Axial Leaded Lo Rho PTC Resettable Fuse: FSL-N Series

1. Summary

(a) **RoHS Compliant & Halogen Free**
(b) **Applications: Laptop Computer, Mobile phone battery packs, Rechargeable battery packs, Lithium cell and battery packs**
(c) **Product Features: Low resistance, Solid state**
(d) **Operation Current: 1.4~4.5A**
(e) **Maximum Voltage: 6V**
(f) **Temperature Range : -40℃ to 85℃**

2. Agency Recognition

UL: File No. E211981
C-UL: File No. E211981
TÜV: File No. R50004084

3. Electrical Characteristics (23℃)

Part Number	Hold Current	Trip Current	Rated Voltage	Maximum Current	Typical Power	Max Time to Trip		Resistance		
						Current	Time	R_{MIN}	R_{MAX}	$R1_{MAX}$
	I_H,A	I_T,A	V_{MAX}, VDC	I_{MAX}, A	Pd, W	A	Sec	Ohms	Ohms	Ohms
FSL140F-N	1.4	3.6	6	50	1.0	7.0	3.0	0.010	0.020	0.035
FSL180F-N	1.8	5.2	6	50	1.0	9.0	3.0	0.007	0.014	0.026
FSL190F-N	1.9	4.9	6	50	1.0	9.5	3.0	0.006	0.014	0.024
FSL250F-N	2.5	8.0	6	50	1.0	12.5	3.0	0.006	0.012	0.020
FSL270F-N	2.7	8.1	6	50	1.0	13.5	2.0	0.006	0.012	0.018
FSL310F-N	3.1	8.8	6	50	1.0	15.5	3.0	0.004	0.010	0.016
FSL370F-N	3.7	9.0	6	50	1.0	18.5	5.0	0.003	0.008	0.014
FSL450LF-N	4.5	9.5	6	50	1.0	22.5	3.0	0.0025	0.0055	0.010

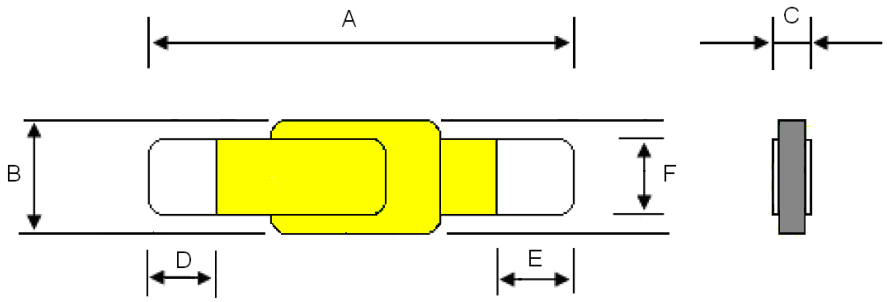
I_H=Hold current-maximum current at which the device will not trip at 23℃ still air.
I_T=Trip current-minimum current at which the device will always trip at 23℃ still air.
V_{MAX}=Maximum voltage device can withstand without damage at its rated current.
I_{MAX}= Maximum fault current device can withstand without damage at rated voltage (V_{MAX}).
Pd=Maximum power dissipated from device when in tripped state in 23℃ still air environment.
R_{MIN}=Minimum device resistance at 23℃.
R_{MAX}=Maximum device resistance at 23℃.
$R1_{MAX}$ =
1) Maximum resistance of device at 23℃ measured 1 hour, after tripping for all product series;
2) or after REFLOW soldering of 260℃ for 20 ~ 40 seconds for all SMD series;
3) or after WAVE soldering of 260℃ for less than 5 seconds for all DIP series.

Special Note :
- In the event that TWO of the above three conditions were experienced once each,the acceptance criteria will become 1.3 times of $R1_{MAX}$.
- In the event that ALL of the above three conditions were experienced once each, the acceptance criteria will become 1.5 times of $R1_{MAX}$.

Physical specifications:
Lead material: 0.1 mm nominal thickness, quarter-hard nickel.
Insulating material: Epoxy.

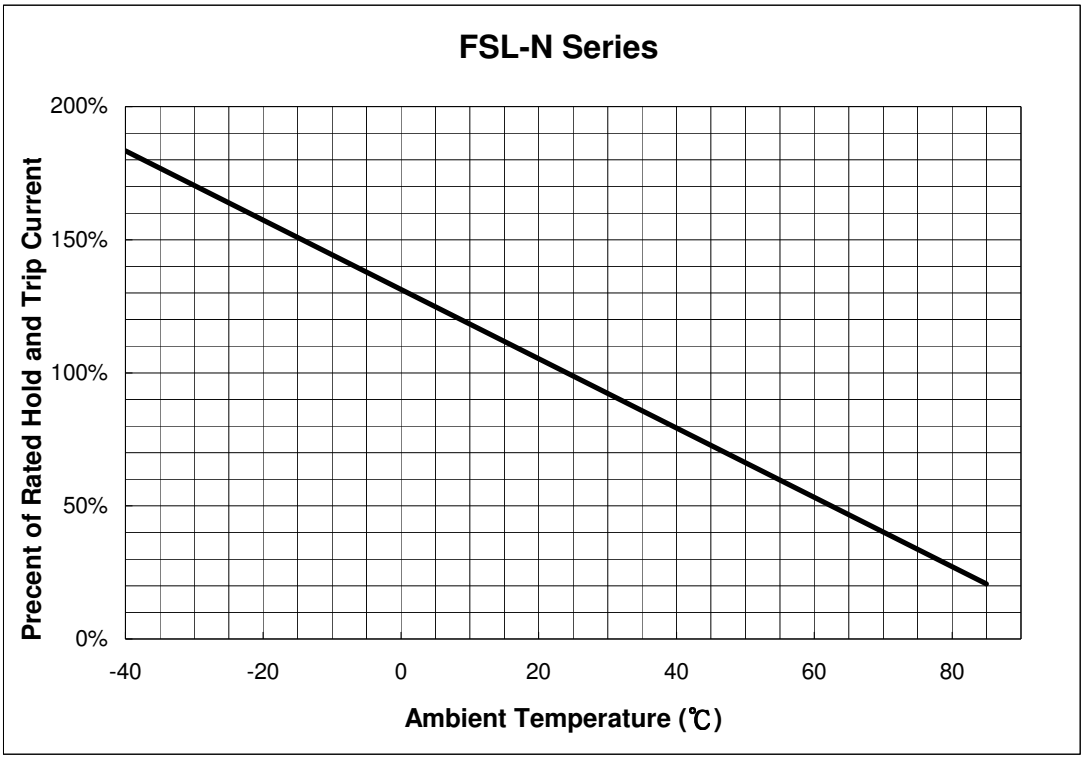
NOTE : Specification subject to change without notice.

