

# Moulded Surface Mount Wirewound Resistors


## WSM Series

### Features

- Flexible Terminations
- All welded construction
- Ideal for automatic pick and place
- Lead free, RoHS compliant construction only
- Contact factory for ohmic values above published ranges



**NOT RECOMMENDED FOR NEW DESIGNS**

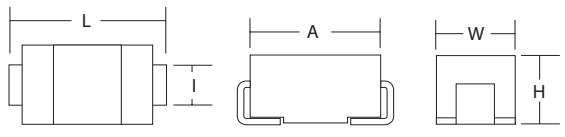
 All parts are Pb-free and comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

## Electrical Data

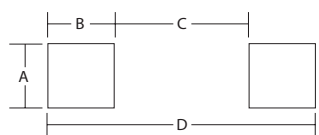
		WSM2	WSM3
Power rating at 70° C	watts	2	3
Resistance range	ohms	0R01 to 1K	0R05 to 3K
Limiting element voltage	volts	100	
TCR	ppm/° C	< 1 : 100 ≥ 1 Ω : 20	≤0.1Ω : 200 ≤10R 100 >10R 20
Resistance tolerance	%	*1, 2, 5, 10	
Standard values		E24 preferred	
Ambient temperature range	°C	-55 to 275°C	

\*Note 1% and 5% preferred. WSM2 available at 5% only below 0R05.

## Physical Data

Dimensions Inches (mm)						
Type	L max	I Nom	A Max	W Max	H Max	
WSM2	0.462 max (11.7 max)	0.137 max (3.5 max)	0.425 max (10.8 max)	0.260 max (6.6 max)	0.195 max (5.0 max)	
WSM3	0.677 max (17.2 max)	0.137 max (3.5 max)	0.64 max (16.3 max)	0.29 max (7.4 max)	0.265 inch (6.7 max)	

## Recommended Pad Sizes

Type	A	B	C	D	
WSM2	0.157 inch (4.0 mm)	0.181 inch (4.6 mm)	0.221 inch (5.6 mm)	0.583 inch (14.8 mm)	
WSM3	0.157 inch (4.0 mm)	0.236 inch (6.2 mm)	0.378 inch (9.6 mm)	0.85 inch (21.6 mm)	

### Construction

A high purity ceramic substrate is assembled with interference fit end caps to which are welded the terminations. The resistive element is wound on the substrate and welded to the caps. The unit is then moulded.

### Flammability

The resistor coating is a flame retardant epoxy to UL 94.

### Marking

WSM resistors are legend marked with type value and tolerance.

### Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuits.

### General Note

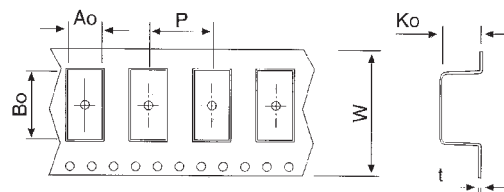
TT Electronics reserves the right to make changes in product specification without notice or liability.  
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

BI Technologies IRC Welwyn

[www.ttelectronics.com/resistors](http://www.ttelectronics.com/resistors)

### Packing Data

Dimensions (mm)						
	Ao	Bo	Ko	W	P	t
<b>WSM2</b>	6.75	11.95	5.22	24	12	0.36
<b>WSM3</b>	7.3	18.3	6.7	32	12	0.4



All other dimensions as per EIA481 standard

### Performance Data

		WSM2	WSM3
Load at rated power:	1000 hrs @ 70°C	$2 \pm 0.001\Omega$	$3 \pm 0.001\Omega$
Dry heat	1000 hrs @ 155°C	$2 \pm 0.001\Omega$	$3 \pm 0.001\Omega$
Short term overload		$2 \pm 0.001\Omega$	
Derating from rated power @ 70°C		zero at 275°C	
Moisture		$1 \pm 0.001\Omega$	$1.5 \pm 0.001\Omega$
Temperature cycling		$1 \pm 0.001\Omega$	
Resistance to solder heat		$1 \pm 0.001\Omega$	
Isolation voltage	V	1,000	
Insulation resistance	ohms	>1000M	
Substrate bend		$0.2 \pm 0.001\Omega$	

Note: The power ratings to be applied depend upon the board used and the ambient temperature.

### Ordering Procedure

This product has two valid part numbers:

**European (Welwyn) Part Number: WSM3-1K8FI** (WSM3, 1.8 kilohms  $\pm 1\%$ , Pb-free)

W	S	M	3	-	1	K	8	F	I
1		2		3	4				

1 Type	2 Value	3 Tolerance	4 Packing & Termination Finish
WSM2	E24 = 3/4 characters R = ohms K = kilohms	F = $\pm 1\%$	I = Standard packing & Pb-free
WSM3		G = $\pm 2\%$	WSM2 800/reel (13" 330mm)
		J = $\pm 5\%$	WSM3 750/reel (13" 330mm)
		K = $\pm 10\%$	

**USA (IRC) Part Number: WSM31801FLFTR** (WSM3, 1.8 kilohms  $\pm 1\%$ , Pb-free)

W	S	M	3	1	8	0	1	F	L	F	T	R
1		2		3	4	5						

1 Type	2 Value	3 Tolerance	4 Termination Finish	5 Packing
WSM2	3 digits + multiplier	F = $\pm 1\%$	LF = Pb-free	TR = Tape & Reel
WSM3	R = ohms for values <100 ohms	G = $\pm 2\%$		WSM2 800/reel (13" 330mm)
		J = $\pm 5\%$		WSM3 750/reel (13" 330mm)
		K = $\pm 10\%$		

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