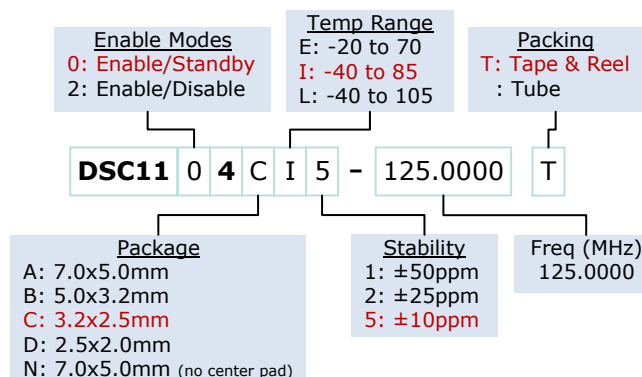


## Absolute Maximum Ratings

| Item           | Min  | Max          | Unit | Condition  |
|----------------|------|--------------|------|------------|
| Supply Voltage | -0.3 | +4.0         | V    |            |
| Input Voltage  | -0.3 | $V_{DD}+0.3$ | V    |            |
| Junction Temp  | -    | +150         | °C   |            |
| Storage Temp   | -55  | +150         | °C   |            |
| Soldering Temp | -    | +260         | °C   | 40sec max. |
| ESD            | -    |              | V    |            |
| HBM            |      | 4000         |      |            |
| MM             |      | 400          |      |            |
| CDM            |      | 1500         |      |            |

