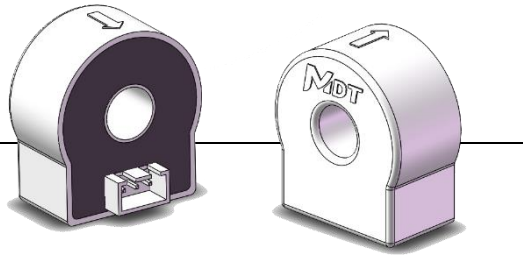
TMR7401

Leakage Current Sensor



DESCRIPTION

TMR7401 series leakage current sensor based on magnetic induction principle, incorporates our tunneling magnetoresistive (TMR) sensor with high sensitivity and high SNR. With the build-in conditioning circuits for offset voltage, temperature and non-linearity compensation, it provides accurate measurement of DC, AC and pulse current. TMR7401 provides excellent primary to secondary galvanic isolation, low power consumption and compact size design.

FEATURES AND BENEFITS

- Open loop current sensor
- Low power consumption
- High accuracy
- Single power supply
- Low linearity error
- Low offset drift over temperature

APPLICATIONS

- Leakage current measurement
- Single phase or three phase nominal current measurement
- Telecommunication power supply
- Residual current measurement in DC sources

ENVIRONMENTAL AND MECHANICAL CHARACTERISTICS

Parameters	Symbol	Value	Unit
Weight	m	25	g
Operating ambient temperature	T_A	-40~85	℃
Storage ambient temperature	T_s	-50~105	℃

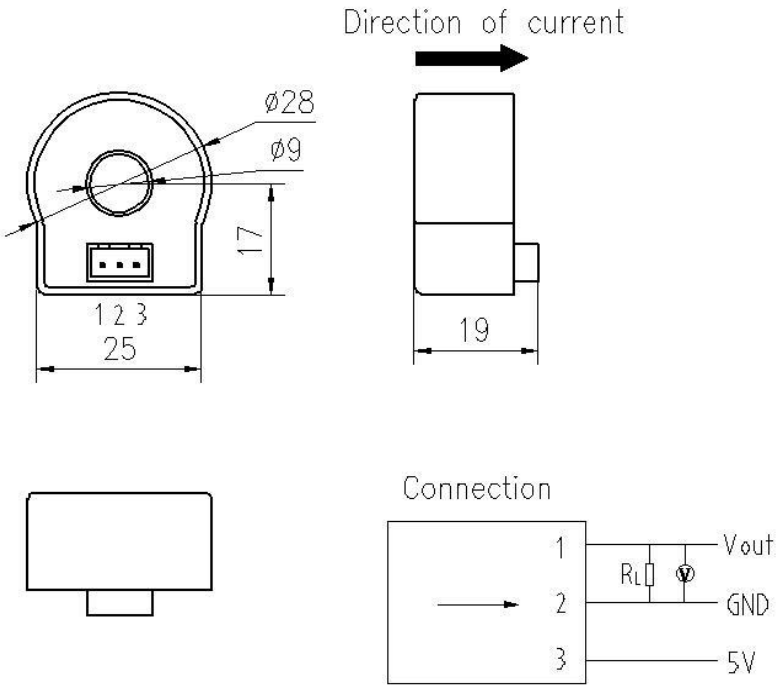
ELECTRICAL CHARACTERISTICS

Parameters	Symbol	Comments	Min.	Typ.	Max.	Units
Rated primary current (nominal residual RMS)	I_{Pn}	TMR7401-300mA		0.3		A
		TMR7401-600mA		0.6		A
		TMR7401-1000mA		1		A
Measuring range	I_{Pm}	TMR7401-300mA	-0.5		0.5	A
		TMR7401-600mA	-1		1	A
		TMR7401-1000mA	-1.5		1.5	A
Supply voltage	V_C		4.5	5	5.5	V
Current consumption	I_C				3	mA
Output voltage(@I_{Pn})	V_{out}	TMR7401-300mA		2.5±IP×4		V
		TMR7401-600mA		2.5±IP×2		V
		TMR7401-1000mA		2.5±IP×1.333		V
Output voltage (@I_{Pm})	V_{out}		0.5		4.5	V
Withstanding voltage	V_d	RMS @50Hz 1min		3		kV
Creepage distance	D_c			7.5		mm

TECHNICAL PARAMETERS

Parameters	Symbol	Comments	Min.	Typ.	Max.	Units
Offset voltage	V_o	@25℃, I_P=0	-30		30	mV
Linearity error	ε_L				1	% of I_{Pm}
Hysteresis current	ε_H	after I_P=30A		10		mA
Temperature coefficient of V_{out}	TCV_o	-40~85℃, I_P=0			±500	PPM/℃
Theoretical Sensitivity	G	TMR7401-300mA		4		V/A
		TMR7401-600mA		2		V/A
		TMR7401-1000mA		1.333		V/A
Sensitivity error	ε_G	R_L>500kΩ	-1		1	%
Temperature coefficient of G	TCG	-40~85℃			±100	PPM/℃
Output RMS noise (1 ~ 10kHz)	V_{no}	R_L>500kΩ		2		mV
Step response time (@90% of I_{Pn})	t_r	R_L>500kΩ		10		μs
Frequency bandwidth (-3dB)	BW	R_L>500kΩ		10		kHz
Accuracy (@I_{Pn}@25℃)	ε	TMR7401-300mA			2	%
		TMR7401-600mA			1.5	%
		TMR7401-1000mA			1.5	%
Accuracy (@I_{Pn}@-40~85℃)	ε	whole series			4	%

DIMENSIONS (mm)



NOTES

1. To avoid electric shock accidents, beware of dangerous voltage and insulation damage of conductor to be measured
2. Use in the power line carrying the current over the rating limit of the sensor can lead to permanent damage
3. Improper connection including but not limit to misconnection, short circuit may cause sensor damage
4. Pass the power line through the hole of sensor with the carrying current flow along the arrow direction, and the output voltage of the flow direction will be obtained.
5. Input current and output voltage are customizable

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