



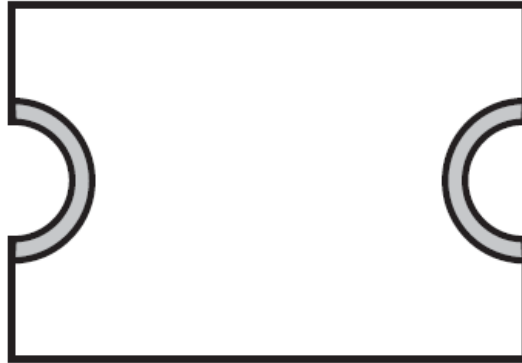
Lead Free SMD Resettable Fuse

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1. Scope

This specification applies for the Lead-Free SMD Resettable fuse series .

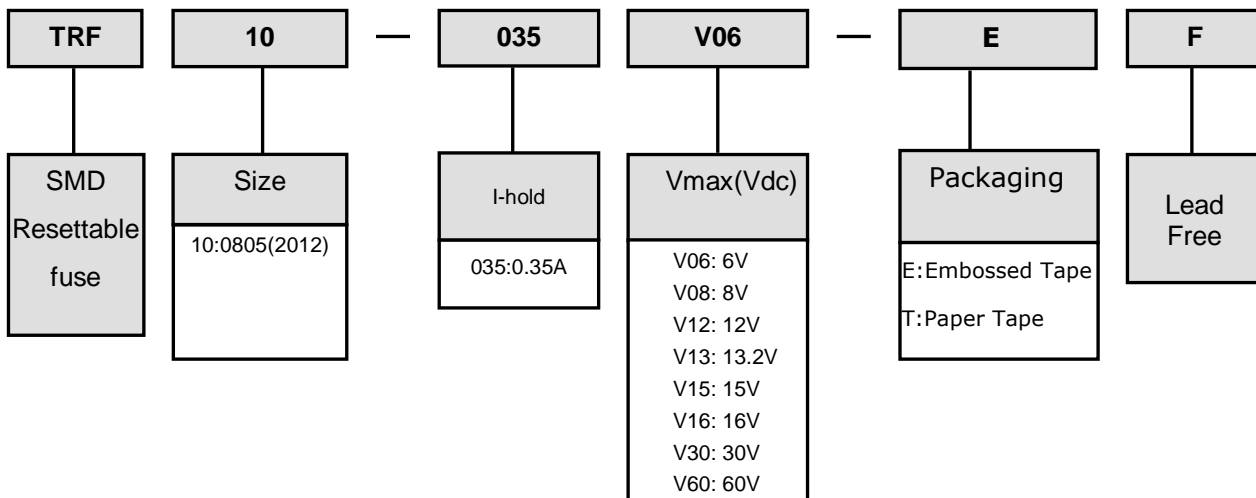
2. Construction



Terminal material:
Electroless Ni under immersion Au

Termination pad solderability:
Standard Au finish:
Meets ANSI/J-STD-002 Category 2.

3. Type Designation

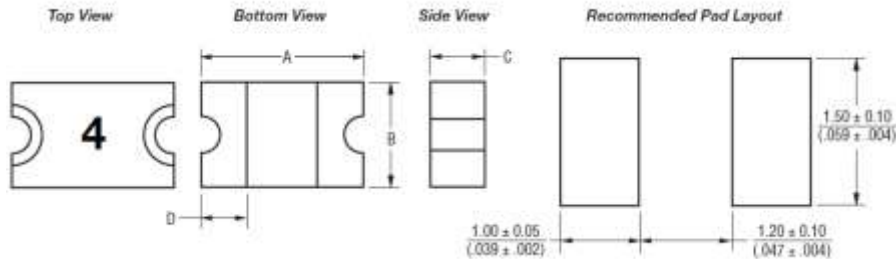




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4. Dimensions



Dimensions

Unit: mm

Part Designation	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
TRF10-010V15-EF	2.00	2.30	1.20	1.50	0.48	0.85	0.20
TRF10-020V09-EF	2.00	2.30	1.20	1.50	0.48	0.85	0.20
TRF10-035V06-EF	2.00	2.30	1.20	1.50	0.48	0.85	0.20
TRF10-050V06-EF	2.00	2.30	1.20	1.50	0.48	0.85	0.20
TRF10-075V06-EF	2.00	2.30	1.20	1.50	0.75	1.25	0.20
TRF10-110V06-EF	2.00	2.30	1.20	1.50	0.75	1.25	0.20

Packaging: 3000 pcs. per reel.

