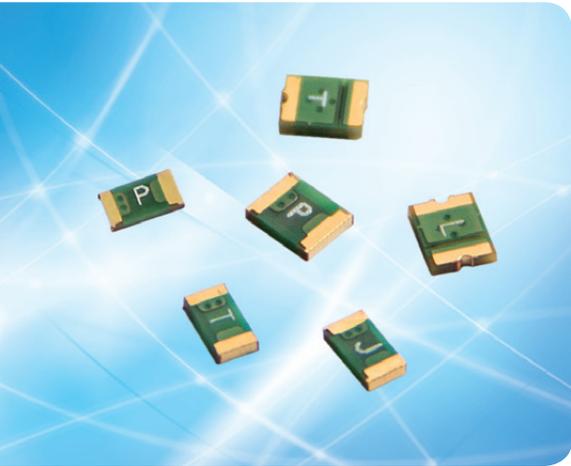


## Product Overview

### Low Rho SMD Series for Circuit Protection in Space-constrained Mobile Applications

The low rho (low-resistance) SMD series addresses the need in the consumer-driven mobile device market for a low-cost, low-power-consumption circuit protection solution for today's increasingly compact products.





## KEY FEATURES

- Device resistance of 10 to 25 milliohms, as compared to the 15-30 milliohm industry standard
- Maximum electrical rating: Voltage  $6V_{DC}$  and short circuit current 50A
- Industry-standard form factor of 1210 (3.0mmx2.54mm; or 0.12inx0.10in) or 1206 (3.0mmx1.52mm; or 0.12inx0.06in) or 1812 (3.0mmx4.57mm; or 0.12inx0.18in)
- Useful for an operating current of 2A and above
- All form factors have an  $R_{MAX}$  of 10 to 25 milliohms
- Useful for and packaged for surface mounting on the PCB

The low rho SMD (surface-mount device) series is designed for space-constrained mobile applications. The devices can help provide both overcurrent and overtemperature protection for battery pack PCMs (protection circuit modules) used in compact consumer devices such as smartphones and MP3/MP4 media players. In particular, the low rho SMD series helps battery pack suppliers achieve their design goals and simplify their installation methods.

The low rho SMD series comprises nine devices. In the model number descriptions, the “micro” prefix refers to the 1210 form factor, the “nano” prefix refers to the 1206 form factor, and the “mini” prefix refers to the 1812 form factor. All form factors have an  $R_{MAX}$  of 10 to 25 milliohms (see “Electrical Characteristics” table).

## APPLICATIONS

Battery pack PCMs used in compact consumer devices such as:

- Mobile and smart phones
- Media players (MP3/MP4)
- Digital still and video cameras
- Tablets
- Mini notebooks

## BENEFITS

- Help save board space and power consumption and therefore costs, in space-constrained mobile electronics
- Are more compact in comparison with similar offerings and are available in an industry-standard form factor
- Can be assembled with a reflowable soldering technique, as opposed to the spot welding process required by many other components

## DESIGN CONCEPT

At a specified temperature and current, the devices in the low rho SMD series will trip after a specified time interval and, by cutting the power supply, will enable overcurrent and overtemperature protection.

Low rho SMD device resistance is just 10 to 25 milliohms, as compared to the 15-30 milliohm industry standard. The devices’ lower resistance helps reduce power consumption and improves battery efficiency.