## Ordering Code



Note: 1000+ years of data retention on internal memory

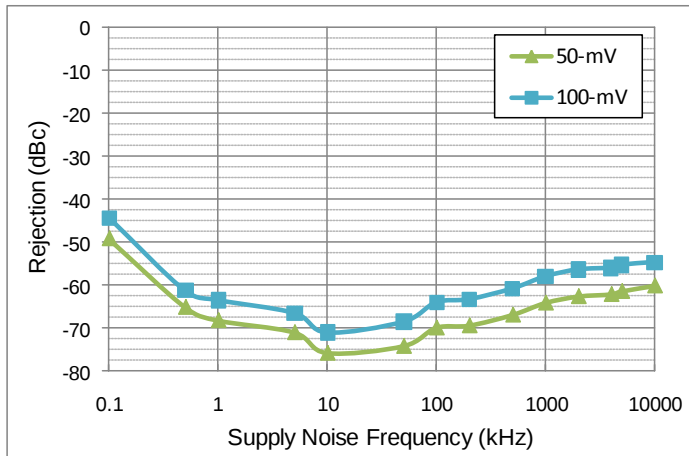
## Specifications

| Parameter                            |            | Condition                                                                              | Min.           | Typ.                | Max.              | Unit              |
|--------------------------------------|------------|----------------------------------------------------------------------------------------|----------------|---------------------|-------------------|-------------------|
| Supply Voltage <sup>1</sup>          | $V_{DD}$   |                                                                                        | 2.25           |                     | 3.6               | V                 |
| Supply Current                       | $I_{DD}$   | EN pin low – outputs are disabled<br>DSC1104<br>DSC1124                                |                | 20                  | 0.095<br>22       | mA                |
| Frequency Stability                  | $\Delta f$ | Includes frequency variations due to initial tolerance, temp. and power supply voltage |                |                     | ±10<br>±25<br>±50 | ppm               |
| Aging                                | $\Delta f$ | 1 year @25°C                                                                           |                |                     | ±5                | ppm               |
| Startup Time <sup>2</sup>            | $t_{SU}$   | T=25°C                                                                                 |                |                     | 5                 | ms                |
| Input Logic Levels                   |            |                                                                                        |                |                     |                   |                   |
| Input logic high                     | $V_{IH}$   |                                                                                        | 0.75x $V_{DD}$ |                     | -                 | V                 |
| Input logic low                      | $V_{IL}$   |                                                                                        | -              |                     | 0.25x $V_{DD}$    |                   |
| Output Disable Time <sup>3</sup>     | $t_{DA}$   |                                                                                        |                |                     | 5                 | ns                |
| Output Enable Time                   | $t_{EN}$   | DSC1104<br>DSC1124                                                                     |                |                     | 5<br>20           | ms<br>ns          |
| Enable Pull-Up Resistor <sup>4</sup> |            | Pull-up resistor exist                                                                 |                | 40                  |                   | kΩ                |
| <b>HCSL Outputs</b>                  |            |                                                                                        |                |                     |                   |                   |
| Supply Current                       | $I_{DD}$   | Output Enabled, $R_L=50\Omega$                                                         |                | 40                  | 42                | mA                |
| Output Logic Levels                  |            |                                                                                        |                |                     |                   |                   |
| Output logic high                    | $V_{OH}$   | $R_L=50\Omega$                                                                         | 0.725          |                     | -                 | V                 |
| Output logic low                     | $V_{OL}$   |                                                                                        | -              |                     | 0.1               |                   |
| Pk to Pk Output Swing                |            | Single-Ended                                                                           |                | 750                 |                   | mV                |
| Output Transition time <sup>3</sup>  |            |                                                                                        |                |                     |                   |                   |
| Rise Time                            | $t_R$      | 20% to 80%<br>$R_L=50\Omega$ , $C_L=2pF$                                               | 200            |                     | 400               | ps                |
| Fall Time                            | $t_F$      |                                                                                        |                |                     |                   |                   |
| Frequency                            | $f_0$      | Single Frequency                                                                       | 2.3            |                     | 460               | MHz               |
| Output Duty Cycle                    | SYM        | Differential                                                                           | 48             |                     | 52                | %                 |
| Period Jitter                        | $J_{PER}$  |                                                                                        |                | 2.5                 |                   | ps <sub>RMS</sub> |
| Integrated Phase Noise               | $J_{PH}$   | 200kHz to 20MHz @156.25MHz<br>100kHz to 20MHz @156.25MHz<br>12kHz to 20MHz @156.25MHz  |                | 0.25<br>0.37<br>1.7 | 2                 | ps <sub>RMS</sub> |

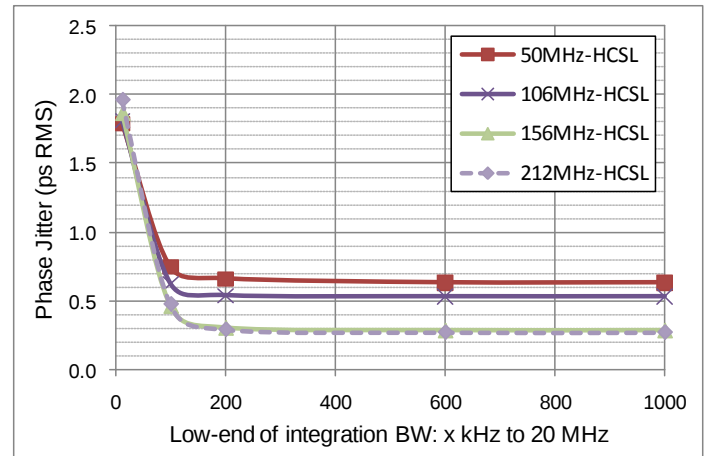
Notes:

- Pin 6  $V_{DD}$  should be filtered with 0.1uF capacitor.
- $t_{SU}$  is time to 100ppm of output frequency after  $V_{DD}$  is applied and outputs are enabled.
- Output Waveform and Test Circuit figures below define the parameters.
- Output is enabled if pad is floated or not connected.

