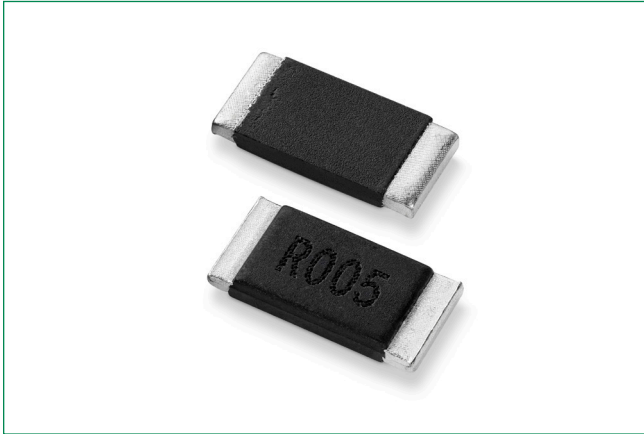


Two-Terminal Surface Mount Resistor

WPB/C Series

HF **RoHS** **Pb**


Description

Littelfuse WPB/C Series is low Ohm current sense resistor, designed with long stability, durability, excels at heat dissipation. It is a metal plate construction with low profile.

Features

- Power rating up to 3 W
- Tolerance down to $\pm 0.5\%$
- Ceramic substrate

Benefits

- Small size
- High voltage

Application

- Power management
- Low ESL

Additional Information



Resources



Accessories



Samples

Two-Terminal Surface Mount Resistor

WPB/C Series

Electrical Specifications

Littelfuse Series	Part Number	Size		Resistance Value		Power Rating (Watt)	TCR (ppm / °C)	Standard Package Quantity
		Inch	mm	Ro (mΩ)	Rt (%)			
WPB	WPB2512GL0M50FWR	2512	6432	0.5	±1.0%	2	±150	3000
WPB	WPB2512GL0M75FWR	2512	6432	0.75	±1.0%	2	±150	3000
WPB	WPB2512RL1M50FYR	2512	6432	1	±1.0%	2	±100	4000
WPB	WPB2512RLR001FYR	2512	6432	1.5	±1.0%	2	±100	4000
WPB	WPB2512QLR002FYR	2512	6432	2	±1.0%	2	±50	4000
WPB	WPB2512QLR003FYR	2512	6432	3	±1.0%	2	±50	4000
WPB	WPB2512QLR004FYR	2512	6432	4	±1.0%	2	±50	4000
WPB	WPB2512QLR005FYR	2512	6432	5	±1.0%	2	±50	4000
WPB	WPB2512QLR006FYR	2512	6432	6	±1.0%	2	±50	4000
WPB	WPB2512QLR007FYR	2512	6432	7	±1.0%	2	±50	4000
WPB	WPB2512QLR008FYR	2512	6432	8	±1.0%	2	±50	4000
WPB	WPB2512QLR009FYR	2512	6432	9	±1.0%	2	±50	4000
WPB	WPB2512QLR010FYR	2512	6432	10	±1.0%	2	±50	4000
WPB	WPB2512QLR011FYR	2512	6432	11	±1.0%	2	±50	4000
WPB	WPB2512QLR012FYR	2512	6432	12	±1.0%	2	±50	4000
WPB	WPB2512QLR013FYR	2512	6432	13	±1.0%	2	±50	4000
WPB	WPB2512QLR014FYR	2512	6432	14	±1.0%	2	±50	4000
WPB	WPB2512QLR015FYR	2512	6432	15	±1.0%	2	±50	4000
WPB	WPB2512QLR016FYR	2512	6432	16	±1.0%	2	±50	4000
WPB	WPB2512QLR018FYR	2512	6432	18	±1.0%	2	±50	4000
WPB	WPB2512QLR020FYR	2512	6432	20	±1.0%	2	±50	4000
WPB	WPB2512QLR021FYR	2512	6432	21	±1.0%	2	±50	4000
WPB	WPB2512QLR022FYR	2512	6432	22	±1.0%	2	±50	4000
WPB	WPB2512QLR024FYR	2512	6432	24	±1.0%	2	±50	4000
WPB	WPB2512QLR027FYR	2512	6432	27	±1.0%	2	±50	4000
WPB	WPB2512QLR028FYR	2512	6432	28	±1.0%	2	±50	4000
WPB	WPB2512QLR030FYR	2512	6432	30	±1.0%	2	±50	4000
WPB	WPB2512QLR033FYR	2512	6432	33	±1.0%	2	±50	4000
WPB	WPB2512QLR034FYR	2512	6432	34	±1.0%	2	±50	4000
WPB	WPB2512QLR036FYR	2512	6432	36	±1.0%	2	±50	4000
WPB	WPB2512QLR039FYR	2512	6432	39	±1.0%	2	±50	4000
WPB	WPB2512QLR043FYR	2512	6432	43	±1.0%	2	±50	4000
WPB	WPB2512QLR047FYR	2512	6432	47	±1.0%	2	±50	4000
WPB	WPB2512QLR050FYR	2512	6432	50	±1.0%	2	±50	4000
WPB	WPB2512QLR051FYR	2512	6432	51	±1.0%	2	±50	4000
WPB	WPB2512QLR056FYR	2512	6432	56	±1.0%	2	±50	4000

