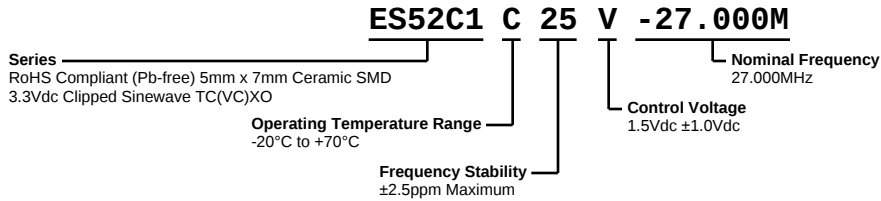


# ES52C1C25V-27.000M



## ELECTRICAL SPECIFICATIONS

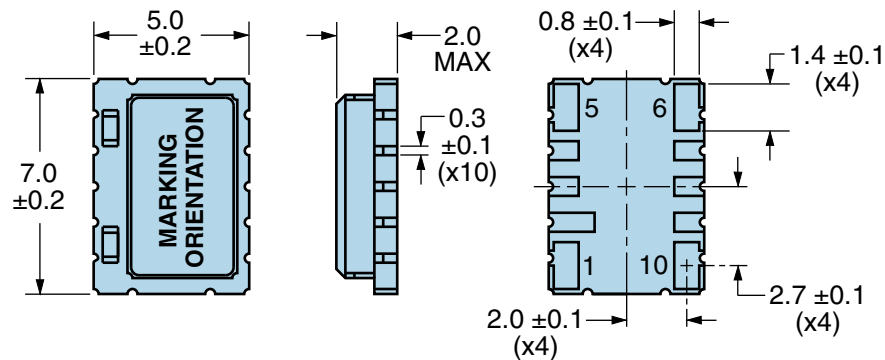
|                                             |                                                                                                                                                                         |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal Frequency                           | 27.000MHz                                                                                                                                                               |
| Frequency Stability vs. Frequency Tolerance | ±1.0ppm Maximum (Measured at 25°C ±2°C, Vdd=3.3Vdc, Vc=1.5Vdc)                                                                                                          |
| Frequency Stability                         | ±2.5ppm Maximum                                                                                                                                                         |
| Frequency Stability vs. Input Voltage       | ±0.2ppm Maximum (Vdd ±5%)                                                                                                                                               |
| Frequency Stability vs. Aging               | ±1ppm/Year Maximum (at 25°C)                                                                                                                                            |
| Frequency Stability vs. Load                | ±0.2ppm Maximum (±1kOhm//±1pF)                                                                                                                                          |
| Operating Temperature Range                 | -20°C to +70°C                                                                                                                                                          |
| Supply Voltage                              | 3.3Vdc ±5%                                                                                                                                                              |
| Input Current                               | 2.5mA Maximum                                                                                                                                                           |
| Output Voltage                              | 0.8Vp-p Clipped Sinewave Minimum                                                                                                                                        |
| Load Drive Capability                       | 10kOhms//10pF                                                                                                                                                           |
| Output Logic Type                           | Clipped Sinewave                                                                                                                                                        |
| Control Voltage                             | 1.5Vdc ±1.0Vdc                                                                                                                                                          |
| Frequency Deviation                         | ±8ppm Minimum                                                                                                                                                           |
| Linearity                                   | 10% Maximum                                                                                                                                                             |
| Transfer Function                           | Positive Transfer Characteristic                                                                                                                                        |
| Modulation Bandwidth                        | 3kHz Minimum (Measured at -3dB with a Control Voltage of 1.5Vdc)                                                                                                        |
| Input Impedance                             | 100kOhms Minimum                                                                                                                                                        |
| Phase Noise                                 | -80dBc/Hz at 10Hz offset, -115dBc/Hz at 100Hz offset, -135dBc/Hz at 1kHz offset, -145dBc/Hz at 10kHz offset, -145dBc/Hz at 100kHz offset (Typical Values, at 12.800MHz) |
| Start Up Time                               | 5mSec Maximum                                                                                                                                                           |
| Storage Temperature Range                   | -55°C to +125°C                                                                                                                                                         |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                      |
|------------------------------|--------------------------------------|
| Fine Leak Test               | MIL-STD-883, Method 1014 Condition A |
| Gross Leak Test              | MIL-STD-883, Method 1014 Condition C |
| Mechanical Shock             | MIL-STD-202, Method 213 Condition C  |
| Resistance to Soldering Heat | MIL-STD-202, Method 210              |
| Resistance to Solvents       | MIL-STD-202, Method 215              |
| Solderability                | MIL-STD-883, Method 2003             |
| Temperature Cycling          | MIL-STD-883, Method 1010             |
| Vibration                    | MIL-STD-883, Method 2007 Condition A |