## Nominal Performance Parameters (Unless specified otherwise: $T=25^{\circ}\text{C}$ , $V_{DD}=3.3\text{V}$ )

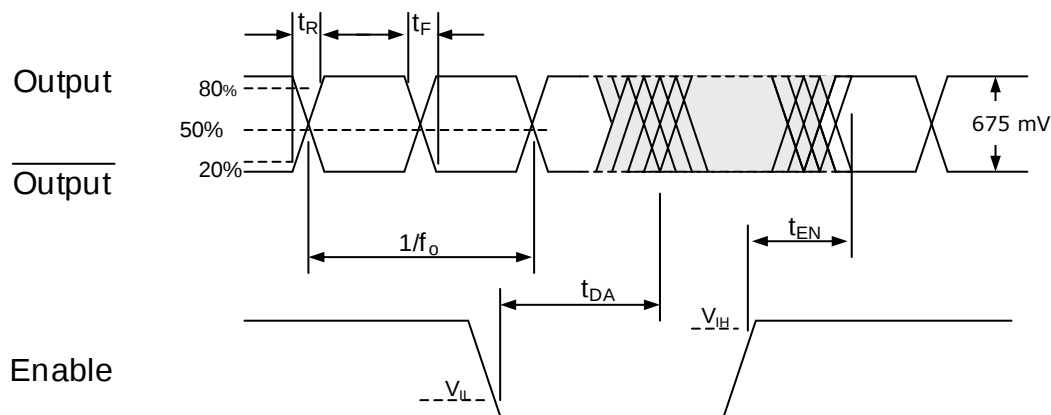


Power supply rejection ratio

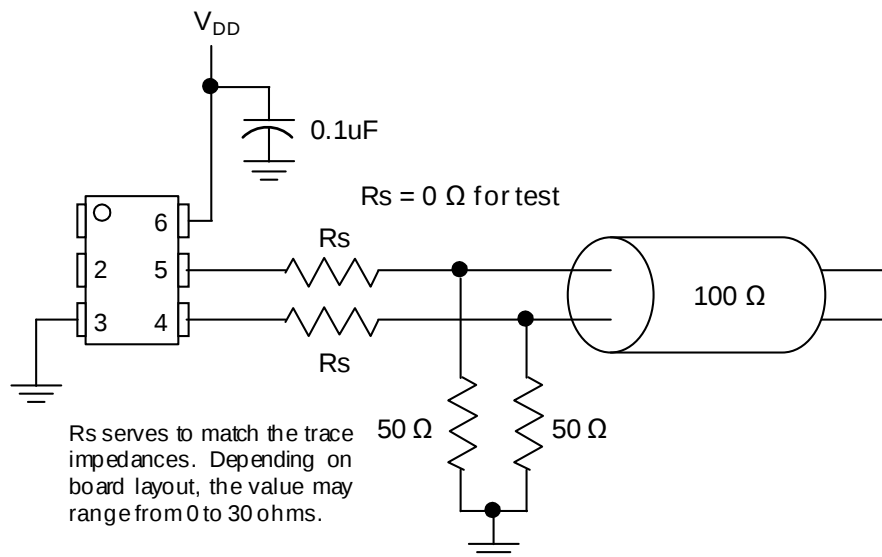


Phase jitter (integrated phase noise)

