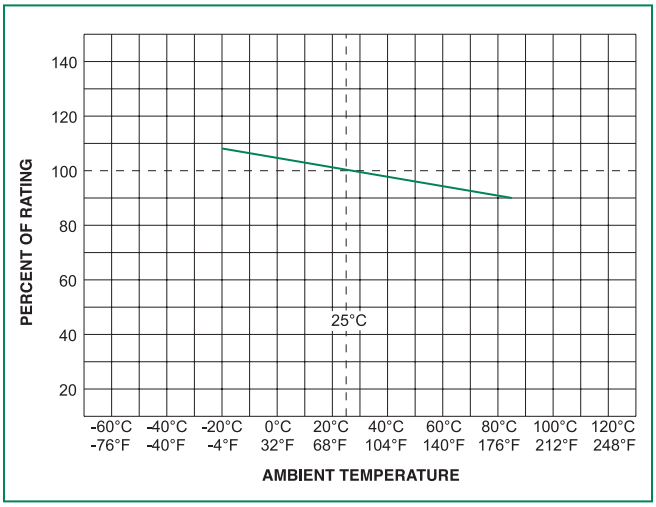
Temperature Rerating

	Ambient Operating Temperature				
	-20°C	0°C	20°C	60°C	85°C
Part Number	Hold Current (A)				
nanoSMD350LR-C	4.80	4.00	3.50	1.90	1.30
nanoSMD400LR-C	5.20	4.60	4.00	2.82	2.10
microSMD450LR-C	6.20	5.50	4.50	3.30	2.30

Note: The temperature rerating data is for reference only. Please contact Littelfuse technical support for detail temperature rerating information.

Temperature Derating Curve



Environmental Specifications

Operating Temperature	-20°C to +85°C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85°C, 1000 hours -/+10% typical resistance change
Humidity Aging	+85°C, 85% R.H., 100 hours -/+15% typical resistance change
Thermal Shock	MIL–STD–202, Method 215 No change
Vibration	MIL–STD–883, Method 2007, Condition A No change
Moisture Sensitivity Level	Level 2a, J–STD–020

Physical Specifications

Terminal Materials	Solder-Plated Copper (Solder Material: Matte Tin (Sn))
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J-STD-002, Category 3

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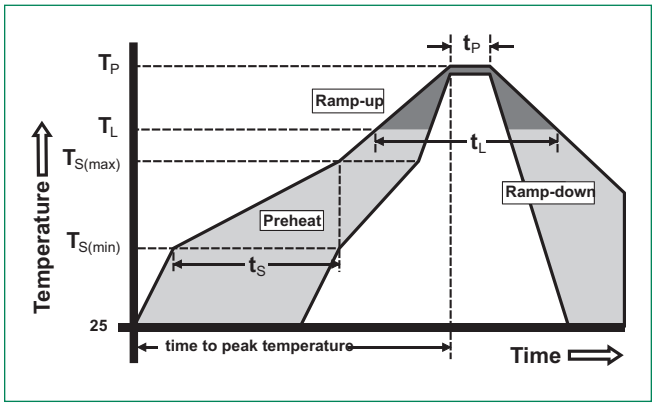
Soldering Parameters

Profile Feature		Pb – Free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (min to max) (t_s)	60 – 120 seconds
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		30 seconds max
Ramp-down Rate		2°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes max

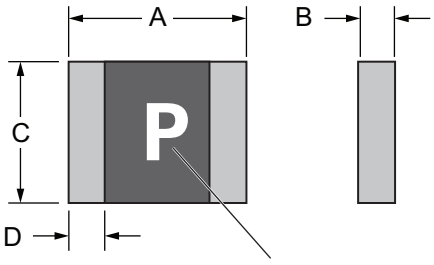


Notes:

- All temperature refer to topside of the package, measured on the package body surface.
- If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements.
- Recommended reflow methods: IR, vapor phase oven, hot air oven, N_2 environment for lead.
- Recommended maximum paste thickness is 0.25 mm (0.010 inch).
- Devices can be cleaned using standard industry methods and solvents.
- Devices can be reworked using the standard industry practices.

