensor performance and accuracy in current measuring applications. The current sensor utilizes an ASIC (Application Specific Integrated Circuit) and a magnetoresistive (MR) magnetic sensor to provide extremely low offset drift with temperature, resulting in stable, repeatable, accurate measurements. It operates from a +5V unipolar power and has an accessible internal 2.5V voltage reference. It can configure from either the internal or external voltage reference, enabling several sensors to be used without offset imbalance. Three primary pin enable the sensor to be configured for different measuring ranges and the current output signal allows different load resistors to be used depending on the application.

Features

- Ultra low offset drift with temperature
- Unipolar Voltage Supply
- Superior global accuracy over temperature range
- Customer adjustable gain
- Customer accessible voltage reference
- Self calibrating
- Designed for auto assembly
- Current output

Applications

- Servo drives
- Variable speed drives
- Frequency converters
- Power supply systems
- Over current protection
- Power metering
- Uninterruptible power supplies (UPS)



Electrical Specifications

Nominal current (I _N)	25 Amp rms
Measuring range	0 to ± 56 Amp ⁽¹⁾
Measuring resistance (²)	
with + 5 V at ± 25 Amp rms	R. min. 0 ohms R. max. 80 ohms
at ± 40 Amp rms	0 ohms 31 ohms
Nominal analog output current	12.5 mA rms
Turns ratio	1-2-3:2000
Overall accuracy at 25 °C (³)	± 0.24 % of I _N max.
Overall accuracy at - 40 °C to +85 °C (³)	± 0.32 % of I _N max.
Supply voltage (Vdc)	+ 5 Vdc (± 5 %)
Internal reference voltage	+ 2.5 Vdc (± 10 mV)
Galvanic Isolation	5.0 kV rms / 50 Hz / 1 minute)

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Accuracy-Dynamic Performance

Zero current offset at 25 °C	< ± 30 uA (= 0.24 % of 25A)
Offset current temperature drift	
between +10 °C and +50 °C	< ± 5 uA (= 0.04 % of 25A)
between -40 °C and +85 °C	< ± 10 uA (= 0.08 % of 25A)
Linearity	< ± 0.1 %
Response time @ 90%	better than 200 ns
di/dt accurately followed	greater than 100 A/us
Bandwidth (-1 dB)	DC to 200 kHz

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General Information

Operating temperature	-40 °C to + 85 °C
Storage temperature	-40 °C to + 90 °C
Current drain (plus output current)	12 mA (+5V)
Secondary internal resistance	50 ohms (at 70 °C)
Package	Glass - filled Polyamide (UL94-VO)
Approvals	EN 50082-2, EN 50081-2, UL, CE
Rated insulation voltage / insulation classification	400V / Reinforced
Environment	Polution degree 2, category III
Weight	20 grams
Mounting	Designed to mount directly on PCB via thru hole connect pins
Output reference	To obtain a positive output on the terminal marked "O/P", current must flow in the direction of the arrow (conventional flow)

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Notes:

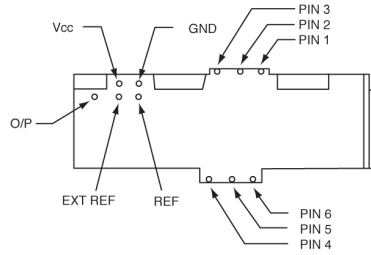
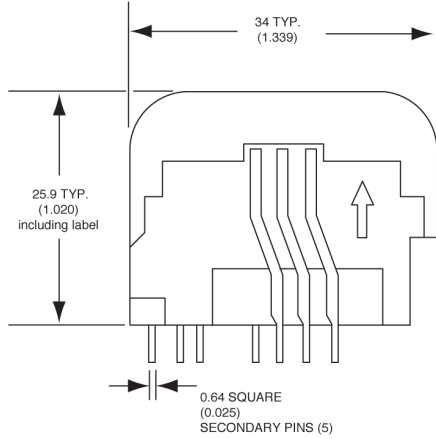
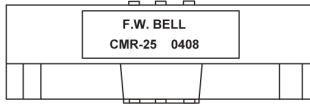
1. ac peak. Maximum dc or ac rms range is 40 amps.
2. Higher resistance (R_m) values can be used with reduced measuring range. Specified values conditional on 70 °C ambient and no power supply tolerance.
3. Excludes the effects of tolerances of reference voltage and external load resistance.
4. Due to continuous process improvements, specifications are subject to change without notice.



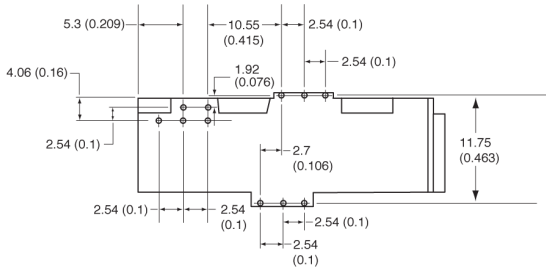
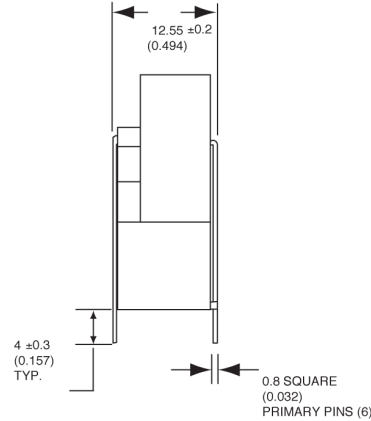
Mechanical Dimensions

All dimensions are in millimeters (inches)

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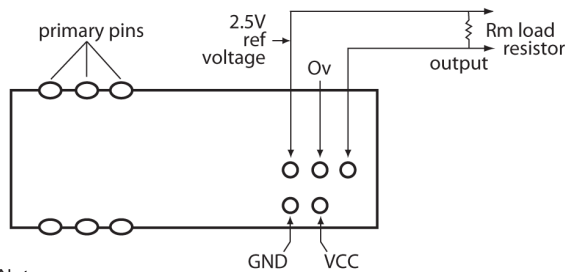
BOTTOM VIEW



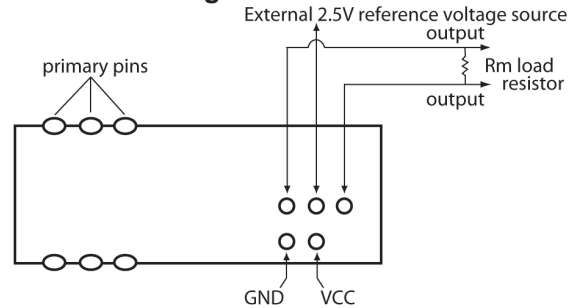
Primary Turns	Primary Current		Nominal Output (mA)	Primary Pin Connection
	Nom I_{pN} (A)	Max I_p (A)		
1	25	56	12.5	
2	12	27	12	
3	8	18	12	

Electrical wiring diagram

Internal voltage reference mode



External voltage reference mode



Notes:

1. For internal 2.5V reference mode 'Ext Ref' pin must be connected to ground.
2. For external 2.5V reference voltage mode, apply voltage in the range +1.0V to 3.0V to the 'Ext Ref' pin,
3. Housing material: Glass filled polyamide, fully encapsulated construction.
4. Due to continuous process improvement, specifications are subject to change without notice.

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