MLX90240

Pressure Sensor IC

Features and Benefits

- 0 – 350mBar Range
- Differential pressure sensor
- Compact Design
- High Long Term Stability
- Low Cost

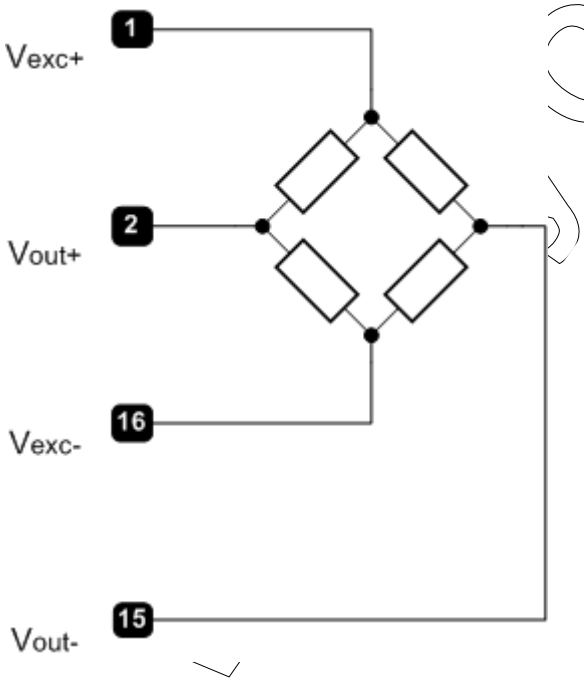
Applications

- Medical Instrumentation (Blood Pressure)
- Consumer Appliances
- Sports Equipment
- Pressure Difference and Flow Monitoring

Ordering Information

Part No.	Temperature Suffix	Package Code
MLX90240	C (0°C to 70°C)	ZF (SO-8 'tophat' package)
MLX90240	C (0°C to 70°C)	UF (Die on Foil)

Functional Diagram



Description

The MLX90240 is a discrete micromachined Pressure sensor IC suitable for pressure ranges between 0 to 350 mBar. The pressure medium must be dry and non-corrosive, such as air.

The 90240 is packaged in a plastic/ceramic package, (ZF) or can be ordered as unpackaged die (UF).

The circuit is a piezo resistive bridge which is realized in silicon through a special micromachining process. As pressure is applied to the bridge, a differential voltage change is seen across the V_{out} pins, while a bias voltage is applied to the V_{exc} pins.

The MLX90240 is a versatile pressure sensor solution which can be directly interfaced with other Melexis ICs such as the MLX90308, which provides amplification, signal conditioning as well as the bias current to supply the sensor itself.

MLX90240 Electrical Specifications

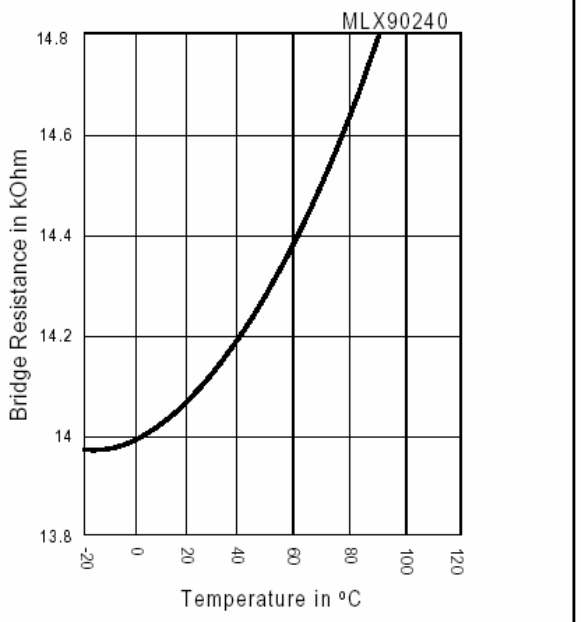
DC Operating Parameters T_A = 25C, V_{DD} = 5V (note 3), Pressure = 0.35 Bar full scale.

