

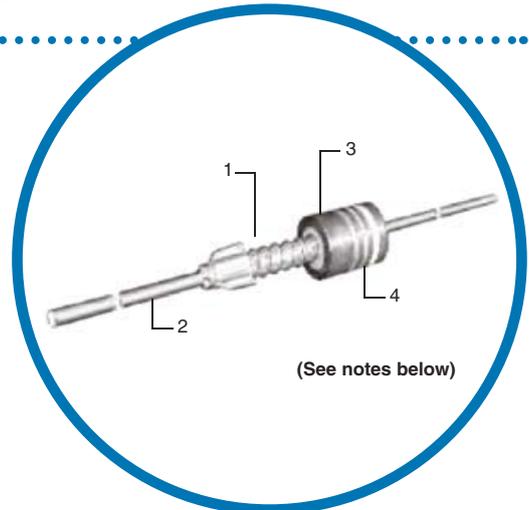
Failsafe Molded Wirewound Resistor



SP20 / SP20F Series

- SP20F UL1412 recognised fusing *
- 0.1 ohm to 1200 ohms
- F version has flame resistant coating
- 1 watt rated with 1/2 watt dimensions
- Drop-in replacement BW20 / BW20F
- Weldable and solderable magnetic lead
- TCR's as low as ± 150 ppm/ $^{\circ}\text{C}$ standard (custom TC's available)
- Lead free, RoHS compliant construction available

* UL file number E234469



Electrical Data

IRC Type		SP20	SP20F
EIA RS-344 Style		CRU1	CRU1
MIL-R-11 Style		RC20/RC32	RC20/RC32
Resistance - Std.		0.1 Ω to 1200 Ω	0.1 Ω to 1000 Ω
UL Recognised Range		---	1 Ω to 470 Ω
Tolerance - Std.		$\pm 5\%$ (E24), $\pm 10\%$ (E12)	
Power Rating		1 watt @ 50 $^{\circ}\text{C}$ 3/4 watt @ 70 $^{\circ}\text{C}$ 1/2 watt @ 100 $^{\circ}\text{C}$ Derating to 0 @ 160 $^{\circ}\text{C}$	1 watt @ 50 $^{\circ}\text{C}$ 3/4 watt @ 70 $^{\circ}\text{C}$ --- Derating to 0 @ 160 $^{\circ}\text{C}$
Max. Continuous Working Voltage		$\sqrt{\text{PR}}$	$\sqrt{\text{PR}}$
Min. Insulation Resistance	Dry Wet	10,000 Meg 100 Meg	10,000 Meg 100 Meg
Min. Dielectric Withstanding Volts (RMS)	ATM Reduced Pressure	700V 450V	700V 450V
Hotspot Temperature Rise		120 $^{\circ}\text{C}$ @ 1 watts	120 $^{\circ}\text{C}$ @ 1 watts
Typical Load Life		5%	5%
Current Noise		Negligible	Negligible

1. Resistive Element

All resistor types have resistance alloy winding on a braided fiberglass substrate. Intermediate silicone coatings are used to enhance processibility and to provide protection to the resistive element.

2. Termination

The SP-20 and SP-20F resistors are terminated using an alloy coated copper flashed steel lead welded to a cap of the same material. This termination assembly is mechanically crimped, utilizing an improved crimp design, to the resistive element.

3. Encapsulation

The SP-20 and the SP20F are encapsulated utilizing a compression molded phenolic plastic material. The SP-20F has a flame resistance coating applied over the resistive element to provide flammability protection when destructive overloads may occur.

4. Marking

All products are marked utilizing heat and solvent resistant color code bands consistent with EIA/MIL requirements. The first band is double width to designate wirewound construction. A fifth band, blue in color, is used for flameproof identification.

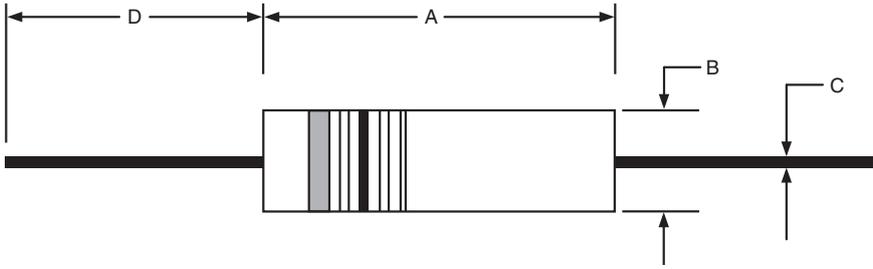
General Note

TT electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT electronics' own data and is considered accurate at time of going to print.