**ELECTRICAL CHARACTERISTICS**

Part Number	$I_H$	$I_T$	$V_{MAX}$	$I_{MAX}$	$P_{D MAX}$	Max Time-to-Trip		$R_{MIN}$	$R_{IMAX}$
	(A)	(A)	(V <sub>DC</sub> )	(A)	(W)	(A)	(S)	(Ω)	(Ω)
miniSMDC350LR	3.50	8.00	6	50	1.00	8.00	5.00	0.006	0.025
microSMD190LR	1.90	4.90	6	50	1.00	9.50	4.00	0.006	0.021
microSMD200LR	2.00	5.00	6	50	1.00	9.50	4.00	0.006	0.021
microSMD250LR	2.50	5.20	6	50	1.00	9.50	5.00	0.005	0.018
microSMD350LR	3.50	9.00	6	50	1.00	9.50	10.00	0.0025	0.011
nanoSMD175LR	1.75	5.00	6	50	1.00	9.50	1.00	0.008	0.025
nanoSMD200LR	2.00	6.00	6	50	1.00	9.50	3.00	0.006	0.024
nanoSMD270LR	2.70	6.30	6	50	1.00	8.00	5.00	0.005	0.018
nanoSMD350LR	3.50	6.30	6	50	1.00	8.00	5.00	0.004	0.018

**DIMENSIONS IN MILLIMETERS**

Part Number	A		B		C		D		E	Figure	Marking
	min.	max.	min.	max.	min.	max.	min.	max.	min.		
miniSMDC350LR	4.37	4.73	0.22	0.43	3.07	3.41	0.25	0.95	0.200	LR1	35
microSMD190LR	3.00	3.43	0.50	1.00	2.35	2.80	0.25	0.75	0.076	LR2	-
microSMD200LR	3.00	3.43	0.50	1.00	2.35	2.80	0.25	0.75	0.076	LR2	T
microSMD250LR	3.00	3.43	0.50	1.00	2.35	2.80	0.25	0.75	0.076	LR2	L
microSMD350LR	3.00	3.43	0.50	1.00	2.35	2.80	0.25	0.75	-	LR3	P
nanoSMD175LR	3.00	3.43	0.50	1.00	1.37	1.85	0.25	0.75	-	LR3	J
nanoSMD200LR	3.00	3.43	0.50	1.00	1.37	1.85	0.25	0.75	-	LR3	T
nanoSMD270LR	3.00	3.43	0.50	1.00	1.37	1.85	0.25	0.75	-	LR3	L
nanoSMD350LR	3.00	3.43	0.50	1.00	1.37	1.85	0.25	0.75	-	LR3	P

Figure LR1

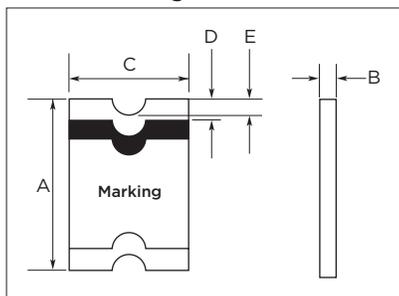


Figure LR2

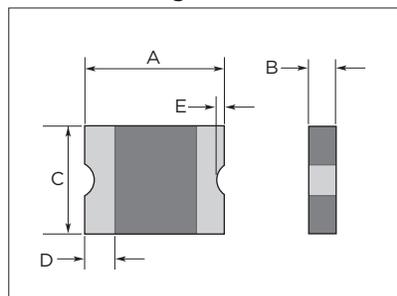
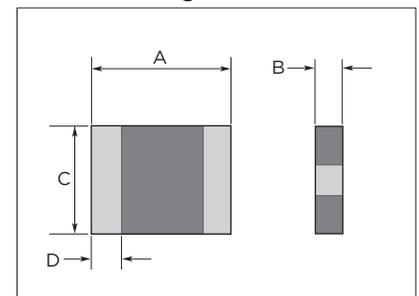


Figure LR3



**MATERIALS INFORMATION**

RoHS Compliant

ELV Compliant

Pb-Free

Halogen Free\*

Directive 2002/95/EC Compliant

Directive 2000/53/EC Compliant



**AGENCY RECOGNITION**

UL, TUV, CSA

\* Halogen Free refers to: Br≤900ppm, Cl≤900ppm, Br+Cl≤1500ppm.

## FOR MORE INFORMATION

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[www.te.com/japan/bu/circuitprotection/](http://www.te.com/japan/bu/circuitprotection/) (Japanese)

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Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.  
\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

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