



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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- ▶ Low EMI Output
- ▶ 5 x 3.2 mm Footprint
- ▶ Wide frequency range
- ▶ Pb Free/RoHS Compliant

# ECS-3250SS

## SPREAD SPECTRUM OSCILLATOR

ECS-3250SS Spread Spectrum EMI output SMD oscillators provide cost effective EMI reduction.

### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS                             | CONDITIONS                 | ECS-3250SS (+3.3V) |      |         | UNITS |
|--|----------------------------|--------------------|------|---------|-------|
|  |                            | MIN                | TYP  | MAX     |       |
| Frequency Range                        |                            | 10.000             |      | 168.000 | MHz   |
| Operating Temperature                  |                            | -10                |      | +70     | °C    |
| Storage Temperature                    |                            | -40                |      | +85     | °C    |
| Supply Voltage                         | VDD                        | +3.135             | +3.3 | +3.465  | VDC   |
| Frequency Stability                    | Referred to frequency avg. |                    |      | ± 50    | ppm   |
| Spread spectrum range<br>Center spread | Option A                   |                    |      | ± 0.5   | %     |
|  | Option B                   |                    |      | ± 1     | %     |
|  | Option C                   |                    |      | ± 2     | %     |
| Input Current                          | 10.000 to 28.000 MHz       |                    |      | 13      | mA    |
|  | 28.100 to 168.000 MHz      |                    |      | 15      | mA    |
| Output Symmetry                        | @ 50% VDD level            | 40/60              |      | 60/40   | %     |
| Rise and Fall Times                    | 10% VDD to 90% level       |                    |      | 5       | ns    |
| "0" level                              | VOL                        |                    |      | 10% VDD | VDC   |
| "1" level                              | VOH                        | 90% VDD            |      |         | VDC   |
| Output Load                            | CMOS                       |                    |      | 15      | pF    |
| Enable/Disable delay time              |                            |                    |      | 10      | ns    |
| Startup time                           |                            |                    |      | 10      | ms    |
| Aging (first year)                     | at +25°C ±3°C              |                    |      | ± 5     | ppm   |
| Jitter (Cycle to Cycle)                | 10.000 to 20.000 MHz       |                    |      | 200     | pS    |
|  | 20.10.000 to 168.000 MHz   |                    |      | 100     | pS    |

### DIMENSIONS (mm)

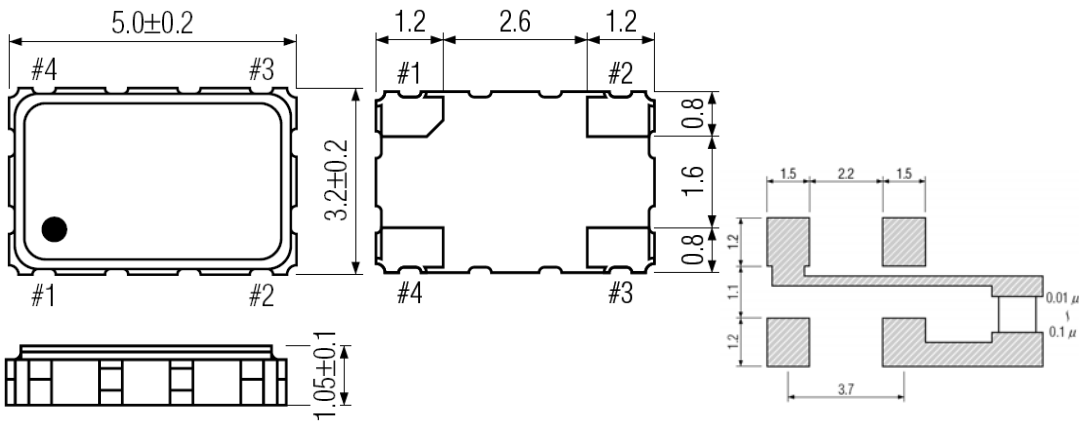


Figure 1) Top, Side and Bottom views

Figure 2) Suggested Land Pattern

### Pin Connections

|        |           |
|--------|-----------|
| Pin #1 | Tri-State |
| Pin #2 | Ground    |
| Pin #3 | Output    |
| Pin #4 | VDD       |

