



## Chip Scale Series Termination Array

### Features

- 8 or 16 integrated high frequency series terminations
- Ultra small footprint Chip Scale Package
- Ceramic substrate
- 0.35mm Eutectic Solder Bumps, 0.65mm pitch

### Applications

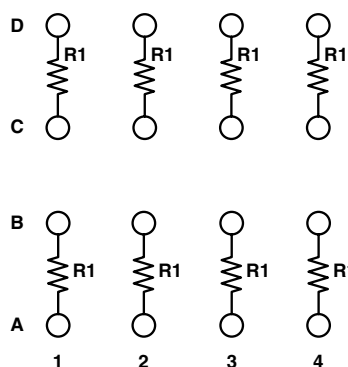
- Series resistive bus termination
- Isolated resistor array

### Product Description

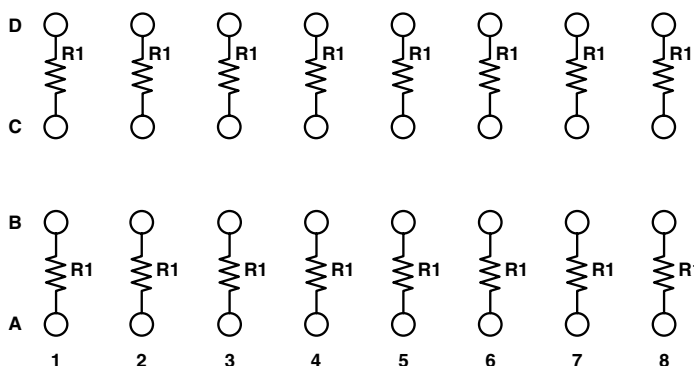
The CSPST is a high performance Integrated Passive Device (IPD) which provides series terminations suitable for use in high speed bus applications. Eight (8) or sixteen (16) series termination versions are provided. These resistors provide excellent high frequency performance in excess of 3GHz and are manufactured to an absolute tolerance as low as  $\pm 1\%$ . The Chip Scale

Package provides an ultra small footprint for this IPD and provides minimal parasitics compared to conventional packaging. Typical bump inductance is less than 25pH. The large solder bumps and ceramic substrate allow for standard attachment to laminate printed circuit boards without the use of underfill.

### SCHEMATIC DIAGRAMS



**CSPST08**



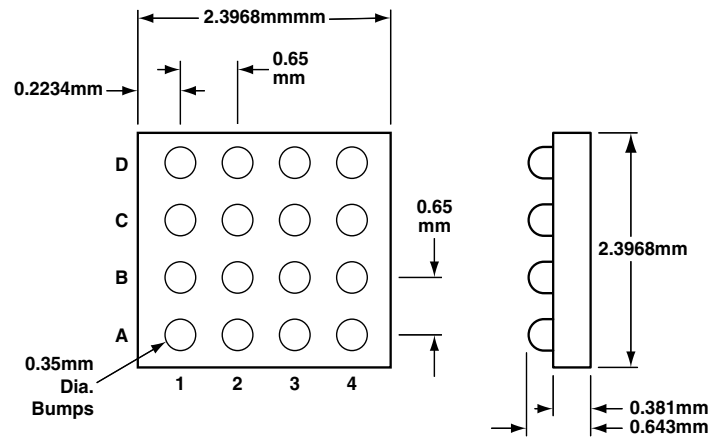
**CSPST16**

### STANDARD VALUES

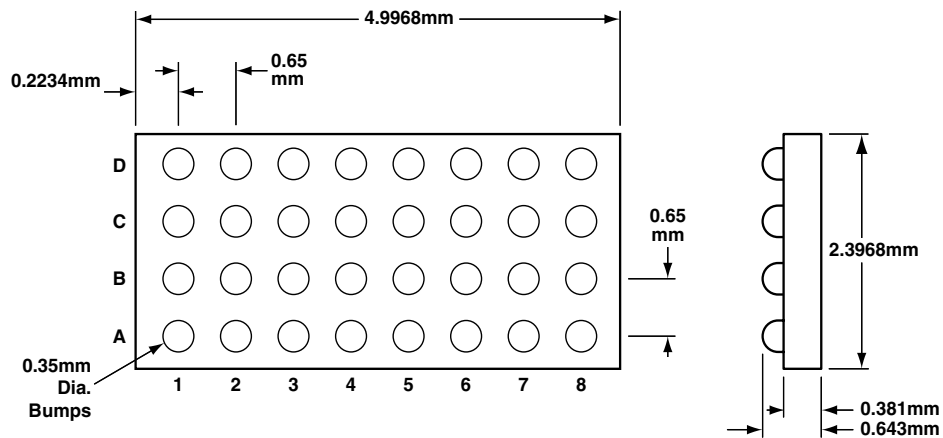
|                             |                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------|
| Resistor Value              | R1 = 22 $\Omega$ , 33 $\Omega$ , 39 $\Omega$ , 47 $\Omega$ , 51 $\Omega$ , 56 $\Omega$ , |
| Absolute Tolerance R        | $\pm 1\%$ , $\pm 5\%$                                                                    |
| TCR of Resistors            | $\pm 100\text{ppm}$                                                                      |
| Power Rating/Resistor       | 100mW                                                                                    |
| Operating Temperature Range | -40°C to 85°C                                                                            |



