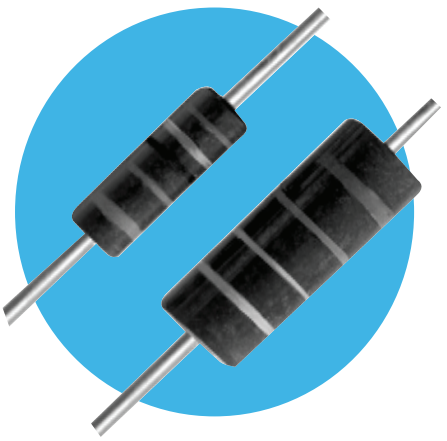
Resistors
General-Purpose Failsafe Moulded Wirewound Resistors

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/°C standard (custom TC's available)
- Lead free, RoHS compliant construction available

* UL file number E234469

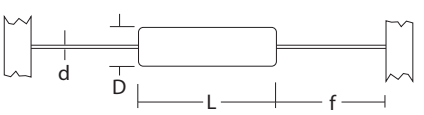
All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Electrical Data

Type		SP20	SP20F
EIA RS-344 Style		CRU 1	
MIL-R-11 Style		RC20/RC32	
Resistance Range	ohms	0R1 to 1k2	0R1 to 1k
UL Recognised Range	ohms	N/A	4R7 to 470R
Tolerance	%	±5, ±10	
Power rating	watts	1 at 50°C 0.75 at 70°C 0.5 at 100°C Derating to 0 at 160°C	1 at 50°C 0.75 at 70°C - Derating to 0 at 160°C
Maximum continuous working voltage		$\sqrt{PR}$	
Minimum insulation resistance	dry	10,000 Meg	
	wet	100 Meg	
Minimum dielectric withstanding volts	ATM	700V	
Reduced pressure	RMS	450V	
Hotspot temperature rise		120°C at 1 watt	
Current noise		Negligible	

Physical Data

Dimensions (mm)				
Type	L	D	d	f
SP20	9.91±0.25	3.56±0.20	0.813±0.05	38.1±3.2
SP20F	9.91±0.25	3.56±0.20	0.813±0.05	38.1±3.2



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

Termination
The SP20 and SP20F 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.

Encapsulation
The SP20 and SP20F are encapsulated utilizing a compression molded phenolic plastic material. The SP20F has a flame resistance coating applied over the resistive element to provide flammmability protection when destructive overloads may occur.

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

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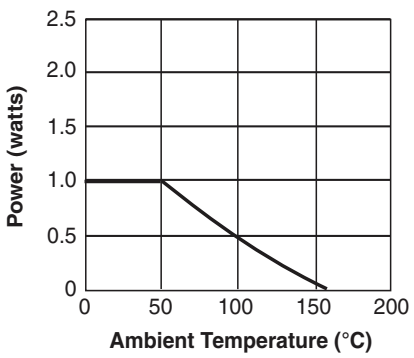
Performance Data

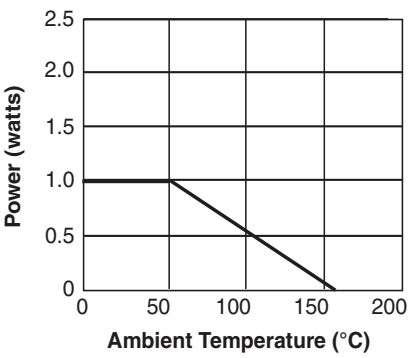
Test		SP20	SP20F
Temperature coefficient (ppm)	ppm/°C	<1R ±800 ≥1R ±150	<1R ±800* ≥1R ±150
Dielectric withstanding voltage	RMS	700V	
Momentary overload	%	5	
Low temperature operation	%	5	
Temperature cycle	%	5	
Humidity	%	5	
Load life	%	5	
Terminal strength	%	5	
Resistance to solder heat	%	5	

*0.1 ohm SP20F <1000 ppm.