Two-Terminal Surface Mount Resistor

WPB/C Series

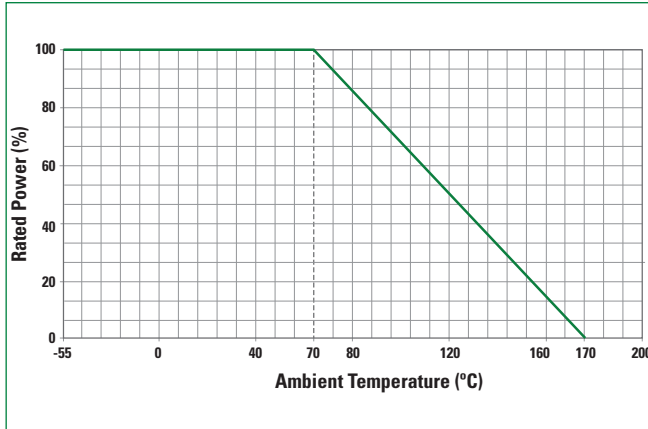
Electrical Specifications

Littelfuse Series	Part Number	Size		Resistance Value		Power Rating (Watt)	TCR (ppm / °C)	Standard Package Quantity
		Inch	mm	Ro (mΩ)	Rt (%)			
WPC	WPC2512GL0M50FWR	2512	6432	0.5	±1.0%	3	±150	3000
WPC	WPC2512GL0M75FWR	2512	6432	0.75	±1.0%	3	±150	3000
WPC	WPC2512RLR001FWR	2512	6432	1	±1.0%	3	±100	3000
WPC	WPC2512QLR002FWR	2512	6432	2	±1.0%	3	±50	3000
WPC	WPC2512QLR003FWR	2512	6432	3	±1.0%	3	±50	3000
WPC	WPC2512QLR004FWR	2512	6432	4	±1.0%	3	±50	3000
WPC	WPC2512QLR005FYR	2512	6432	5	±1.0%	3	±50	4000
WPC	WPC2512QLR006FYR	2512	6432	6	±1.0%	3	±50	4000
WPC	WPC2512QLR007FYR	2512	6432	7	±1.0%	3	±50	4000
WPC	WPC2512QLR008FYR	2512	6432	8	±1.0%	3	±50	4000
WPC	WPC2512QLR009FYR	2512	6432	9	±1.0%	3	±50	4000
WPC	WPC2512QLR010FYR	2512	6432	10	±1.0%	3	±50	4000
WPC	WPC2512QLR011FYR	2512	6432	11	±1.0%	3	±50	4000
WPC	WPC2512QLR012FYR	2512	6432	12	±1.0%	3	±50	4000
WPC	WPC2512QLR013FYR	2512	6432	13	±1.0%	3	±50	4000
WPC	WPC2512QLR014FYR	2512	6432	14	±1.0%	3	±50	4000
WPC	WPC2512QLR015FYR	2512	6432	15	±1.0%	3	±50	4000
WPC	WPC2512QLR016FYR	2512	6432	16	±1.0%	3	±50	4000
WPC	WPC2512QLR018FYR	2512	6432	18	±1.0%	3	±50	4000
WPC	WPC2512QLR020FYR	2512	6432	20	±1.0%	3	±50	4000
WPC	WPC2512QLR021FYR	2512	6432	21	±1.0%	3	±50	4000
WPC	WPC2512QLR022FYR	2512	6432	22	±1.0%	3	±50	4000
WPC	WPC2512QLR024FYR	2512	6432	24	±1.0%	3	±50	4000
WPC	WPC2512QLR027FYR	2512	6432	27	±1.0%	3	±50	4000
WPC	WPC2512QLR028FYR	2512	6432	28	±1.0%	3	±50	4000
WPC	WPC2512QLR030FYR	2512	6432	30	±1.0%	3	±50	4000
WPC	WPC2512QLR033FYR	2512	6432	33	±1.0%	3	±50	4000
WPC	WPC2512QLR034FYR	2512	6432	34	±1.0%	3	±50	4000
WPC	WPC2512QLR036FYR	2512	6432	36	±1.0%	3	±50	4000
WPC	WPC2512QLR039FYR	2512	6432	39	±1.0%	3	±50	4000
WPC	WPC2512QLR043FYR	2512	6432	43	±1.0%	3	±50	4000
WPC	WPC2512QLR047FYR	2512	6432	47	±1.0%	3	±50	4000
WPC	WPC2512QLR050FYR	2512	6432	50	±1.0%	3	±50	4000
WPC	WPC2512QLR051FYR	2512	6432	51	±1.0%	3	±50	4000
WPC	WPC2512QLR056FYR	2512	6432	56	±1.0%	3	±50	4000