## Package Diagram (Bumps Up View)



CSPST08

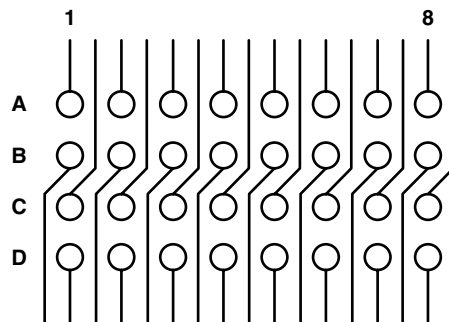


CSPST16

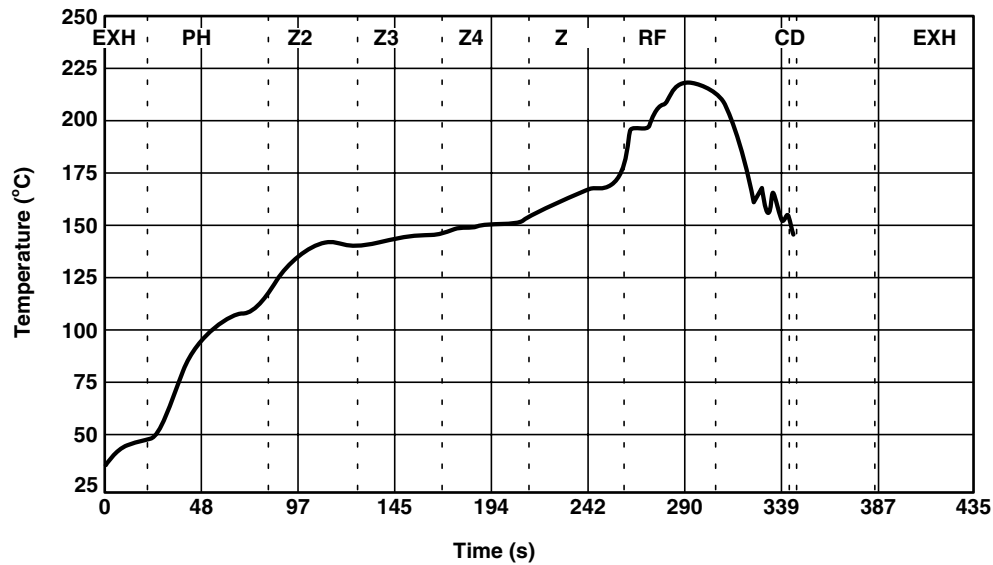
| PRINTED CIRCUIT BOARD RECOMMENDATIONS |                                     |
|---------------------------------------|-------------------------------------|
| Pad Size on PCB                       | 0.300mm                             |
| Pad Shape                             | Round                               |
| Pad Definition                        | Non Solder Mask Defined Pads (NSMD) |
| Solder Mask Opening                   | 0.350mm                             |
| Solder Stencil Thickness              | 0.152mm                             |
| Solder Stencil Aperture Opening       | 0.360mm (sq.)                       |
| Solder Flux Ratio                     | 50/50                               |
| Solder Paste                          | No Clean                            |
| Bond Trace Finish                     | OSP (Entek Cu Plus 106A)            |



Typical PCB Routing Diagram (Bumps Down View)



Typical Solder Reflow Thermal Profile (No Clean Flux)





| STANDARD PART ORDERING INFORMATION |              |                      |              |
|------------------------------------|--------------|----------------------|--------------|
| Package                            |              | Ordering Part Number |              |
| Style                              | Terminations | Tape & Reel          | Part Marking |
| Chip Scale                         | 8            | CSPST08-220F         | None         |
| Chip Scale                         | 8            | CSPST08-220J         | None         |
| Chip Scale                         | 8            | CSPST08-330F         | None         |
| Chip Scale                         | 8            | CSPST08-330J         | None         |
| Chip Scale                         | 8            | CSPST08-390F         | None         |
| Chip Scale                         | 8            | CSPST08-390J         | None         |
| Chip Scale                         | 8            | CSPST08-470F         | None         |
| Chip Scale                         | 8            | CSPST08-470J         | None         |
| Chip Scale                         | 8            | CSPST08-510F         | None         |
| Chip Scale                         | 8            | CSPST08-510J         | None         |
| Chip Scale                         | 8            | CSPST08-560F         | None         |
| Chip Scale                         | 8            | CSPST08-560J         | None         |
| Chip Scale                         | 16           | CSPST16-220F         | None         |
| Chip Scale                         | 16           | CSPST16-220J         | None         |
| Chip Scale                         | 16           | CSPST16-330F         | None         |
| Chip Scale                         | 16           | CSPST16-330J         | None         |
| Chip Scale                         | 16           | CSPST16-390F         | None         |
| Chip Scale                         | 16           | CSPST16-390J         | None         |
| Chip Scale                         | 16           | CSPST16-470F         | None         |
| Chip Scale                         | 16           | CSPST16-470J         | None         |
| Chip Scale                         | 16           | CSPST16-510F         | None         |
| Chip Scale                         | 16           | CSPST16-510J         | None         |
| Chip Scale                         | 16           | CSPST16-560F         | None         |
| Chip Scale                         | 16           | CSPST16-560J         | None         |

| PACKAGE                |              | NON-STANDARD PART ORDERING INFORMATION                                                       |               |
|------------------------|--------------|----------------------------------------------------------------------------------------------|---------------|
| Part Series            | Terminations | Value Code: R1 (XXX)                                                                         | Tolerance     |
| <i>Example (CSPST)</i> | <i>(8)</i>   | <i>(201)</i>                                                                                 | <i>(J)</i>    |
| CSPST                  | 8            | First 2 digits are significant value.<br>Third digit represents number of<br>zeros to follow | F = $\pm 1\%$ |
| CSPST                  | 16           |                                                                                              | J = $\pm 5\%$ |