# ES52C1C25V-27.000M

## MECHANICAL DIMENSIONS (all dimensions in millimeters)

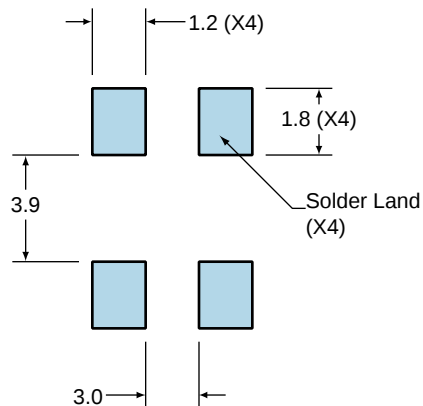


| PIN | CONNECTION      |
|-----|-----------------|
| 1   | Voltage Control |
| 2   | Do Not Connect  |
| 3   | Do Not Connect  |
| 4   | Do Not Connect  |
| 5   | Case/Ground     |
| 6   | Output          |
| 7   | Do Not Connect  |
| 8   | Do Not Connect  |
| 9   | Do Not Connect  |
| 10  | Supply Voltage  |

| LINE | MARKING                                                                                           |
|------|---------------------------------------------------------------------------------------------------|
| 1    | <b>E27.000</b><br>E=Ecliptek                                                                      |
| 2    | <b>XXYYZ</b><br>XX=Ecliptek Manufacturing Code<br>Y=Last Digit of the Year<br>ZZ=Week of the Year |

## Suggested Solder Pad Layout

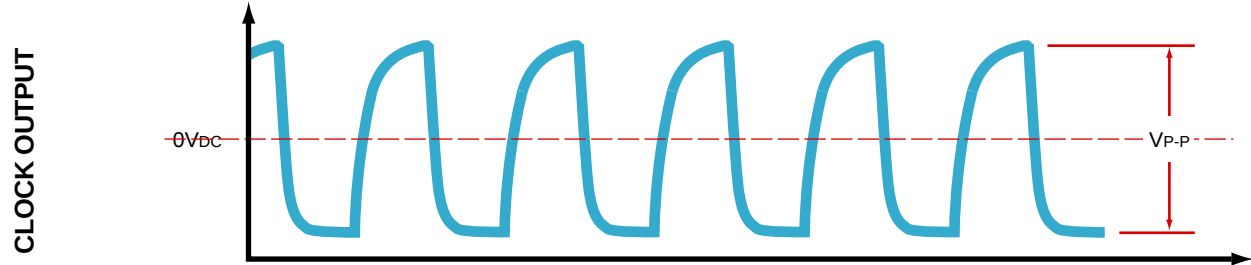
All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

