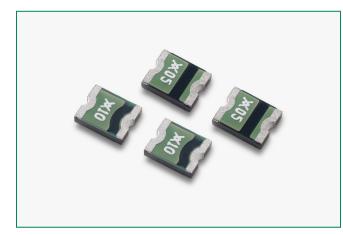
Automotive microASMD Series Surface Mount

HF RoHS 🕅



Additional Information





Resources

Accessories

Samples

Description

The microASMC is small-sized 1210 PPTC series, helping to reduce weight of wire harnesses. PPTC devices distributed in a circuit can allow the use of smaller wire sizes with the resulting harnesses. Forego looping back and forth around a fuse box and place your protection wherever you see fit. The solid state composition of PPTC devices helps provide reliability.

Features & Benefits

- Products meet applicable automotive industry standards
- Compatible with high-volume electronics assembly
- Small footprint 1210 size
- Resettable solution against overcurrent and short-circuit
- AEC-Q200 qualified, RoHS compliant, and ISO/TS16949 certified

Applications

- Automotive and industrial transportation
- Actuators and medium motors
- Trace protection
- Harness/junction box protection

- Surface-mount form factor
- High Performance
- Expertise from the world's leading resettable overcurrent protection manufacturer
- Wide range of dedicated automotive surface-mount and radial-leaded resettable overcurrent devices
- High performance transient voltage protection devices
- Powered outputs
- Electronic control modules
- Telematics/Infotainment

Part Number	Ordering Part Number	I _H (A)@ (R _{1MAX})	I _H (A)@ (R _{aMAX})	I _T (A)	V _{MAX} (V _{DC})	I _{MAX} (A)	Р _{о тур} (W)	Max Tim (A)	ne-to-trip (s)	R _{MIN} (Ω)	R _{1MAX} (Ω)	R _{aMAX} (Ω)
microASMD – 13.2-30V												
microASMD005F	RF2149-000	0.05	0.05	0.15	30	10	1.00	0.25	1.50	3.60	50.00	50.00
microASMD010F	RF2150-000	0.10	0.10	0.25	30	10	0.80	0.50	1.00	2.10	15.00	15.00
microASMD050F	RF4565-000	0.50	0.50	1.00	13.2	40	0.80	8.00	0.05	0.25	0.90	0.90

Electrical Characteristics

Notes:

I_H : Hold current: maximum current device will pass without interruption in 25°C, unless otherwise specified

I_T : Trip current: minimum current that will switch the device from low-resistance to high-resistance in 25°C still air, unless otherwise specified.

V_{MAX} : Maximum voltage device can withstand without damage at rated current.

 I_{MAX} : Maximum fault current device can withstand without damage at rated voltage.

P_D : Power dissipated from device when in the tripped state in 25°C still air, unless otherwise specified.

R_{MIN} : Minimum resistance of device as supplied at 25°C, unless otherwise specified.

R_{1MAX}: Maximum resistance of device when measured one hour post reflow, unless otherwise specified.

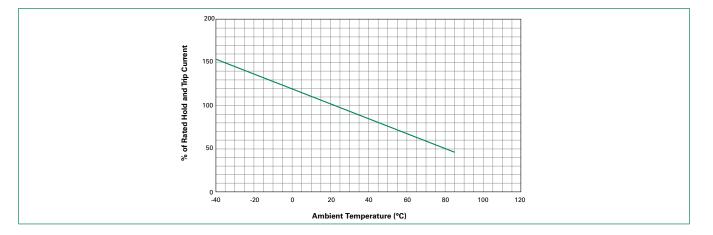
RaMAX: Maximum functional resistance of device after being subjected to the stresses described in PS400 at 25°C, unless otherwise specified.