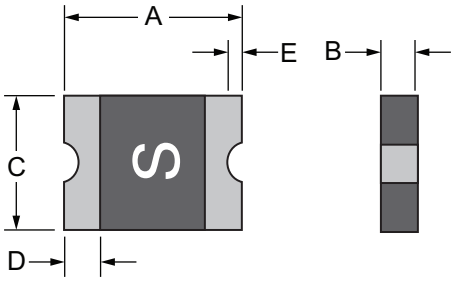
Dimensions

nanoSMD350LR-C
nanoSMD400LR-C

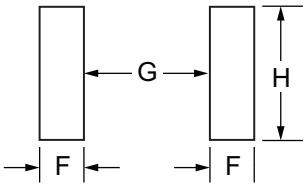


Marking code varies by device.
See Electrical Characteristics table.

microSMD450LR-C



Solder Pad Layout



Part Number	Device Dimension																				Solder Pad					
	A				B				C				D				E				F		G		H	
	inch		mm		inch		mm		inch		mm		inch		mm		inch		mm		inch	mm	inch	mm	inch	mm
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max						
nanoSMD350LR-C	0.12	0.13	3.00	3.43	0.02	0.03	0.60	0.80	0.05	0.07	1.37	1.85	0.01	0.03	0.25	0.75	–	–	–	–	0.04	1.10	0.08	2.00	0.07	1.75
nanoSMD400LR-C	0.12	0.13	3.00	3.43	0.02	0.03	0.60	0.80	0.05	0.07	1.37	1.85	0.01	0.03	0.25	0.75	–	–	–	–	0.04	1.10	0.08	2.00	0.07	1.75
microSMD450LR-C	0.12	0.13	3.00	3.43	0.02	0.03	0.60	0.80	0.09	0.11	2.35	2.80	0.01	0.03	0.25	0.75	0.003	–	0.076	–	0.04	1.00	0.08	2.00	0.10	2.65

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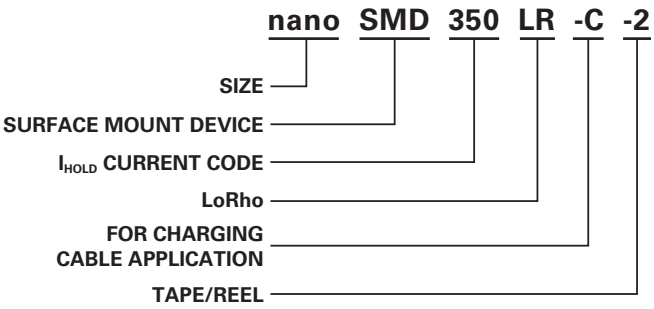
Packaging

Part Number	Ordering	I_{HOLD} (A)	I_{HOLD} Code	Packaging Option	Quantity
nanoSMD350LR-C	RF4610-000	3.50	350	Tape and Reel	15,000
nanoSMD400LR-C	RF4611-000	4.00	400		15,000
microSMD450LR-C	RF2515-000	4.50	450		15,000

Part Numbering System



Installation and Handling Guidelines

- Operation of these devices beyond the stated maximum ratings could result in damage to the devices and lead to electrical arcing and/or fire.
- These devices are intended to protect against the effects of temporary over-current or over-temperature conditions and are not intended to perform as protective devices where such conditions are expected to be repetitive or prolonged in duration.
- Exposure to silicon-based oils, solvents, electrolytes, acids, and similar materials can adversely affect the performance of these PPTC devices.
- These devices undergo thermal expansion under fault conditions, and thus shall be provided with adequate space and be protected against mechanical stresses.
- Circuits with inductance may generate a voltage (L di/dt) above the rated voltage of the PPTC device.
- Hand-soldering of PTC devices on boards is generally not recommended. Users shall define and verify this process if needed.
- Consult Littelfuse when the device is to be applied with thermal processes other than reflow process on the circuit board, such as molding, encapsulation. User should evaluate molding materials used in the charging cable applications to ensure there are no adverse effect on the PTC devices.