Parameter	Min	Typ	Max	Units	Comment
Excitation voltage	0	5	12	V	
TC of the Offset		-15		µV /°C	
Sensitivity	43	58	75	mV / V / bar	
TC of the Sensitivity (1)	-0.17	-0.21	-0.26	% / °C	
Bridge Impedance	11.5	13.5	15.5	kOhm	
TC of the Bridge (1)		580		ppm / °C	
Non linearity (3)	0	+/- 0.15	+/-0.30	% FS	
Hysteresis			0.1	% FS	
Offset Long term stability (2)			0.5	% FS	
Sensitivity Long term stability (2)			0.3	% FS	
Burst pressure	5x			FS pressure	
Operating temp	0		70	°C	
Storage temp	-40		125	°C	

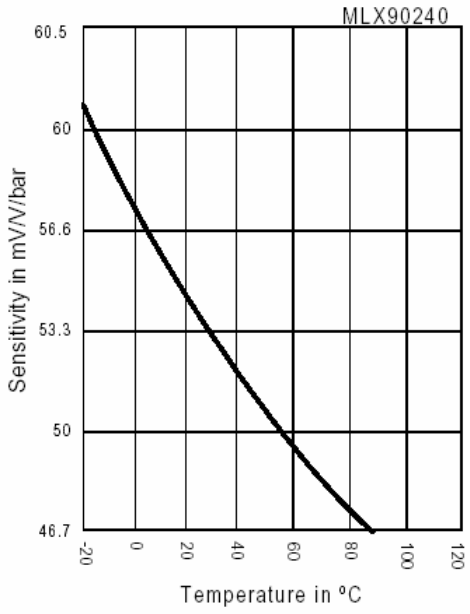
Notes:

1) Between 0 and 70°C
2) After 100 thermo cycles 0 - 70°C
3) 1 mil pressure cycles 0 – 350 mbar
4) Typical 0.5% FS for 0-500 mbar range