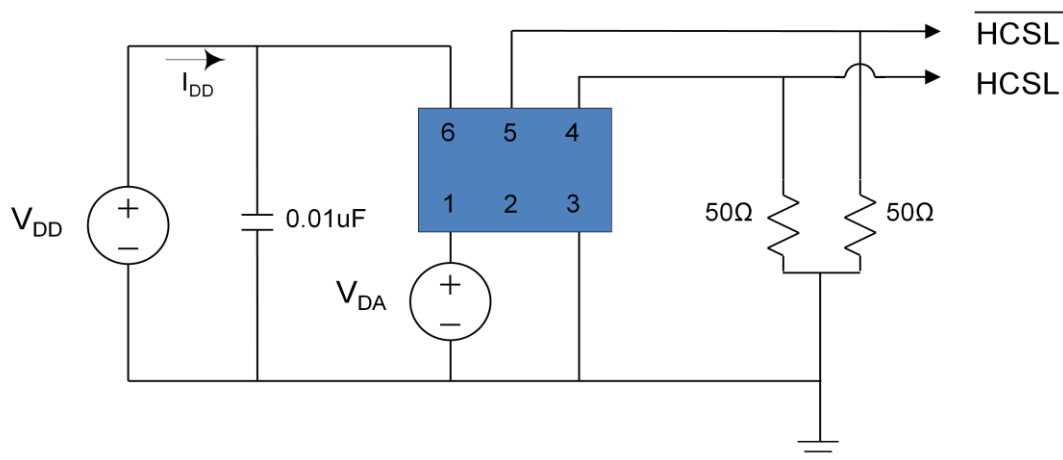
## Output Waveform



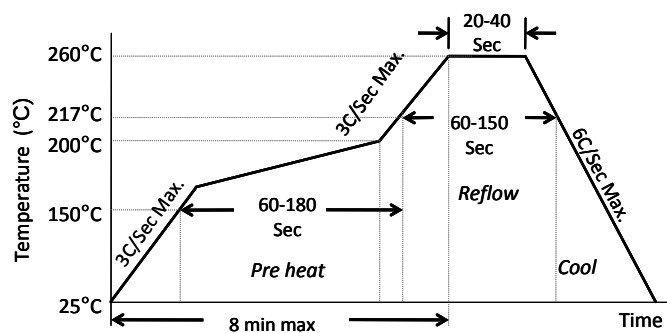
## Typical Termination Scheme



## Test Circuit



## Solder Reflow Profile



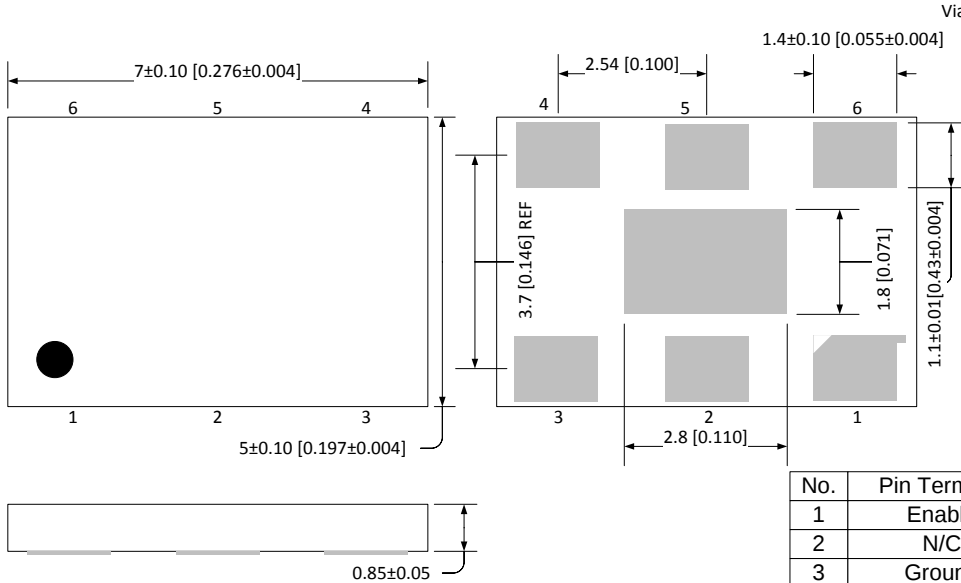
| MSL 1 @ 260°C refer to JSTD-020C  |              |
|-----------------------------------|--------------|
| Ramp-Up Rate (200°C to Peak Temp) | 3°C/Sec Max. |
| Preheat Time 150°C to 200°C       | 60-180 Sec   |
| Time maintained above 217°C       | 60-150 Sec   |
| Peak Temperature                  | 255-260°C    |
| Time within 5°C of actual Peak    | 20-40 Sec    |
| Ramp-Down Rate                    | 6°C/Sec Max. |
| Time 25°C to Peak Temperature     | 8 min Max.   |