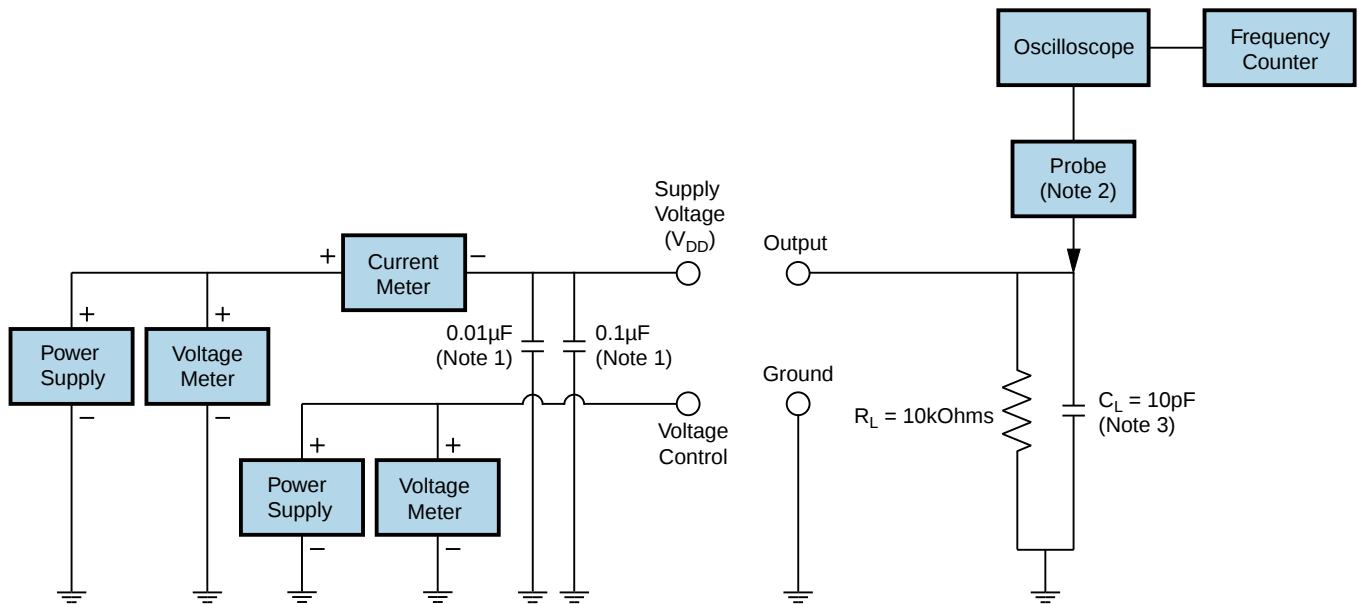
# ES52C1C25V-27.000M

## OUTPUT WAVEFORM



# ES52C1C25V-27.000M

## Test Circuit for Voltage Control Option



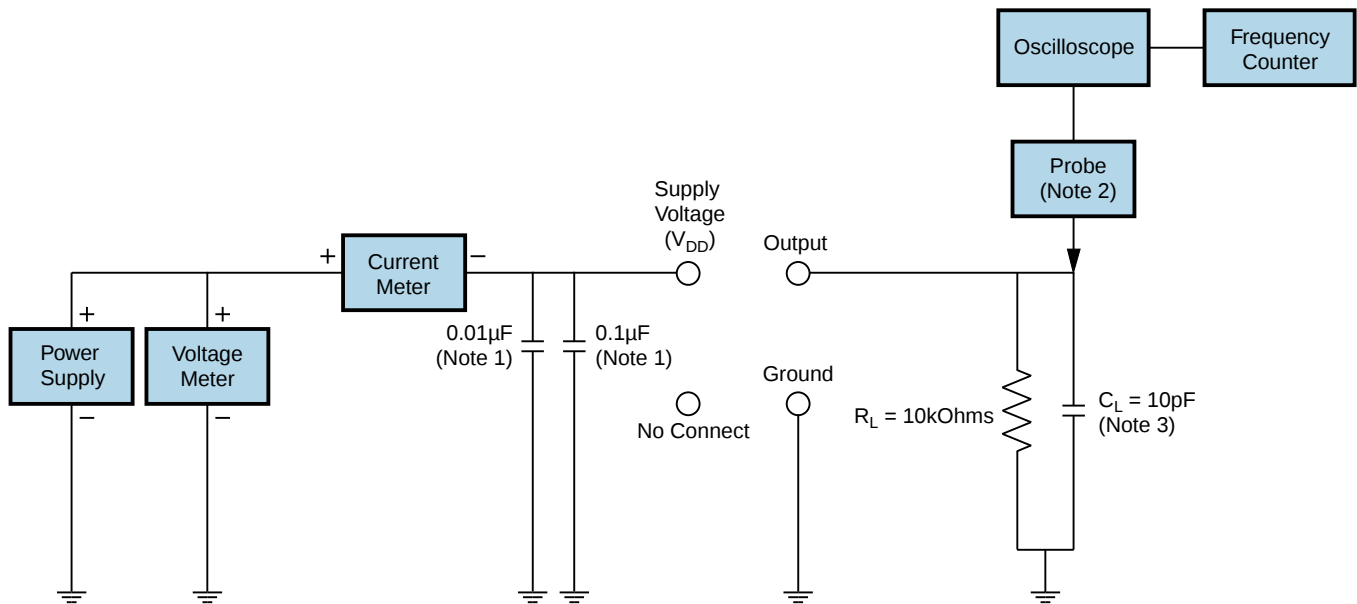
Note 1: An external  $0.1\mu\text{F}$  low frequency tantalum bypass capacitor in parallel with a  $0.01\mu\text{F}$  high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  pin is required.

Note 2: A low capacitance ( $<12\text{pF}$ ), 10X attenuation factor, high impedance ( $>10\text{Mohms}$ ), and high bandwidth ( $>300\text{MHz}$ ) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

# ES52C1C25V-27.000M

## Test Circuit for No Connect Option



Note 1: An external  $0.1\mu F$  low frequency tantalum bypass capacitor in parallel with a  $0.01\mu F$  high frequency ceramic bypass capacitor close to the package ground and  $V_{DD}$  pin is required.

Note 2: A low capacitance ( $<12pF$ ), 10X attenuation factor, high impedance ( $>10M\Omega$ ), and high bandwidth ( $>300MHz$ ) passive probe is recommended.

Note 3: Capacitance value  $C_L$  includes sum of all probe and fixture capacitance.

## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 220°C

$T_S$  MAX to  $T_L$  (Ramp-up Rate) 5°C/second Maximum

#### Preheat

- Temperature Minimum ( $T_S$  MIN) N/A
- Temperature Typical ( $T_S$  TYP) 150°C
- Temperature Maximum ( $T_S$  MAX) N/A
- Time ( $t_s$  MIN) 60 - 120 Seconds

Ramp-up Rate ( $T_L$  to  $T_P$ ) 5°C/second Maximum

#### Time Maintained Above:

- Temperature ( $T_L$ ) 150°C
- Time ( $t_L$ ) 200 Seconds Maximum

Peak Temperature ( $T_P$ ) 220°C Maximum

Target Peak Temperature ( $T_P$  Target) 220°C Maximum 1 Time / 215°C Maximum 1 Time

Time within 5°C of actual peak ( $t_P$ ) 15 seconds Maximum 1 Time / 80 seconds Maximum 1 Time

Ramp-down Rate 5°C/second Maximum

Time 25°C to Peak Temperature (t) N/A

Moisture Sensitivity Level Level 1

### Low Temperature Manual Soldering

185°C Maximum for 10 seconds Maximum, 2 times Maximum.

### High Temperature Manual Soldering

260°C Maximum for 5 seconds Maximum, 2 times Maximum.