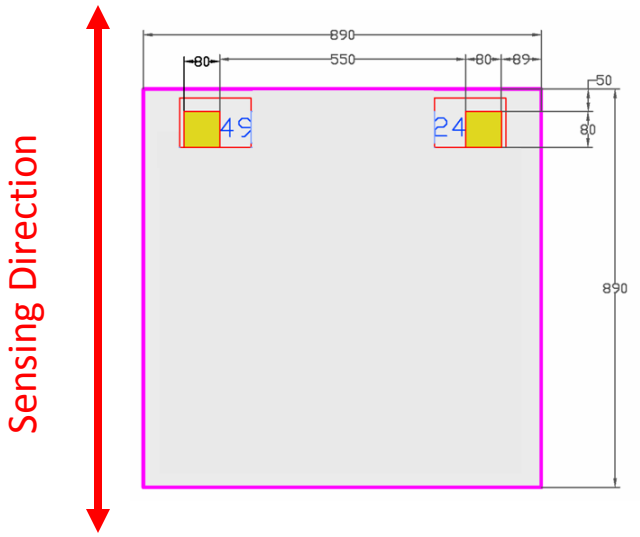
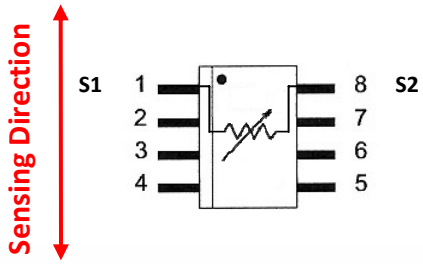
• Bare Die used in STJ-240



Die Dimensions – 1mm^2
Die Thickness - 0.3 mm

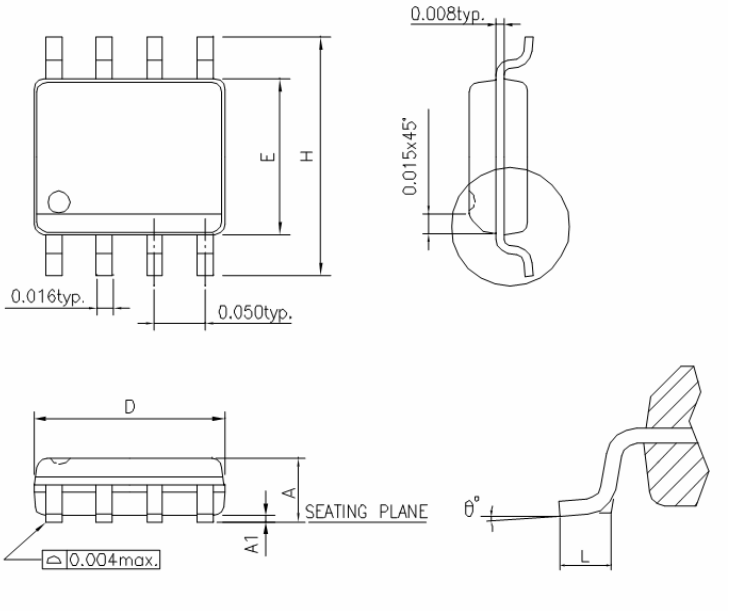
• STJ-240 – SOIC-8 Package Information



SYMBOLS	MIN.	MAX.
A	0.053	0.069
A1	0.004	0.010
D	0.189	0.196
E	0.150	0.157
H	0.228	0.244
L	0.016	0.050
θ°	0	8

UNIT : INCH

NOTES:
1. JEDEC OUTLINE : MS-012 AA
2. DIMENSIONS "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED .15mm (.006in) PER SIDE.
3. DIMENSIONS "E" DOES NOT INCLUDE INTER-LEAD FLASH, OR PROTRUSIONS. INTER-LEAD FLASH AND PROTRUSIONS SHALL NOT EXCEED .25mm (.010in) PER SIDE.