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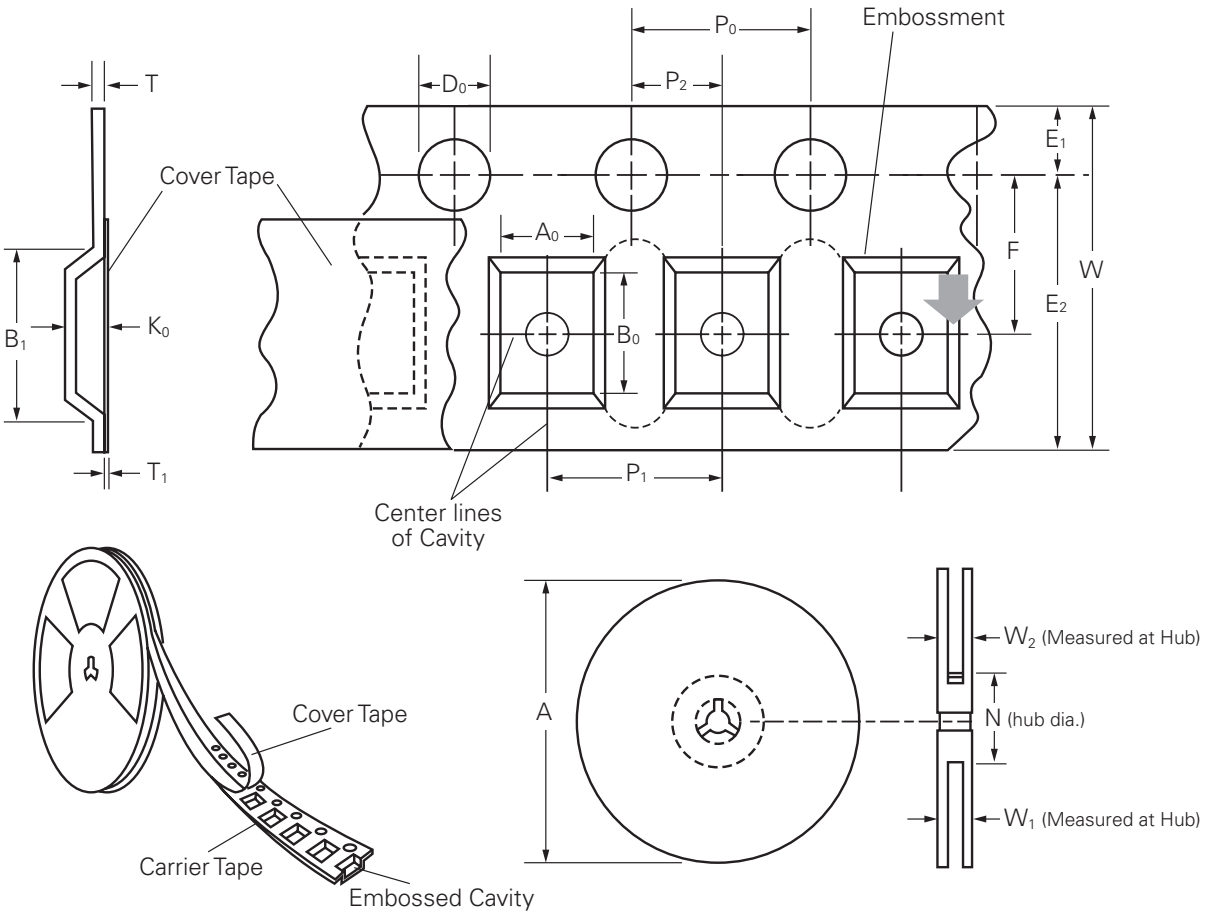
Tape and Reel Specifications



Standard Pack Quantity: 3,000 pcs
Minimum Order Quantity: 15,000 pcs

	nanoSMD350LR-C nanoSMD400LR-C	microSMD450LR-C
W	8.0 ± 0.30	8.0 ± 0.30
P_0	4.0 ± 0.10	4.0 ± 0.10
P_1	4.0 ± 0.10	4.0 ± 0.10
P_2	2.0 ± 0.05	2.0 ± 0.05
A_0	1.95 ± 0.10	2.9 ± 0.10
B_0	3.50 + 0.1/-0.08	3.55 ± 0.10
B_1 max.	4.35	4.35
D_0	1.55 ± 0.05	1.55 ± 0.05
F	3.50 ± 0.05	3.50 ± 0.05
E_1	1.75 ± 0.10	1.75 ± 0.10
E_2 min.	6.25	6.25
T max.	0.3	0.3
T_1 max.	0.1	0.1
K_0	0.89 ± 0.10	1.27 ± 0.10
A max.	179	179
N min.	53.5	53.5
W_1	9.5 ± 0.5	9.5 ± 0.5
W_2 max.	15	15

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