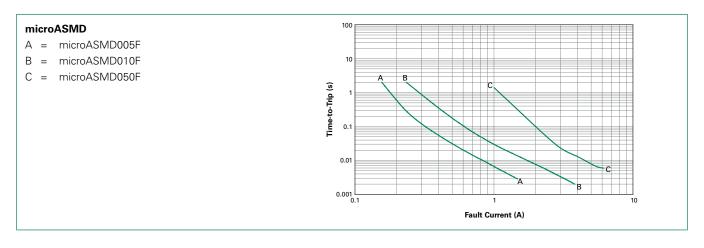
Temperature Rerating

Maximum Ambient Temperature										
Part Number	-40°C	-20°C	0°C	20°C	25°C	40°C	50°C	60°C	70°C	85°C
Hold Current (A)										
	microASMD – 13.2-30V									
microASMD005F	0.08	0.07	0.06	0.05	0.05	0.04	0.04	0.03	0.03	0.02
microASMD010F	0.15	0.13	0.12	0.10	0.10	0.09	0.08	0.06	0.06	0.05
microASMD050F	0.76	0.66	0.58	0.50	0.48	0.42	0.38	0.35	0.29	0.23

Temperature Rerating Curve



Typical Time-to-Trip Curves at 25°C



Physical Specifications

Terminal Pad Material	100% Matte Tin with Nickel Underplate
Soldering Characteristics	Solderability per ANSI-J-STD-002 Category 3
Solder Heat Withstand	per IEC 60068-2-20, Test Tb, Section 5, Method 1a
Flammability	per IEC 60695-11-5 Needle Flame Test for 20 seconds
Recommended Storage Conditions	40°C max, 70% RH max; Devices May Not Meet Specified Ratings if Storage Conditions are Exceeded
Operation Temperature	-40°C~85°C

 $\label{eq:Note: See PS400 for other physical specifications.}$

Environmental Specifications

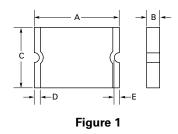
Test	Conditions	Resistance Change				
Passive Aging	60°C, 1000 hrs 85°C, 1000 hrs	±3% Typical ±5% Typical				
Humidity Aging	85°C, 85% R.H., 100 hrs	±1.2% Typical				
Thermal Shock	85°C, -40°C 20 times 125°C, -55°C 10 times	-33% Typical -33% Typical				
Solvent Resistance	Freon Trichloroethane Hydrocarbons	No change No change No change				
Note: See PS400 for other environmental specifications.						
Moisture Resistance Level 2a, J-STD-020						

40°C max, 70% RH max; devices should remain in original sealed bags prior to use.

Devices may not meet specified values if these storage conditions are exceeded.

Storage Conditions

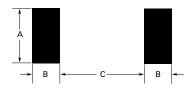
Dimension Figures



Dimensions

Dimensions in Millimeters (Inches)											
Part Number	А		В		С		D		E		Figure
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
microASMD – 13.2-30V											
microASMD005F	3.0 (0.118)	3.43 (0.135)	0.50 (0.019)	0.85 (0.034)	2.35 (0.092)	2.80 (0.110)	0.25 (0.010)	0.75 (0.030)	0.076 (0.003)		1
microASMD010F	3.0 (0.118)	3.43 (0.135)	0.50 (0.019)	0.85 (0.034)	2.35 (0.092)	2.80 (0.110)	0.25 (0.010)	0.75 (0.030)	0.076 (0.003)	_	1
microASMD050F	3.0 (0.118)	3.43 (0.135)	0.38 (0.015)	0.62 (0.025)	2.35 (0.092)	2.80 (0.110)	0.25 (0.010)	0.75 (0.030)	0.076 (0.003)		1

Recommended Pad Layout



Packaging and Marking Information

Part	Tape and Reel Standard		Part	Recommended Pad Layout Figures [mm (in)]				
Number	Quantity	Package	Marking	Dimension A (Min*/Nom)	Dimension B (Nom)	Dimension C (Nom)		
	microASMD – 13.2-30V							
microASMD005F	4,000	20,000	05	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)		
microASMD010F	4,000	20,000	10	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)		
microASMD050F	4,000	20,000	50	2.50 (0.098)	1.00 (0.039)	2.00 (0.079)		

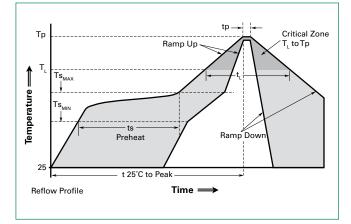
* These devices are intended for use in automotive applications.