## Package Dimensions

### 7.0 x 5.0 mm Plastic Package

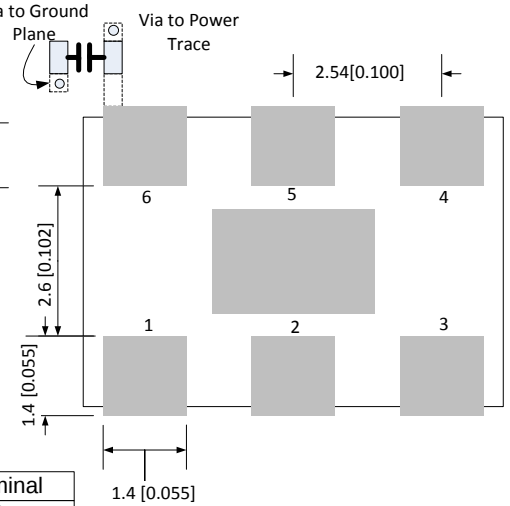
#### EXTERNAL DIMENSIONS

Units: mm [ inches]



#### RECOMMENDED SOLDER PAD LAYOUT

Units: mm [ inches]

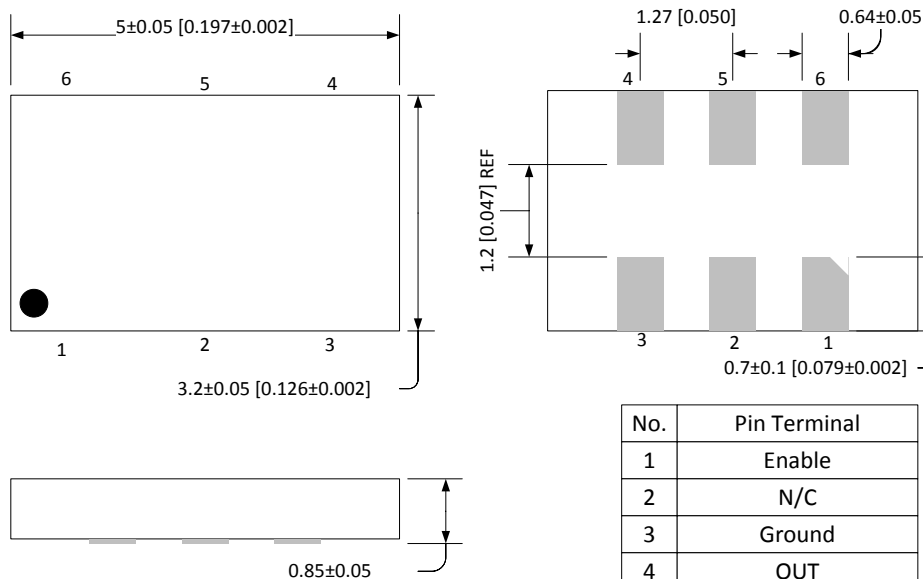


| No. | Pin Terminal |
|-----|--------------|
| 1   | Enable       |
| 2   | N/C          |
| 3   | Ground       |
| 4   | OUT          |
| 5   | OUT-         |
| 6   | VDD          |
| PAD | TIE TO GND   |

### 5.0 x 3.2 mm Plastic Package

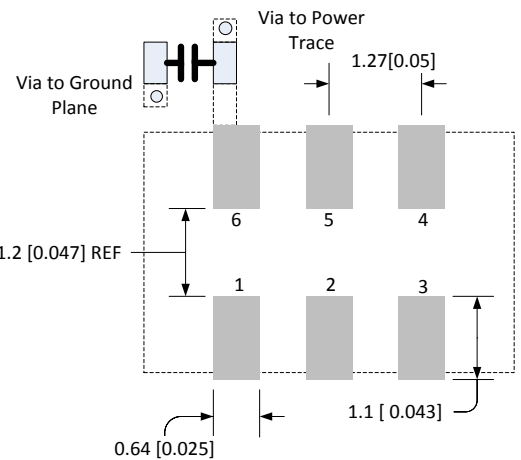
#### EXTERNAL DIMENSIONS

Units: mm [ inches]



#### RECOMMENDED SOLDER PAD LAYOUT

Units: mm [ inches]