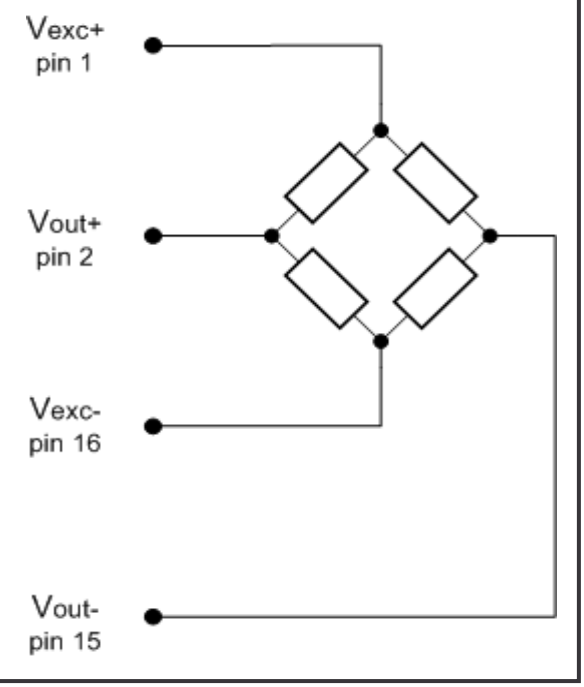
Bridge Resistance versus Temperature



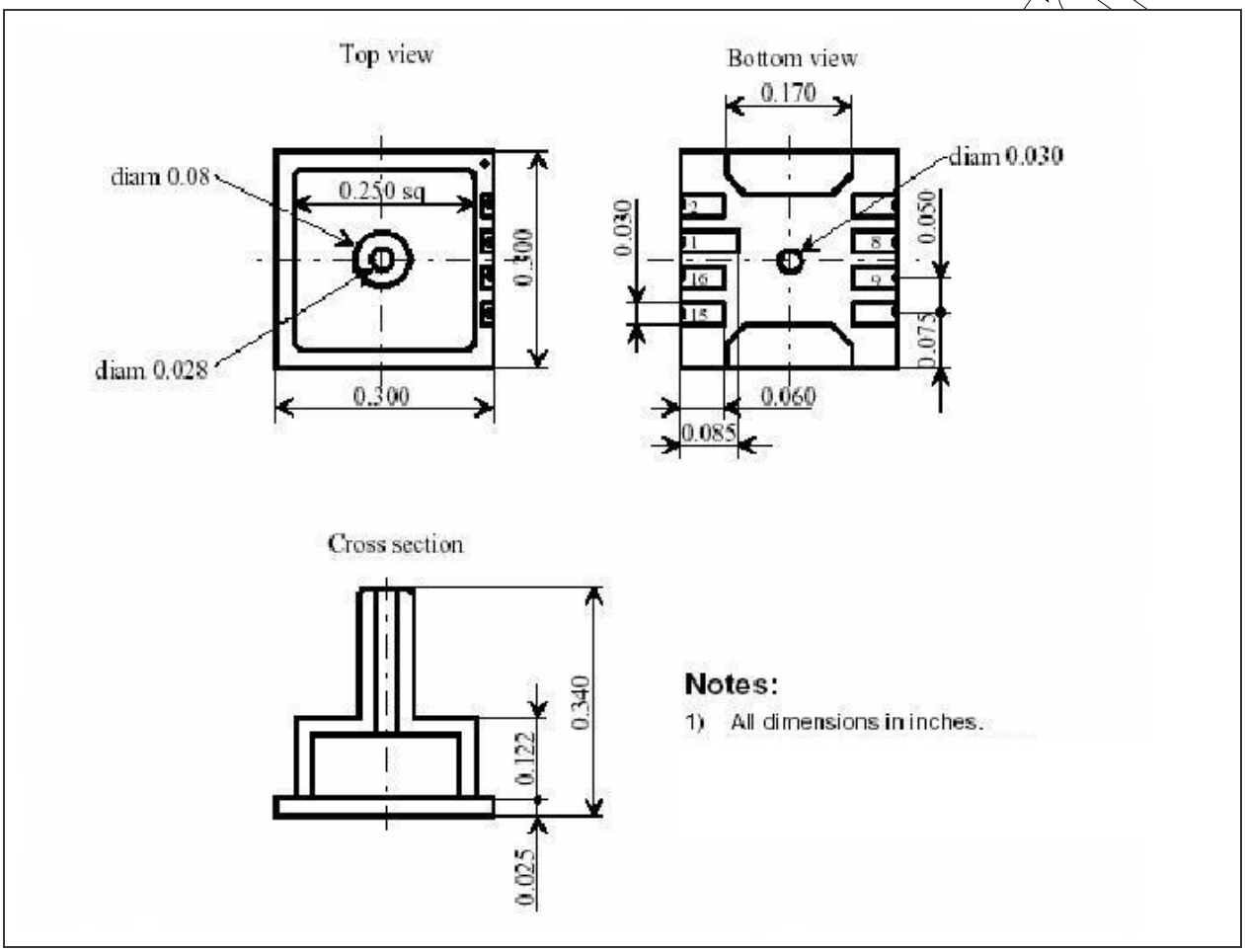
Sensitivity versus Temperature



MLX90240 Pin Description



"ZF" Package Dimensions



Reliability Information

The metallization of the ceramics is PtPd on the top side and PtPdAg on the bottom side. A solder paste for hybrid circuits is recommended for proper soldering.

The reflow profile should be adjusted to the presence of a plastic cap.

High peak temperature could derogate the cap and cause leakage. For IR reflow profile Melexis would recommend to keep the peak temperature below 210 degC.

Disclaimer

Devices sold by Melexis are covered by the warranty and patent indemnification provisions appearing in its Term of Sale. Melexis makes no warranty, express, statutory, implied, or by description regarding the information set forth herein or regarding the freedom of the described devices from patent infringement. Melexis reserves the right to change specifications and prices at any time and without notice. Therefore, prior to designing this product into a system, it is necessary to check with Melexis for current information. This product is intended for use in normal commercial applications. Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional processing by Melexis for each application.
The information furnished by Melexis is believed to be correct and accurate. However, Melexis shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interrupt of business or indirect, special incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of Melexis' rendering of technical or other services.

For the latest version of this document, go to our website at:
www.melexis.com

Or for additional information contact Melexis Direct:

Europe and Japan:
Phone: +32 13 67 04 95
E-mail: sales_europe@melexis.com

All other locations:
Phone: +1 603 223 2362
E-mail: sales_usa@melexis.com

ISO/TS16949 and ISO14001 Certified