Automotive microASMD Series Surface Mount

Profile Feature	Pb-Free Assembly
Average ramp up rate (Ts _{MAX} to Tp)	3°C/s max
Preheat	
• Temperature min (Ts _{MIN})	150°C
• Temperature max (Ts _{MAX})	200°C
- Time (ts_{_{\rm MIN}} to ts_{_{\rm MAX}})	60-120 s
Time maintained above:	
• Temperature (T _L)	217°C
• Time (t _L)	60-150 s
Peak/Classification temperature (Tp)	260°C
Time within 5°C of actual peak temperature	
Time (tp)	30 s max
Ramp down rate	3°C/s max
Time 25°C to peak temperature	8 min max

Solder Reflow Recommendations



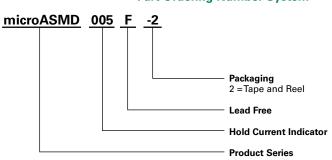
Note: All temperatures refer to topside of the package, measured on the package body surface.

Solder Reflow

- Recommended reflow method: IR, hot air, nitrogen.
- Recommended maximum paste thickness: 0.25mm (0.010in)
- Devices can be cleaned using standard methods and aqueous solvents.
- Experience has shown the optimum conditions for forming acceptable solder fillets occur when a reasonable amount of solder paste is placed underneath each device's termination. As such, we request that customers comply with our recommended solder pad layouts.
- Customer should validate that the solder paste amount and reflow recommendations meet its application.
- We request that customer board layouts refrain from placing raised features (e.g. vias, nomenclature, traces, etc.) underneath PolySwitch devices. It is possible that raised features could negatively impact solderability performance of our devices.

Rework

Standard industry practices. (Please also avoid direct contact to the device.)



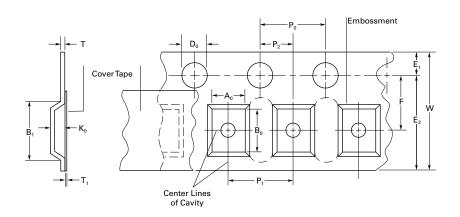
Part Ordering Number System



Tape and Reel Specifications

	microASMD
	EIA 481-1
Description	microASMD005F microASMD010F microASMD050F
W	8.0 ± 0.30
Po	4.0 ± 0.10
P ₁	4.0 ± 0.10
P ₂	2.0 ± 0.05
A _o	2.9 ± 0.10
B _o	3.50 ± 0.10
B ₁ max	4.35
D _o	1.55 ± .05
F	3.50 ± 0.05
E,	1.75 ± 0.10
E ₂ min	6.25
T max	0.3
T₁ max	0.1
Ko	0.9 ± 0.1
A max	185
N min	50
W ₁	8.4 + 1.5/00
W ₂ max	14.4

Tape and Reel Diagrams





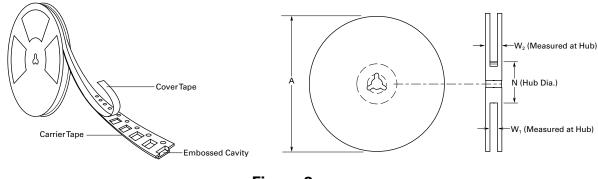


Figure 2

Warning

- Users should independently evaluate the suitability of and test each product selected for their own application.
- Operation beyond the maximum ratings or improper use may result in device damage and possible electrical arcing and flame.
- These devices are intended for protection against damage caused by occasional overcurrent or overtemperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- Contamination of the PPTC material with certain silicone-based oils or some aggressive solvents can adversely impact the performance of the devices.
- Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- PPTC devices are not recommended for installation in applications where the device is constrained such that its PTC properties are inhibited, for example in rigid potting materials or in rigid housings, which lack adequate clearance to accommodate device expansion.
- Operation in circuits with a large inductance can generate a circuit voltage (Ldi/dt) above the rated voltage of the device.

Disclaimer Notice - Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