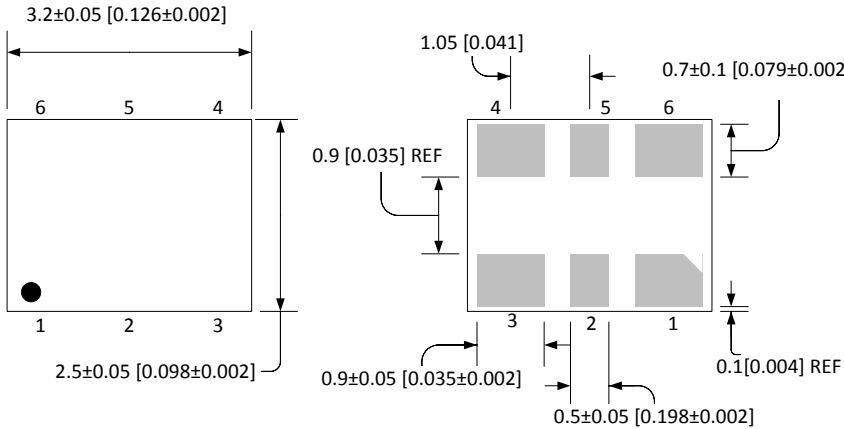


| No. | Pin Terminal |
|-----|--------------|
| 1   | Enable       |
| 2   | N/C          |
| 3   | Ground       |
| 4   | OUT          |
| 5   | OUT-         |
| 6   | VDD          |

### 3.2 x 2.5 mm Plastic Package

## EXTERNAL DIMENSIONS

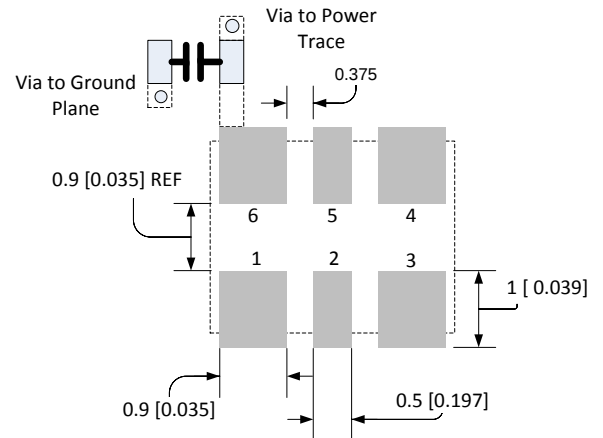
Units: mm [ inches]



| No. | Pin Terminal |
|-----|--------------|
| 1   | Enable       |
| 2   | N/C          |
| 3   | Ground       |
| 4   | OUT          |
| 5   | OUT-         |
| 6   | VDD          |

## RECOMMENDED SOLDER PAD LAYOUT

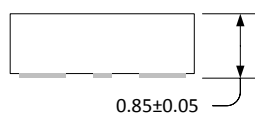
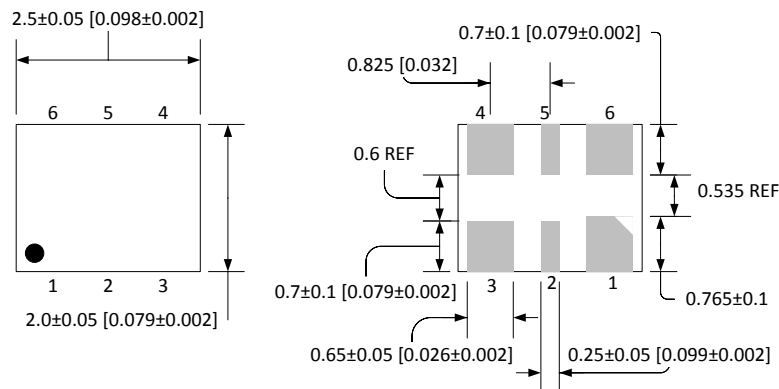
Units: mm [ inches]