### Tri-State Control Voltage

| Pad 1           | Pad 3          |
|-----------------|----------------|
| Open            | Oscillation    |
| VIH 90% VDD Min | Oscillation    |
| VIL 10% VDD Max | High Impedance |

Note: Internal crystal oscillation to be halted (Pin #1=VIL)

### PART NUMBERING GUIDE: Example ECS-3250SS-270-3B

| ECS | Series | Frequency Abbreviation                                 | Voltage  | Spread Spectrum Range                  |
|-----|--------|--|----------|--|
|     | 3250SS | 270 = 27.000 MHz<br>See Frequency Abbreviations (Pg 2) | 3 = 3.3V | A = ± 0.5%<br>B = ± 1.0%<br>C = ± 2.0% |



### Frequency Abbreviations

| FREQUENCY MHz | CODE |
|---------------|------|
| 24.000        | 240  |
| 25.000        | 250  |
| 27.000        | 270  |
| 40.000        | 400  |
| 54.000        | 540  |

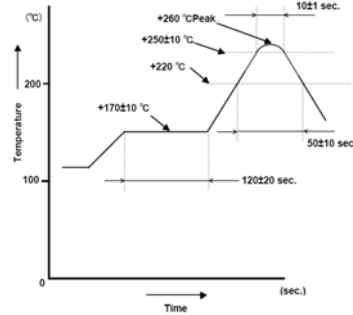
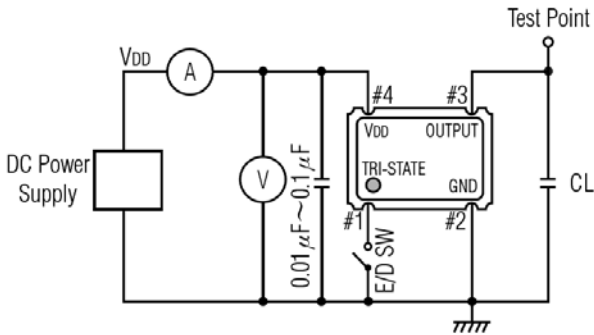


Figure 3) Suggested Reflow Profile

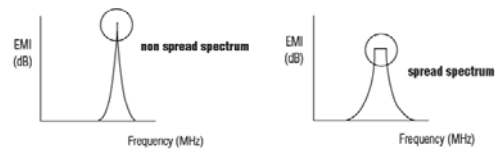
### TEST CIRCUIT



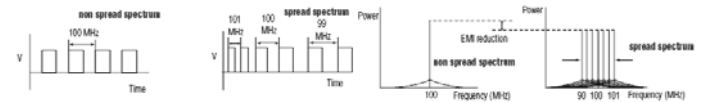
CL : including fixture and probe capacitance.

Figure 1) Suggested Reflow Profile

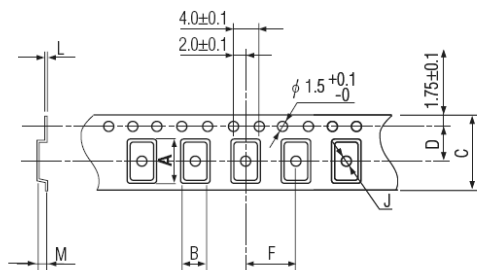
### SPREAD SPECTRUM FOR EMI REDUCTION



### ± 1% CENTER SPREAD AT 100 MHz



### TAPE DIMENSIONS (mm)



| A   | B   | C    | D   | F   | J   | L   | M   | Reel Dia. | Qty/Reel |
|-----|-----|------|-----|-----|-----|-----|-----|-----------|----------|
| 5.4 | 3.5 | 12.0 | 5.5 | 8.0 | 1.5 | 0.3 | 1.4 | 178       | 1000pcs  |

### Package Data

| Item     | Description                   |
|----------|-------------------------------|
| Lid      | Metal                         |
| Base     | Ceramic                       |
| Sealing  | Seam                          |
| Terminal | Tungsten (metalized)          |
| Plating  | Gold/Nickel (Surface)/(Under) |
| RoHS     | Compliant (Pb Free)           |

Figure 2) Pocket Tape Dimensions