Two-Terminal Surface Mount Resistor

WPB/C Series

Temperature De-rating Curve



Storage / Environment Conditions

Products should be stored under the following environmental conditions.

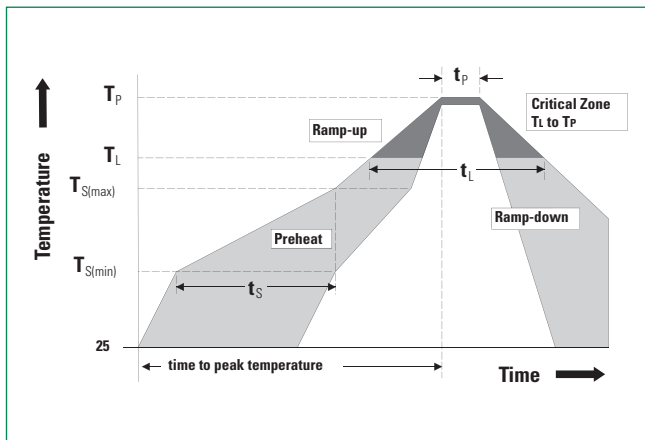
Temperature:	+5 to +35 °C
Humidity:	45 to 85% relative humidity
Moisture Sensitivity Level:	1, J-STD-020

Do not keep products in environments where they may be subject to particulate contamination or harmful gases such as sulfuric acid or hydrogen chloride as it may cause oxidization on electrodes, resulting poor solderability.

Products should be stored in a space that does not expose to high temperatures, vibration, or direct sunlight.

Products should be stored in the original airtight packaging until use.

Soldering Parameters—Wave Soldering



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ($T_{S(max)}$ to T_p)	3 °C / second max
Preheat	
Temperature Minimum ($T_{S(min)}$)	150 °C
Temperature Maximum ($T_{S(max)}$)	200 °C
Time ($T_{S(min)}$ to $T_{S(max)}$)	60–180 seconds
Time maintained above	
Temperature Minimum (T_L)	217 °C
Time (t_L)	60–150 seconds
Peak Temperature (T_p)	260 +0 °C
Time within 5 °C of Actual Peak Temperature (t_p)	20–40 seconds
Ramp-Down Rate	6 °C / second Maximum
Time 25 °C to Peak Temperature	8 minutes Maximum