4. Production Dimensions (millimeter)



Part Number	A		B		C		D		E		F	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
FSL140F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL180F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL190F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL250F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL270F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL310F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL370F-N	9.20	10.80	3.15	3.45	0.55	1.10	2.15	3.25	2.15	3.25	2.20	2.40
FSL450LF-N	20.50	21.50	3.50	3.90	0.55	1.10	7.00	8.00	7.00	8.00	2.40	2.60

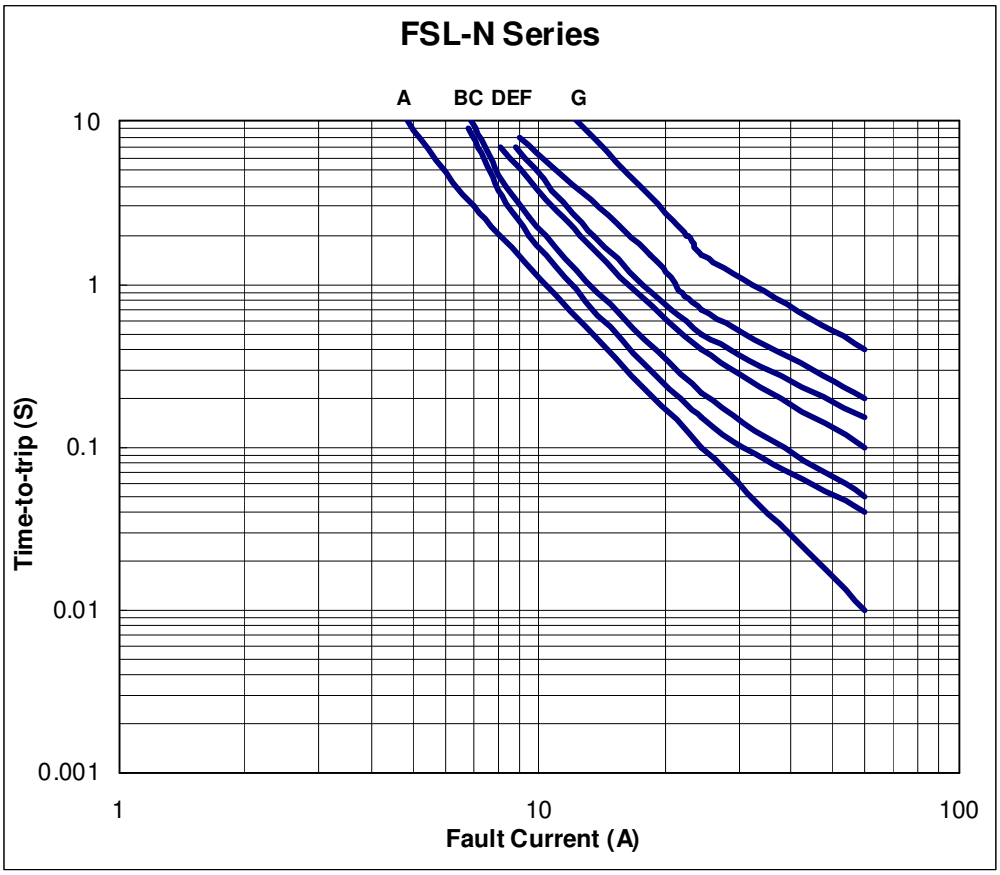
5. Thermal Derating Curve



NOTE : Specification subject to change without notice.

6. Typical Time-To-Trip at 23℃

A = FSL140F-N
B = FSL180F-N
C = FSL190F-N
D = FSL250F-N/
FSL270F-N
E = FSL310F-N
F = FSL370F-N
G = FSL450LF-N



7. Material Specification

Lead material: 0.1 mm nominal thickness, quarter-hard nickel
Insulating material:Epoxy

8. Part Numbering and Marking System

Part Numbering System

F SL □ □ □ (□ F) - N
Special Coating
RoHS Compliant/ Lead Free
Long Lead Type
Current Rating

Warning: -Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.
-PPTC device are intended for occasional overcurrent protection. Application for repeated overcurrent condition and/or prolonged trip are not anticipated.
- Avoid contact of PPTC device with chemical solvent. Prolonged contact will damage the device performance.

NOTE : Specification subject to change without notice.