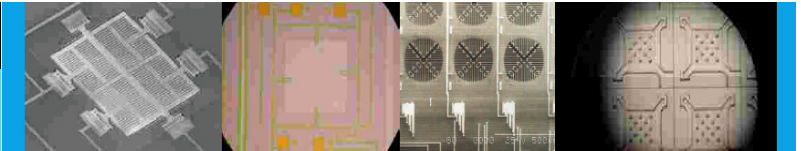


MTX1-50G

Single Axis Accelerometer – 50 g



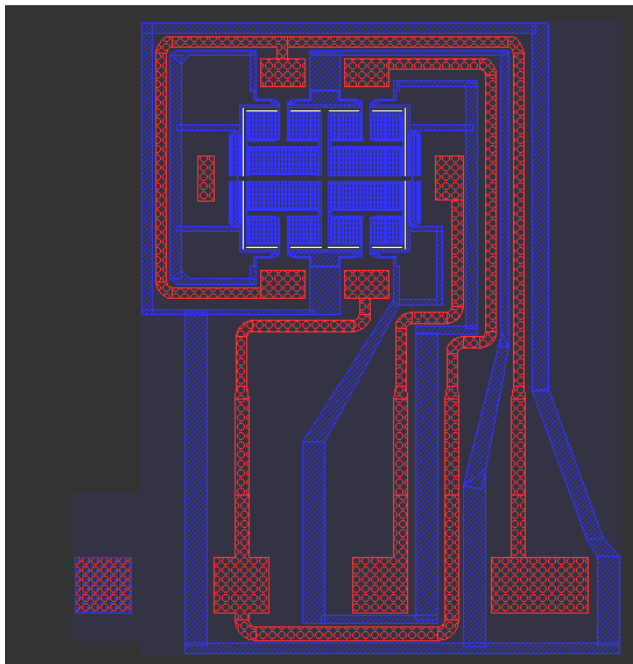
Single Axis Silicon Accelerometer Die

The MTX1-50G series capacitive silicon accelerometer sensors are manufactured in class 10 clean room using state of the art CMOS and bulk micro-machining capabilities. They are manufactured in six inched wafers, utilizing DRIE techniques and patented processes.

An applied force or acceleration (including gravity) causes a capacitance shift in a differential capacitor, which is converted to a pulse density modulation by an integrated ASIC. The sensing element is a differential capacitor fabricated in single crystal silicon with a high aspect ratio thereby offering excellent performance in sensitivity and linearity.

The sensing element is enclosed in a hermetic wafer-level package using wafer to wafer bonding. This allows it to be assembled in different types of packaging including low cost over-molded plastic packages.

Dies are fully probed and inspected and can be shipped in waffle pack.



FEATURES

- Excellent accuracy over 50g range
- Good temperature performance
- Low cost design
- Capacitive, high performance
- 100% factory tested
- High volume manufacturing
- Patented process

THE MAIN FIELD OF APPLICATIONS

- ✓ Acceleration Measurement
- ✓ Vibration measurement
- ✓ Inclination Measurement

MTX1-50G**Single Axis Accelerometer – 50 g****TECHNICAL DATA****Maximum ratings**

| Specification | Min. | Typ. | Max. | Unit |
|-----------------------|------|------|------|------|
| Operating Temperature | -40 | - | +85 | °C |
| Storage Temperature | -40 | - | 125 | °C |

