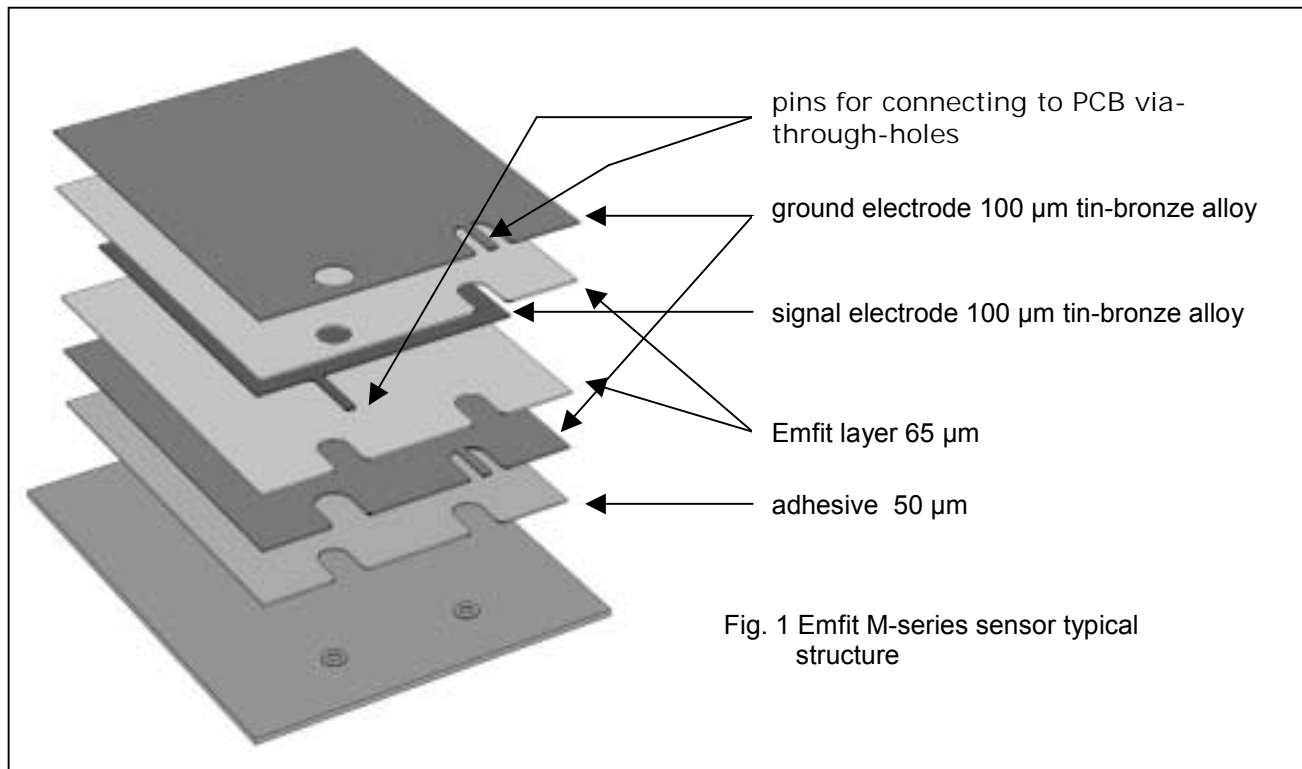


INTRODUCTION

The M-series sensor is a fully shielded, low mass, thin, small area sensor. It consists typically of a sensing element constructed of two elastic electret Emfit films and 3 etched metal electrodes (Fig. 1). Several other constructions are possible depending on application and needs. Etched electrodes have pins for connecting to PCB through holes by fast and low temperature soldering.



M-series sensors are manufactured in sheet laminating. Available only as custom made sensors.

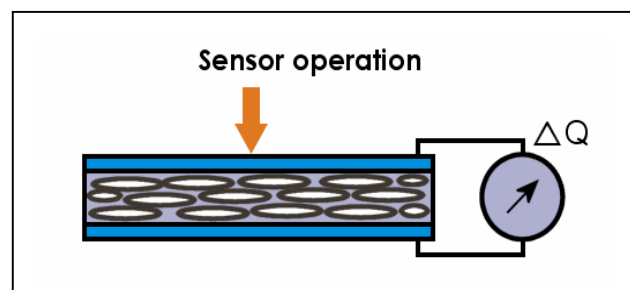
USES

Integrated onto PCB with signal amplifying and processing means for vibration/impact sensing, accelerometers, switches, machine monitoring,...

SENSOR OPERATION

Operating in a reciprocal fashion, changes in the thickness of the Emfit sensor generate a corresponding charge and hence, voltage to appear on the electrodes. The transducer behaves like an "active" capacitor, consequently, the loading of the signal by the

Input impedance of the measuring device must be considered.



Due to the small area and the thinness of the films, the associated capacitance of M-series sensors cannot normally be sufficient to give adequate low frequency response into standard 1 MΩ load and the use of an X10 probe will extend the low frequency range by a decade. Buffering is normally needed. Again, the low mass contributed by the transducer is of major importance, as well as its non-resonate behaviour. Frequency response is

inherently flat to over 20 KHz with only the R-C roll off at low frequencies distorting the profile. Though it responds to thickness change rather than strain, low signal levels may be generated by low frequency flexing, so a distinction must be made between the frequency response of the film for changes in its primary parameter (i.e. thickness) and its relative behaviour compared with, say piezoelectric sensors. The sensor has a flat response over a very wide frequency range, with resonant frequency points well above 20 KHz.

OTHER SPECIFICATIONS

Property	Symbol	Value	Unit	Tolerance	Conditions
Storage temperature	Ts	from -40 to +50	°C		
Operating temperature ¹	Tr	from -20 to +50	°C		
Thickness	D	0,2 – 1,0	mm		
Sensitivity ²	Sq	25	pC/N		
Youngs modulus, TD		0,5	Mpa	±50 %	
Operating force range	P	>100	N/cm2		

- 1) Loss of sensitivity is < 20 % after the following temperature cycles:
 - a) 11 hours at -20 °C, 1 hour at +20 °C, 11 hours at +70 °C, 1 hour at +20 °C, 28 cycles;
 - b) 1 hour at -20 °C, 1 hour at +70 °C, 10 cycles.
- 2) Sensitivity depends on the structure, pre-aging and number of Emfit layers. Max sensitivity available is up to about 400 pC/N upon special order.

ADDITIONAL INFORMATION

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