

## MODELS

**SQSxxA<sup>1</sup>, SQSxxB, SSNxxA, SSNxxB,  
SSWxxA, SSWxxB, SPDxxA, SPDxxB**

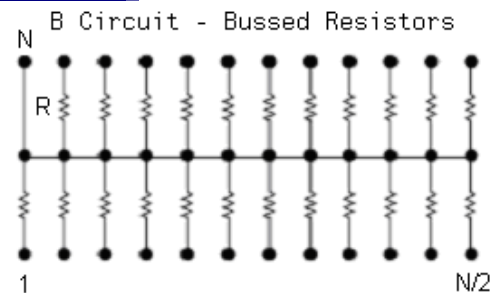
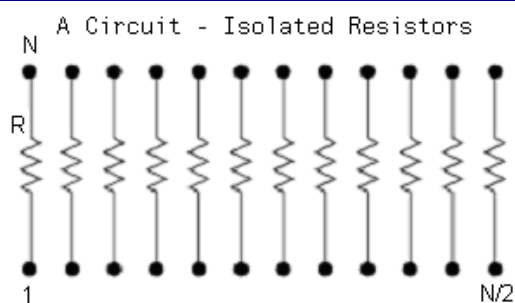


**Isolated and bussed circuits  
Thin film resistor network  
RoHS compliant available**

## FEATURES

|   |   |
|---|---|
| Precision Nichrome Resistors on Silicon | Passivation coating provides protection in humid environments |
| Industry Standard Packaging             | JEDEC 95  |
| Ratio Tolerances                        | < ± 0.05%   |
| TCR Tracking Tolerances                 | < ± 5 ppm/°C  |

## SCHEMATICS



## ELECTRICAL<sup>2</sup>

|  |   |
|--|---|
| Standard Resistance Range <sup>3</sup>   | 1K ohms to 100K ohms (Isolated)<br>1K ohms to 30K ohms (Bussed) |
| Resistor Tolerances                      | ± 0.25%   |
| Ratio Tolerances                         | ± 0.05%   |
| TCR                                      | Reference TCR table   |
| Operating Temperature Range              | -55°C to +125°C   |
| Interlead Capacitance                    | < 2 pF  |
| Insulation Resistance                    | ≥ 10,000 Megohms  |
| Maximum Operating Voltage                | 100 Vdc or √ PR   |
| Noise, Maximum (MIL-STD-202, Method 308) | -25 dB  |
| Resistor Power Rating at 70°C            | 0.1 Watts   |

<sup>1</sup> xx denotes package pin count. Reference package type section in this data sheet for description.

<sup>2</sup> Specifications subject to change without notice.

<sup>3</sup> E96 codes available.

**BI Technologies Corporation**

4200 Bonita Place  
Fullerton, CA 92835 USA

Website: [www.bitechnologies.com](http://www.bitechnologies.com)

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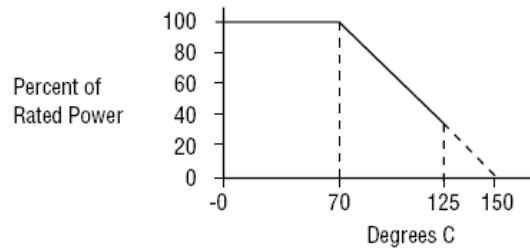
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**SQSxxA, SQSxxB, SSNxxA, SSNxxB,  
SSWxxA, SSWxxB, SPDxxA, SPDxxB**

**PACKAGE POWER, WATTS @ 70°C<sup>4</sup>**

| QSOP |     |     | SOIC (Narrow) |     |     | SOIC (Wide) |     |     | P-DIP |     |     |
|------|-----|-----|---------------|-----|-----|-------------|-----|-----|-------|-----|-----|
| 16   | 20  | 24  | 8             | 14  | 16  | 16          | 20  | 24  | 8     | 14  | 16  |
| 0.6  | 0.7 | 0.8 | 0.4           | 0.7 | 0.8 | 1.0         | 1.2 | 1.2 | 0.4   | 0.6 | 0.8 |

**POWER DERATING CURVE**



**ENVIRONMENTAL (MIL-R-83401)**

|                                       |                             |
|---------------------------------------|-----------------------------|
| Thermal Shock plus Power Conditioning | ΔR 0.25%                    |
| Short Time Overload                   | ΔR 0.1%                     |
| Terminal Strength                     | ΔR 0.1%                     |
| Moisture Resistance                   | ΔR 0.2%                     |
| Mechanical Shock                      | ΔR 0.25%                    |
| Vibration                             | ΔR 0.25%                    |
| Low Temperature Operation             | ΔR 0.05%                    |
| High Temperature Exposure             | ΔR 0.1%                     |
| Resistance to Solder Heat             | ΔR 0.1%                     |
| Marking Permanency                    | Per MIL-STD-202, Method 215 |
| Flammability                          | UL-94V-0 Rated              |
| Storage Temperature Range             | -55°C to +125°C             |