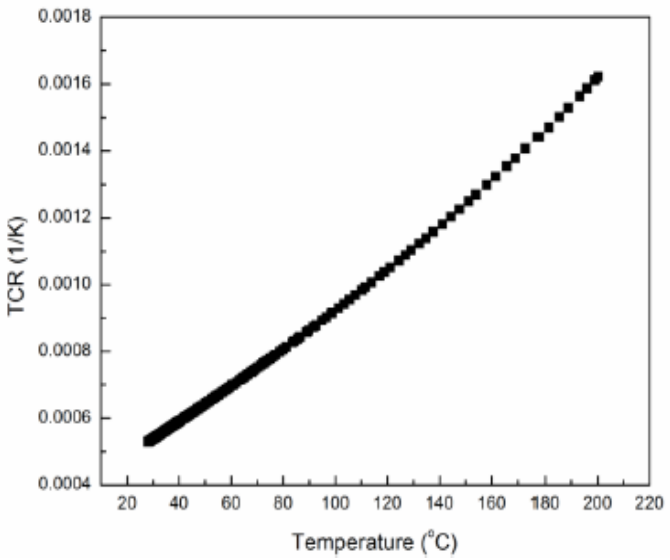
• STJ-240 – Specifications

PHYSICAL	Min.	Typical	Max.	Unit
Die Size		0.89 x 0.89		mm
Die Thickness		0.3		mm
Active Area Length		0.79		mm
Active Area Width		0.71		mm
Active Area Thickness	3.0	60.0	100.0	nm
ELECTRICAL				
Sensor Resistance[1]	100	10000	200000	Ω
Recommended Operating Voltage	0.01	5.0	12.0	V
Maximum Operating Frequency[2]	1	5	25	MHz
MAGNETIC				
Total Magnetoresistance[3]	50	80	200	%
Magnetic Field Sensitivity	0.7	1.0	2.0	%/G
Non-linearity[4] (+/- 1 G)		0.25	2.0	%
Hysteresis[5] (field range = +/- 1 G)		0.01	0.05	G
Non-linearity[4] (+/- 10 G)		0.50	5.0	%
Hysteresis[5] (field range = +/- 10 G)		0.5	2.0	G
Voltage sensitivity (V_{IN} = +12 V)	84	120	240	mV/G
Equivalent Field Noise (100 Hz)	2	5	15	$nT/Hz^{0.5}$
Equivalent Field Noise (10 kHz)	0.2	1	5	$nT/Hz^{0.5}$

• STJ-240 – Thermal Data (Typical)

Temperature Coefficient of Resistance

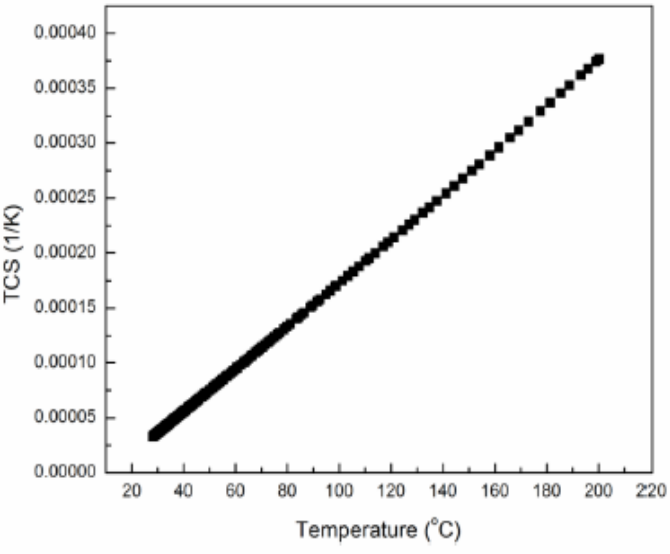
TCR=(1/R)(△R/△T)



Temperature Coefficient of Sensitivity

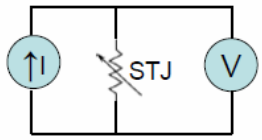
TCS=(1/S)(△S/△T)

S=(1/R)(△R/△B) (Units: %/Oe)



Note: The sensor die can operate up to 180 °C. The SOIC-8 package for STJ-240 can operate up to 80 °C.

• Typical Measurement Circuits

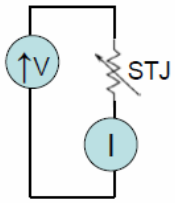


Bias STJ sensor with a constant current supply.

Measure voltage drop V across STJ.

Calculate resistance:

R = V/I

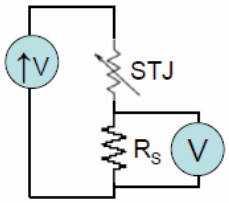


Bias STJ sensor with a constant voltage supply.

Measure current I through the STJ element.

Calculate resistance:

R = V/I



Place sensor in series with a fixed resistor R_s.

Bias the series devices with a constant voltage V_{IN}.

Measure voltage V across the fixed resistor.

Calculate resistance:

$R = R_s(V/V_{IN} - 1)$

• STJ-240 – Precautions and Handling Instructions

1. MTJ sensors will fail if subjected to a sufficiently large differential voltage. A good rule-of thumb is to **limit the voltage drop across the sensor element to 12 V** or less at all times.

2. Please store sensors as they were shipped and in a location which is away from sources of radiated electromagnetic fields (ESD/EMI).

3. Sensors are sensitive to electrostatic discharge (ESD). Be careful to ground tools and your hands when handling the sensors. If possible, be sure to wear grounding straps when handling the sensors.

4. To directly measure MTJ sensor resistance, connect to a constant current source, and measure the voltage drop directly across the two active leads. In order to limit the voltage drop across the MTJ sensor, initial applied current values should NOT exceed 50 µA. If this amount of current is not sufficient to measure the device resistance, the current may be increased gradually until the sensor voltage is sufficient to make an accurate reading.