## 2.5 x 2.0 mm Plastic Package

## EXTERNAL DIMENSIONS

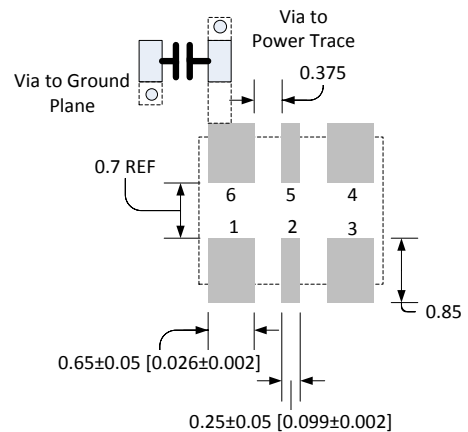
Units: mm [ inches]



| No. | Pin Terminal |
|-----|--------------|
| 1   | Enable       |
| 2   | N/C          |
| 3   | Ground       |
| 4   | OUT          |
| 5   | OUT-         |
| 6   | VDD          |

## RECOMMENDED SOLDER PAD LAYOUT

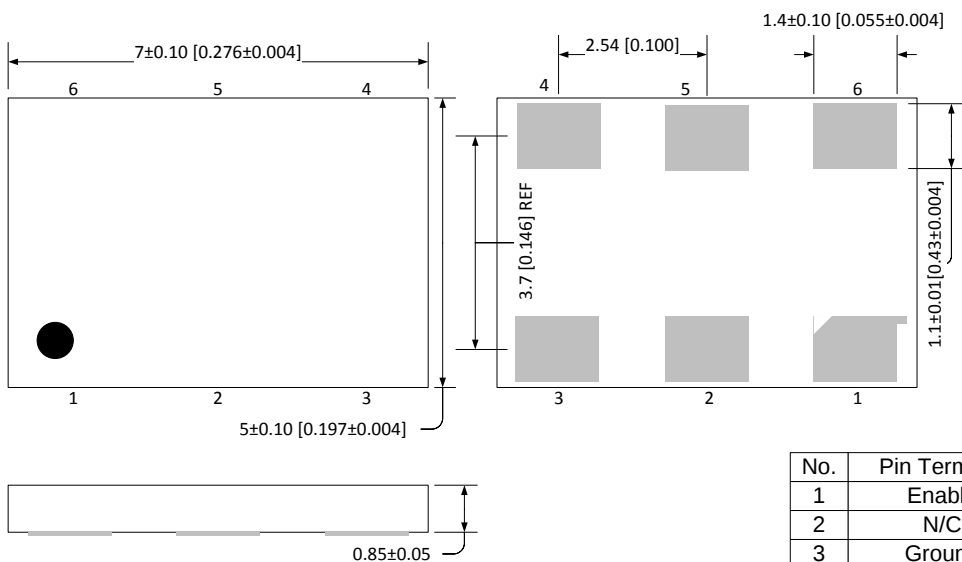
Units: mm [ inches]



### 7.0 x 5.0 mm Plastic Package

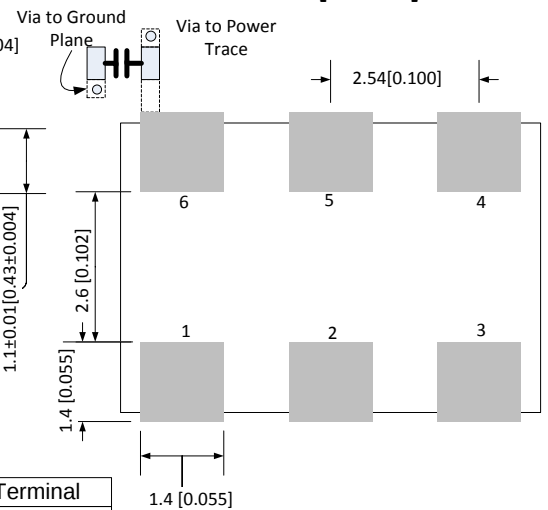
## EXTERNAL DIMENSIONS

Units: mm [ inches]



### RECOMMENDED SOLDER PAD LAYOUT

Units: mm [ inches]



| No. | Pin Terminal |
|-----|--------------|
| 1   | Enable       |
| 2   | N/C          |
| 3   | Ground       |
| 4   | OUT          |
| 5   | OUT-         |
| 6   | VDD          |

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