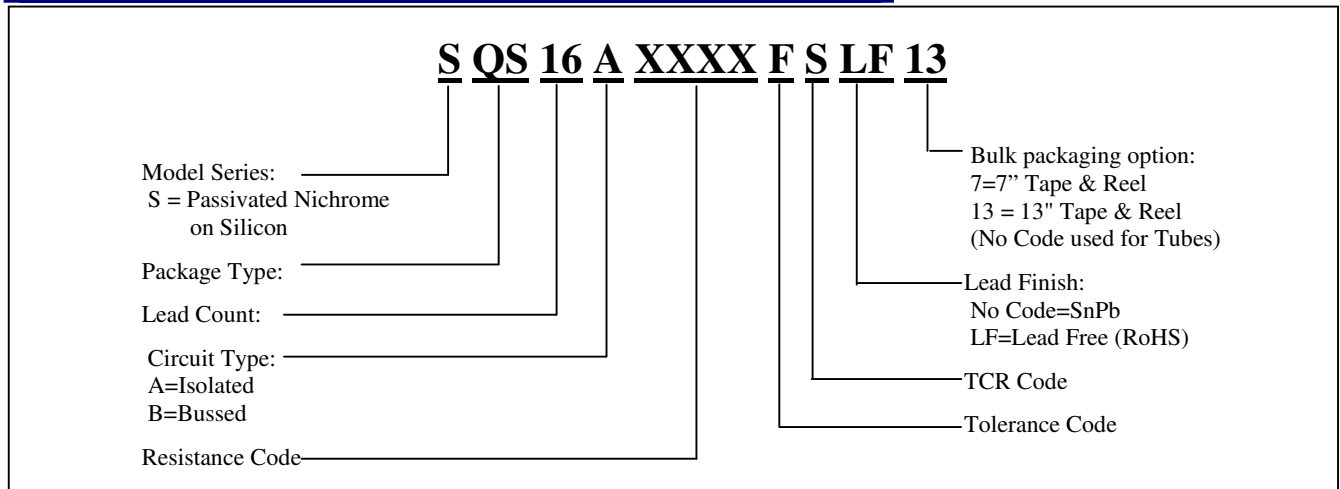
**MECHANICAL**

|                    |   |
|--------------------|---|
| Lead Plating       | 80/20 Tin Lead (Standard)<br>100 matte Tin (RoHS) |
| Lead Material      | Copper Alloy                                      |
| Lead Configuration | Gull Wing   |
| Lead Coplanarity   | 0.004" (0.102 mm)                                 |
| Substrate Material | Silicon   |
| Resistor Material  | Passivated Nichrome                               |
| Body Material      | Molded Epoxy                                      |

<sup>4</sup> Maximum power per resistor @ 70 °C is 100 mW, not to exceed package power.

**SQSxxA, QSxxB, SSNxxA, SSNxxB,  
SSWxxA, SSWxxB, SPDxxA, SPDxxB**

**ORDERING INFORMATION<sup>5</sup>**



**PACKAGE TYPE**

|                  | Package Codes | Lead count | Mechanical Outline |
|------------------|---------------|------------|--------------------|
| QSOP             | QS            | 16, 20, 24 | MO-137             |
| SOIC Narrow Body | SN            | 8, 14, 16  | MS-012             |
| SOIC Wide Body   | SW            | 16, 20, 24 | MS-013             |
| P-DIP            | PD            | 8, 14, 16  | MS-001             |

**RESISTANCE<sup>5</sup>**

First 3 digits are significant. Fourth digit denotes number of trailing zeros. For values less than 100, use "R" to denote a decimal point. Example, 51 and 10000 ohms is coded as 51R0 and 1002 respectively. Standard values follow E96.

**RESISTANCE TOLERANCE**

| Accuracy Code at 25°C              | CA     | CB     | D     | FA     | F     | G     | J     |
|------------------------------------|--------|--------|-------|--------|-------|-------|-------|
| Absolute Resistance Tolerances (%) | ± 0.25 | ± 0.25 | ± 0.5 | ± 1.0  | ± 1.0 | ± 2.0 | ± 5.0 |
| Ratio Tolerances (R1 Ref) (%)      | ± 0.05 | ± 0.1  | ± 0.1 | ± 0.05 | ± 1.0 | N/A   | N/A   |

**TEMPERATURE COEFFICIENT OF RESISTANCE (TCR)**

| TCR Code (-55°C to 125°C)  | Q    | P    | S     | L     |
|----------------------------|------|------|-------|-------|
| Absolute (ppm/°C)          | ± 25 | ± 50 | ± 100 | ± 200 |
| Tracking (R1 Ref) (ppm/°C) | ± 5  | ± 5  | N/A   | N/A   |

<sup>5</sup> Contact customer service for custom designs and features.

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SSWxxA, SSWxxB, SPDxxA, SPDxxB**

**BULK PACKAGING OPTIONS**

| Model + Pin Count | Quantity |          |       |
|-------------------|----------|----------|-------|
|                   | 7" Reel  | 13" Reel | Tubes |
| SQS16             | 1000     | 2500     | 100   |
| SQS20             | 1000     | 2500     | 50    |
| SQS24             | 1000     | 2500     | 50    |
| SSN08             | 1000     | 2500     | 100   |
| SSN14             | 500      | 2500     | 50    |
| SSN16             | 500      | 2500     | 50    |
| SSW16             | 500      | 1500     | 50    |
| SSW20             | 500      | 1500     | 38    |
| SPD08             | N/A      | N/A      | 50    |
| SPD14             | N/A      | N/A      | 25    |
| SPD16             | N/A      | N/A      | 25    |

**TYPICAL MARKING**