DataTemperature= 22 ± 2 °C, Relative humidity= 45 ± 5 %

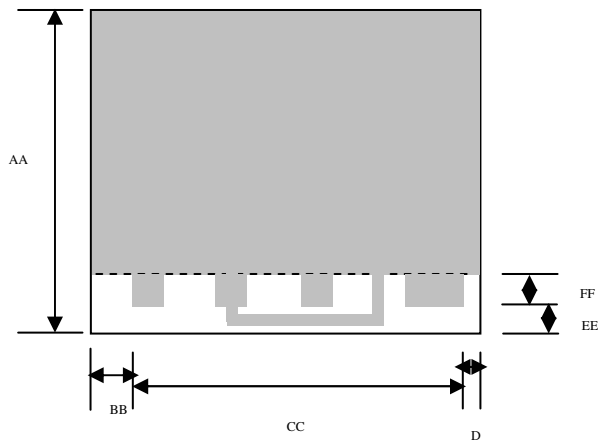
| Specification | Min. | Typ. | Max. | Unit |
|--------------------------|------|------|------|------|
| Measuring Range | -50 | - | +50 | g |
| Probe voltage | - | 3 | 5 | V |
| Leakage current | - | - | 5 | nA |
| Shock survival range | - | 2000 | - | g |
| Nominal Capacitance @ 0V | 0.5 | 1 | 1.5 | pF |
| Delta Capacitance | 0 | 200 | 400 | fF |
| Capacitance change @3V | 20 | 50 | 80 | fF |
| Sensitivity | 0.7 | 1 | 1.3 | fF/g |

MTX1-50G

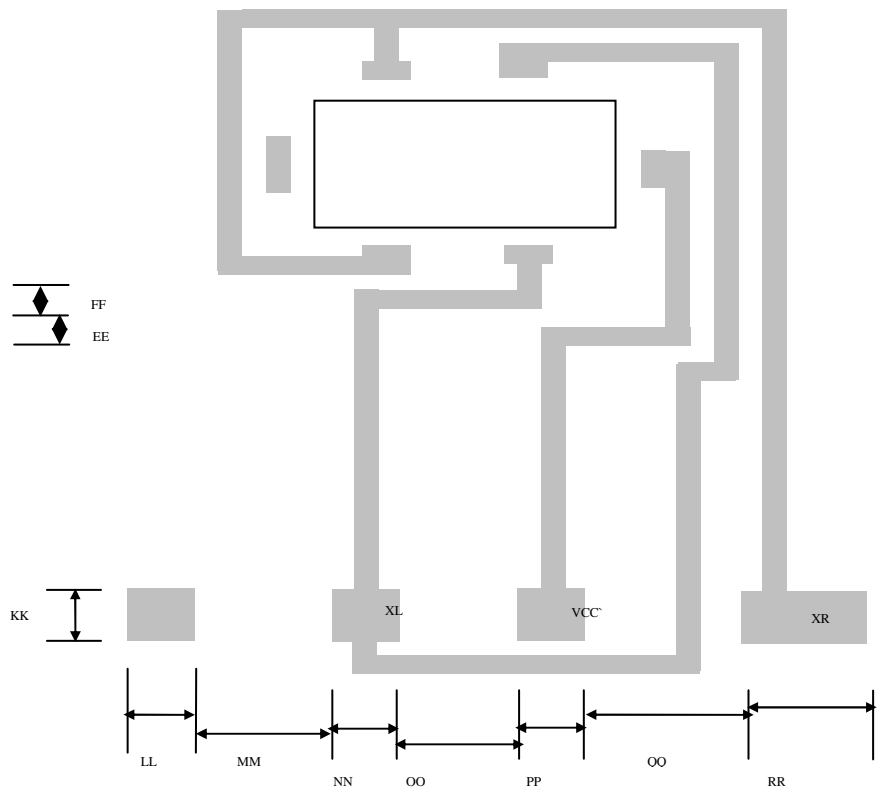
Single Axis Accelerometer – 50 g

DIMENSIONS

Plan View (w silicon cap)

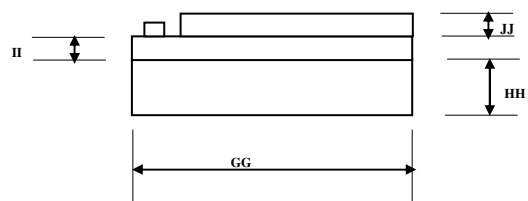


Plan View (w/o silicon cap)



| Dim | Typical |
|-----|---------|
| AA | 3020 |
| BB | 275 |
| CC | 1850 |
| DD | 225 |
| EE | 220 |
| FF | 200 |
| KK | 200 |
| LL | 200 |
| MM | 300 |
| NN | 200 |
| OO | 300 |
| PP | 200 |
| QQ | 300 |
| RR | 350 |