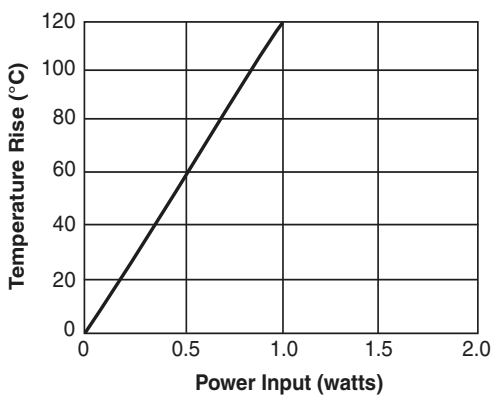
SP-20 Power Derating Curve



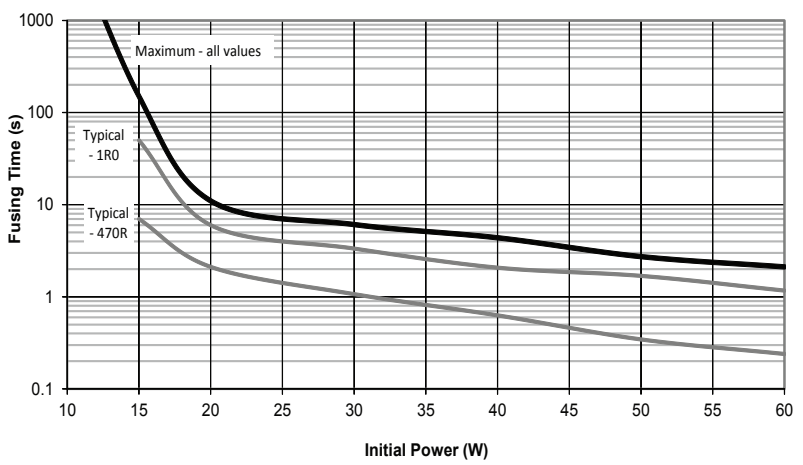
SP-20F Power Derating Curve



SP-20 and SP20F Temperature Rise Chart



SP20F Fusing Characteristic
(Maximum & Typical Fusing Times)



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Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: SP20FUL-180RJI (SP20F with UL recognition, 180 ohms ±5%, Pb-free)

S	P	2	0	F	U	L	-	1	8	0	R	J	I
1					2			3				4	5

1 Type	2 UL Status	3 Value	4 Tolerance	5 Packing & Termination Finish
SP20	UL = UL recognised (SP20F only, see Electrical Data for applicable values.)	R = ohms K = kilohms	J = ±5%	I = Standard packing & Pb-free
SP20F			K = ±10%	Tape pack 4000/reel

USA (IRC) Part Number: SP20FUL1800JLF (SP20F with UL recognition, 180 ohms ±5%, Pb-free)

S	P	2	0	F	U	L	1	8	0	0	J	L	F			
1					2		3				4	5		6		

1 Type	2 UL Status	3 Value	4 Tolerance	5 Packing & Termination Finish	6 Custom Code
SP20	UL = UL recognised (SP20F only, see Electrical Data for applicable values.)	3 digits + multiplier	J = ±5%	Omit for SnPb	Optional
SP20F		R = ohms for values <100 ohms	K = ±10%	LF = Pb-free	
				Tape pack 4000/reel	

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TT Electronics:

SP-20 47 5% SP201R50J SP201R50JTR SP2047R0JTR SP2075R0JTR SP20F1500J SP20F1R0JTR SP20F1R50J SP20F22R0J SP20F4700J SP20F68R0J SP20R100JTR SP20R100J SP201000J SP20F47R0J SP20FR150K SP20F33R0J SP20F10R0J SP20F20R0J SP20F30R0J SP20F1500JTR SP201R50JTRLF SP20F1500JLF SP20F1R50JLF SP20FR100J SP20F2000JTR SP20R180JLF SP20R560JLF SP20F2R2KLF