Two-Terminal Surface Mount Resistor

WPB/C Series

Reliability Specifications

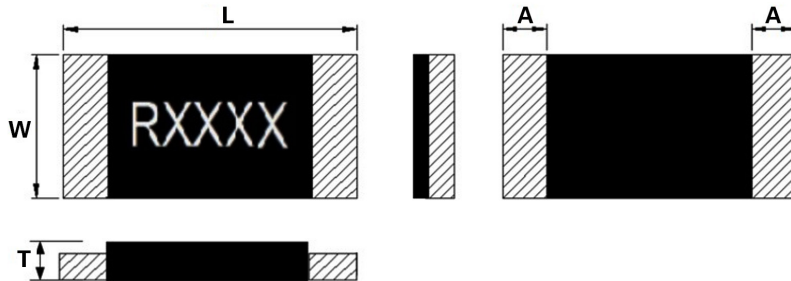
Test	Procedure	Specifications
Short Time Over Load IEC60115-1 Clause 4.13	$P = 5Pr; T = 25 \pm 2^{\circ}\text{C}, t = 5\text{sec.}$	$\pm(1.0\%+0.5\text{m}\Omega)$
High Temp. Exposure IEC60115-1 Clause 4.25	$T = +170 \pm 2^{\circ}\text{C}; t = 1000\text{h}$	$\pm(1.0\%+0.5\text{m}\Omega)$
Low Temp. Storage IEC60115-1 Clause 4.25	$T = -55 \pm 2^{\circ}\text{C}; t = 1000\text{h}$	$\pm(1.0\%+0.5\text{m}\Omega)$
Moisture Load Life IEC60115-1 Clause 4.25	$V_{\text{test}} = V_{\text{max}}; T=60 \pm 2^{\circ}\text{C}; \text{RH}=95\%;$ $t= 90\text{min ON, } 30\text{min OFF, } 1000\text{h}$	$\pm(2.0\%+0.5\text{m}\Omega)$
Thermal Shock IEC60115-1 Clause 4.19	$[-55^{\circ}\text{C } 30\text{min.} \rightarrow \text{R.T. } 3\text{min.} \rightarrow +155^{\circ}\text{C } 30\text{min.}$ $\rightarrow \text{R.T. } 3\text{min }], 100\text{Cycles}$	$\pm(1.0\%+0.5\text{m}\Omega)$
Load Life IEC60115-1 Clause 4.25	$V_{\text{test}} = V_{\text{max}}; T=70 \pm 2^{\circ}\text{C}; t= 90\text{min ON,}$ $30\text{min OFF, } 1000\text{h}$	$\pm(2.0\%+0.5\text{m}\Omega)$
Solderability IEC60115-1 Clause 4.17	Dip into solder at $T = 245 \pm 5^{\circ}\text{C}, t = 3 \pm 0.5\text{sec.}$	>95% coverage
Resistance to Solder Heat IEC60115-1 Clause 4.18	Through Reflow 3x $T = 260 \pm 5^{\circ}\text{C}, t = 20 \pm 1\text{sec.}$	$\pm(1.0\%+0.5\text{m}\Omega)$
Mechanical Shock IEC60115-1 Clause 4.21	$a = 100\text{G}, t = 6\text{ms}$	$\pm(1.0\%+0.5\text{m}\Omega)$
Substrate Bending IEC60115-1 Clause 4.33	Span between fulcrums = 90mm Bend Width = 2mm Test board = Glass-Epoxy Board Thickness = 1.6mm	$\pm(1.0\%+0.5\text{m}\Omega)$

Two-Terminal Surface Mount Resistor

WPB/C Series

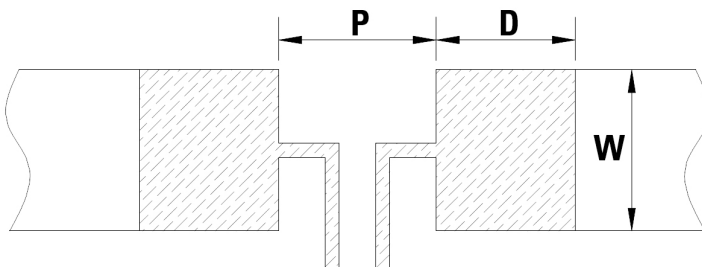
Dimensions

All dimensions in mm



Part Number	W	L	T	A
WPB2512 0M50, 0M75	3.20±0.30	6.40±0.30	1.05±0.20	1.90±0.25
WPB2512 R001, 1M50	3.20±0.30	6.40±0.30	0.90±0.20	1.90±0.25
WPB2512 R002~R056	3.20±0.30	6.40±0.30	0.90±0.20	0.80±0.25
WPC2512 0M50~0M75	3.20±0.30	6.40±0.30	1.05±0.20	1.90±0.25
WPC2512 R001~R004	3.20±0.30	6.40±0.30	1.10±0.20	0.80±0.25
WPC2512 R001~R056	3.20±0.30	6.40±0.30	0.90±0.20	0.80±0.25

Recommended Land Pattern



Part Number	P	W	D	Loading
WPB2512 0M50, 0M75, R001, 1M50	1.50mm	3.57mm	2.95mm	2.0w
WPB2512 R002~R056	3.18mm	3.57mm	2.11mm	2.0w
WPC2512 0M50~0M75	1.50mm	3.57mm	2.95mm	3.0w
WPC2512 R001~R056	3.18mm	3.57mm	2.11mm	3.0w