Side view



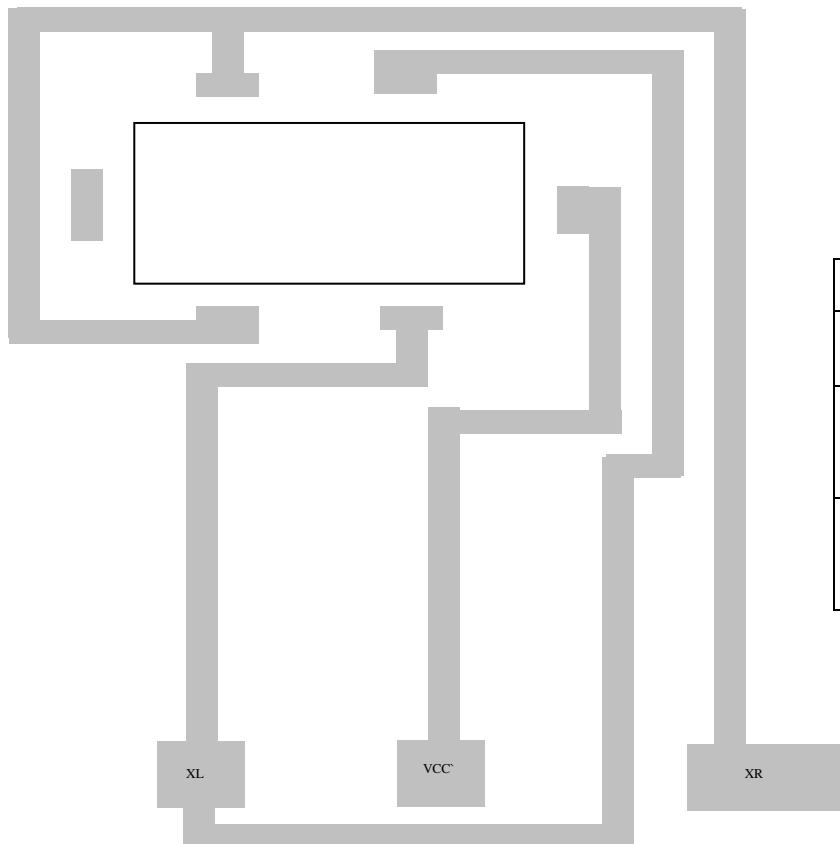
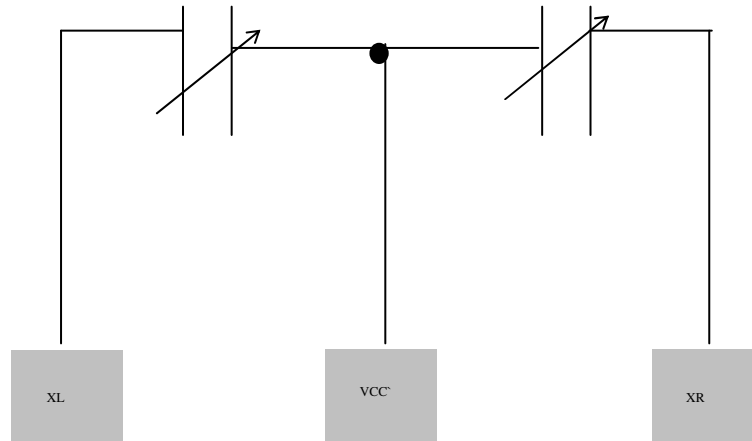
All units in um.

| Dim | Typical |
|---------------------------|---------|
| GG | 2350 |
| HH (glass substrate) | 550 |
| II (silicon device wafer) | 25 |
| JJ (silicon cap wafer) | 450 |

MTX1-50G

Single Axis Accelerometer – 50 g

ELECTRICAL AND DIE LAYOUT



| Pad | Description |
|-----|---|
| XL | X axis left capacitance (fixed electrode) |
| XR | X axis right capacitance (fixed electrode) |
| VCC | Common electrode for applying voltage bias (moving electrode) |