Environmental Data

Test	SP20	SP20F
Temperature Coefficient (ppm)*	<1R <±800 ≥1R <±150	<1R <±800* ≥1R <±150
Dielectric Withstanding Voltage (RMS)	700V	700V
Momentary Overload	5%	5%
Low Temperature Operation	5%	5%
Temperature Cycle	5%	5%
Humidity	5%	5%
Load Life	5%	5%
Terminal Strength	5%	5%
Resistance to Solder Heat	5%	5%
Solderability	No Failures	No Failures

Physical Data

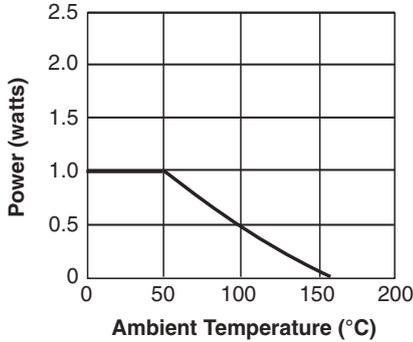


Dimensions (Inches and (mm))				
IRC Type	A	B	C	D
SP20	0.390 ± 0.010 (9.91 ± 0.25)	0.140 ± 0.008 (3.56 ± 0.20)	0.032 ± 0.002 (0.813 ± 0.05)	1.50 ± 0.126 (38.1 ± 3.2)
SP20F	0.390 ± 0.010 (9.91 ± 0.25)	0.140 ± 0.008 (3.56 ± 0.20)	0.032 ± 0.002 (0.813 ± 0.05)	1.50 ± 0.126 (38.1 ± 3.2)

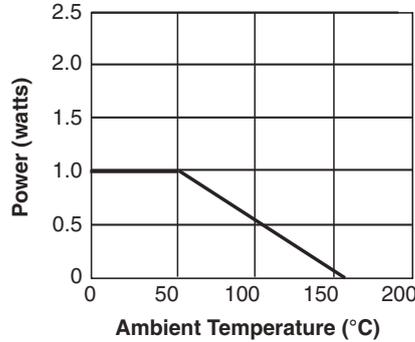
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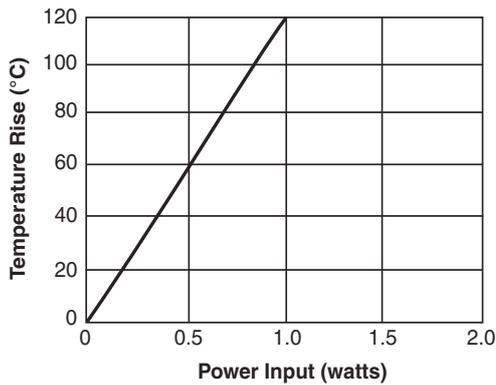
SP-20 Power Derating Curve



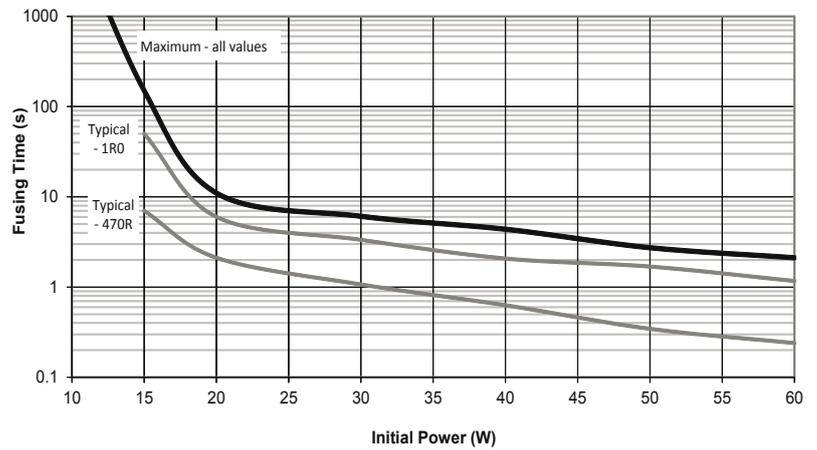
SP-20F Power Derating Curve



SP-20 and SP20F Temperature Rise Chart



SP20F Fusing Characteristic (Maximum & Typical Fusing Times)



Note: After fusing the ohmic value is at least 100 times the initial value, provided initial power ≥ 20W is applied.

Ordering Data

Sample Part No. **SP20F** **1800** **J** **LF** **XXX**

IRC Type

Recognition

UL = UL1412 recognised (optional characters)

Resistance Range

(First three significant figures plus fourth digit multiplier)

Example: 2203 = 220 Kohm

51R0 = 51 ohm

2R00 = 2.0 ohm

Tolerance

F = ±1.0%, G = ±2.0%, J = ±5.0%

RoHS Compliant (optional)

Provides clear "Lead Free" Designation

Specification

Custom design identifier for non-standard products

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