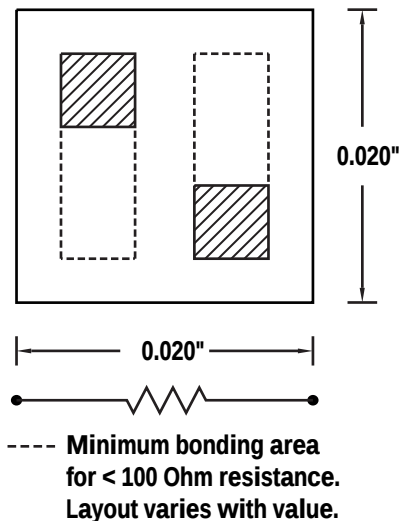


# THIN FILM CHIP RESISTORS

## MSTF 2 SERIES



### MECHANICAL DATA

|                  |                                                             |
|------------------|-------------------------------------------------------------|
| SIZE             | 0.020" x 0.020" (±0.003") x 0.010" (±0.003")                |
| SUBSTRATE        | SILICON, ALUMINA, QUARTZ, OR GLASS                          |
| RESISTOR         | NICHROME OR TANTALUM NITRIDE                                |
| BOND PADS        | 15,000 Å MINIMUM GOLD<br>10,000 Å MINIMUM ALUMINUM OPTIONAL |
| BACKSIDE SURFACE | BARE SUBSTRATE<br>GOLD BACK OPTIONAL                        |

### ELECTRICAL DATA

| RESISTANCE RANGE       | NICHROME                                          | TANTALUM NITRIDE                                  |
|------------------------|---------------------------------------------------|---------------------------------------------------|
| SILICON, QUARTZ, GLASS | 2Ω TO 1.5MΩ                                       | 2Ω TO 1.5MΩ                                       |
| ALUMINA                | 2Ω TO 300KΩ                                       | 2Ω TO 300KΩ                                       |
| ABSOLUTE TOLERANCE     | 0.1%, 0.5%, 1%, 2%, 5%, 10%<br>TO 0.01% AVAILABLE | 0.1%, 0.5%, 1%, 2%, 5%, 10%<br>TO 0.01% AVAILABLE |
| T.C.R.                 |                                                   |                                                   |
| SILICON, QUARTZ, GLASS | ±50ppm/°C STANDARD<br>OPTIONAL TO ±5ppm/°C        | ±150ppm/°C STANDARD<br>OPTIONAL TO ±10ppm/°C      |
| ALUMINA                | ±50ppm/°C STANDARD<br>OPTIONAL TO ±25ppm/°C       | ±150ppm/°C STANDARD<br>OPTIONAL TO ±25ppm/°C      |

### SERIES DATA

|                               |                                                                   |
|-------------------------------|-------------------------------------------------------------------|
| CURRENT NOISE                 | 101Ω TO 250KΩ: -40dB<br>≤ 100Ω, ≥ 250KΩ: -30dB                    |
| DIELECTRIC BREAKDOWN          | 400V MIN.                                                         |
| INSULATION RESISTANCE         | 10 <sup>12</sup> Ω MIN.                                           |
| OPERATING VOLTAGE             | 100 V MAX.                                                        |
| POWER RATING                  |                                                                   |
| SILICON, ALUMINA              | 250mW (70°C DERATED LINEARLY TO 150°C) P = E <sup>2</sup> /R      |
| QUARTZ, GLASS                 | 50mW (70°C DERATED LINEARLY TO 150°C) P = E <sup>2</sup> /R       |
| SHORT TERM OVERLOAD           | 5X RATED POWER, 25°C, 5 SEC., ±0.25% MAX. ΔR/R: ±0.1% MSI TYPICAL |
| HIGH TEMP EXPOSURE            | 150°C, 100 HRS., ±0.25% MAX. ΔR/R: ±0.03% MSI TYPICAL             |
| THERMAL SHOCK                 | MIL-STD 202, METHOD 107F, ±0.25% MAX. ΔR/R: ±0.1% MSI TYPICAL     |
| MOISTURE RESISTANCE           | MIL-STD 202, METHOD 106, ±0.5% MAX. ΔR/R: ±0.1% MSI TYPICAL       |
| STABILITY                     | 1000 HRS., 70°C, 100% POWER, ±0.5% MAX. ΔR/R: ±0.1% MSI TYPICAL   |
| OPERATING TEMP RANGE          | -55°C TO +150°C                                                   |
| STRAY DISTRIBUTED CAPACITANCE |                                                                   |
| SILICON / NiCr OR TaN         | 2pF                                                               |
| ALUMINA / NiCr                | 0.06pF                                                            |
| ALUMINA / TaN                 | 0.08pF                                                            |
| QUARTZ / NiCr                 | 0.02pF                                                            |
| QUARTZ / TaN                  | 0.05pF                                                            |
| GLASS / NiCr                  | 0.04pF                                                            |
| GLASS / TaN                   | 0.06pF                                                            |

### PART NUMBER DESIGNATION

| MSTF 2 | X                                                     | X                                    | XXXXX                                                                                                                       | X                                                                                                       | X                                                                                                                                                              |
|--------|-------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SERIES | SUBSTRATE                                             | RESISTIVE FILM                       | OHMIC VALUE                                                                                                                 | TOLERANCE                                                                                               | OPTION                                                                                                                                                         |
|        | A = Alumina<br>G = Glass<br>Q = Quartz<br>S = Silicon | N = Nichrome<br>T = Tantalum Nitride | 5-Digit Number: 1st 4 Digits Are Significant With "R" As Decimal Point When Required. 5th Digit Represents Number of Zeros. | S = 0.01%*<br>X = 0.02%*<br>Q = 0.05%*<br>B = 0.1%<br>D = 0.5%<br>F = 1%<br>G = 2%<br>J = 5%<br>K = 10% | A = ±50ppm/°C<br>B = ±25ppm/°C<br>C = ±10ppm/°C<br>D = ±5ppm/°C<br>E = Aluminum Bond Pads<br>F = ±100ppm/°C<br>G = Gold Bond Pads Std.**<br>GB = Gold Backside |

**MSI**  
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EXAMPLE: MSTF 2SN-50R00F-GB = 0.020" x 0.020", Silicon Substrate, Nichrome Resistor, 50Ω, ±1% Tol., ±50 ppm/°C, Gold Backside. [www.DataSheet4U.com](http://www.DataSheet4U.com)

\* Value dependent on Alumina. Consult sales.

\*\*Always used when no other option is required.