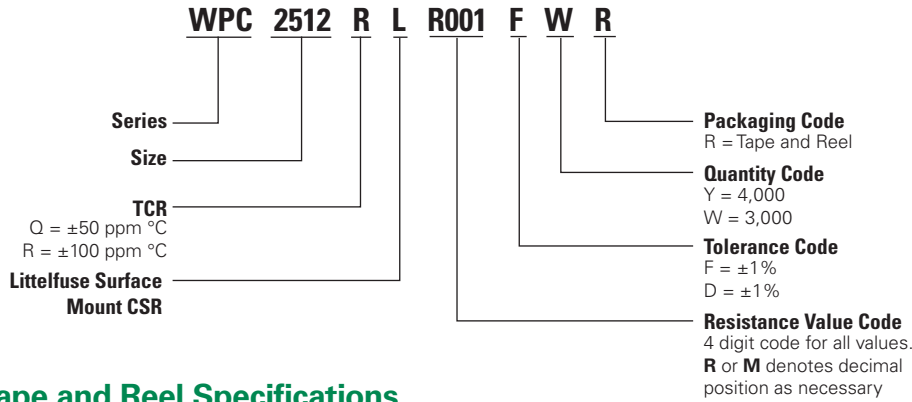
Packaging

Part Number	Halogen Free	Packaging Option	Quantity	Quantity & Packaging Codes
WPB2512 0M50, 0M75	Yes	Tape and Reel	3000	WR
WPB2512 1M50, R001~R056	Yes	Tape and Reel	4000	YR
WPC2512 0M50, 0M75	Yes	Tape and Reel	3000	WR
WPC2512 R001~R004	Yes	Tape and Reel	3000	WR
WPC2512 R005~R056	Yes	Tape and Reel	4000	YR

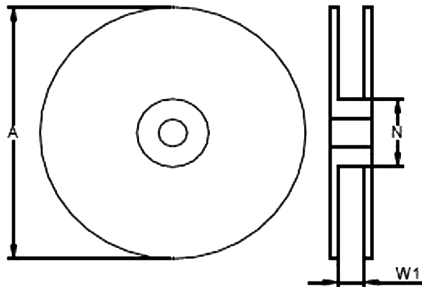
Two-Terminal Surface Mount Resistor

WPB/C Series

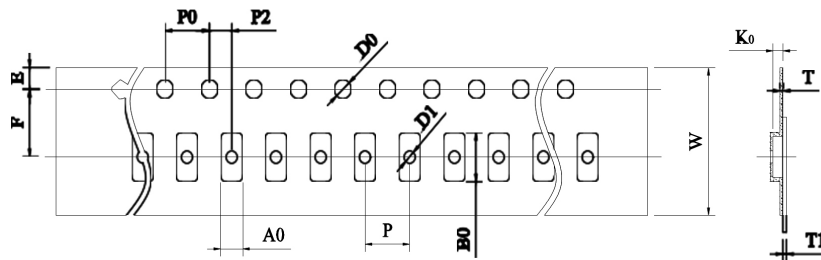
Part Numbering System



Tape and Reel Specifications



Part Number	A ± 5 (mm)	N ± 2 (mm)	W1 ± 1 (mm)
WPB2512	178	60	13
WPC2512	178	60	13



Part Number	W	P0	P	P2	A0	B0	D0	F	E	T	T1	K0
WPB2512 0M50, 0M75	12.00 ± 0.30	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	3.40 ± 0.20	6.75 ± 0.20	1.55 ± 0.10	5.50 ± 0.10	1.75 ± 0.10	0.20 ± 0.10	Max. 0.1	1.30 +0.2/-0.1
WPB2512 R001, 1M50, R002~R004	12.00 ± 0.30	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	3.40 ± 0.20	6.75 ± 0.20	1.55 ± 0.10	5.50 ± 0.10	1.75 ± 0.10	0.20 ± 0.10	Max. 0.10	1.00 ± 0.20
WPC2512 0M50, 0M75	12.00 ± 0.30	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	3.40 ± 0.20	6.75 ± 0.20	1.55 ± 0.10	5.50 ± 0.10	1.75 ± 0.10	0.20 ± 0.10	Max. 0.10	1.30 +0.2/-0.1
WPC2512 R001~R004	+0.2/-0.1	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	3.40 ± 0.20	6.75 ± 0.20	1.55 ± 0.10	5.50 ± 0.10	1.75 ± 0.10	0.20 ± 0.10	Max. 0.10	1.30 ± 0.20
WPC2512 R005~R056	12.00 ± 0.30	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	3.40 ± 0.20	6.75 ± 0.20	1.55 ± 0.10	5.50 ± 0.10	1.75 ± 0.10	0.20 ± 0.10	Max. 0.10	1.00 ± 0.20

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