5. Applications and ratings

Part Designation	V_{max} (Vdc)	I_{max} (A)	I_{hold} at 23°C (A)	I_{trip} at 23°C (A)	P_d Typ. (W)	Maximum time to trip at 23°C		Resistance at 23°C	
						Current (A)	Time (Sec)	$R_{i_{min}}$ (Ω)	$R_{1_{max}}$ (Ω)
TRF10-010V15-EF	15	40	0.10	0.3	0.5	0.5	1.5	1	7.5
TRF10-020V09-EF	9	40	0.20	0.5	0.5	8	0.02	0.65	3.5
TRF10-035V06-EF	6	40	0.35	0.75	0.5	8	0.1	0.25	1.2
TRF10-050V06-EF	6	40	0.50	1	0.5	8	0.1	0.15	0.9
TRF10-075V06-EF	6	40	0.75	1.5	0.6	8	0.2	0.09	0.35
TRF10-110V06-EF	6	40	1.10	2.2	0.6	8	0.3	0.06	0.21

I_{hold} = Hold Current. Maximum current device will sustain for 30min without tripping in 23°C still air.

I_{trip} = Trip Current. Minimum current at which the device will trip in 23°C still air.

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 at 23°C still air.

$R_{i_{min}}$ = Typical resistance of device in initial (un-soldered) state.

$R_{1_{max}}$ = Maximum resistance of device at 23°C measured one hour post reflow.

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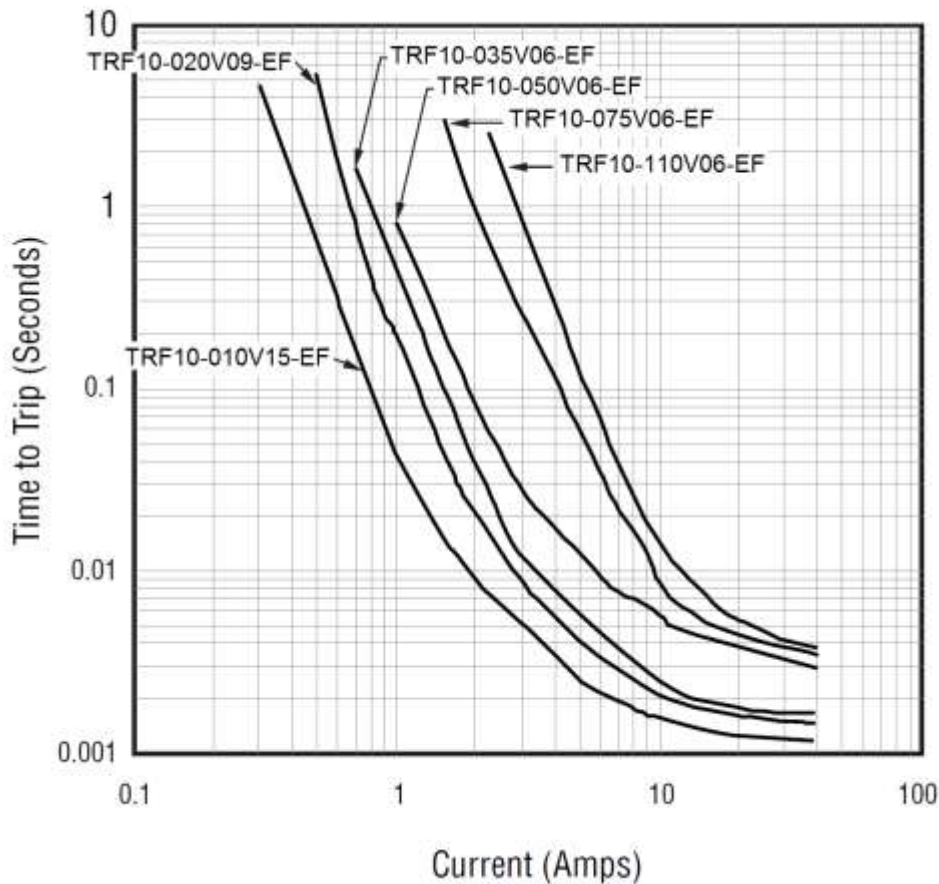
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6. Thermal Derating Chart

Part	Maximum ambient operating temperature(T_{mao}) vs. hold current (I_{hold}) (Amps)								
	Designation	-40°C	-20°C	0°C	23°C	40°C	50°C	60°C	70°C
TRF10-010V15-EF	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
TRF10-020V09-EF	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
TRF10-035V06-EF	0.47	0.44	0.39	0.35	0.30	0.27	0.24	0.20	0.14
TRF10-050V06-EF	0.68	0.62	0.55	0.50	0.40	0.37	0.33	0.29	0.23
TRF10-075V06-EF	1.00	0.90	0.79	0.75	0.63	0.57	0.53	0.42	0.35
TRF10-110V06-EF	1.45	1.35	1.20	1.10	0.92	0.84	0.75	0.65	0.52

7. Typical Time to Trip at 23 °C



The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.



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8. Environment

8.1 Operating Conditions

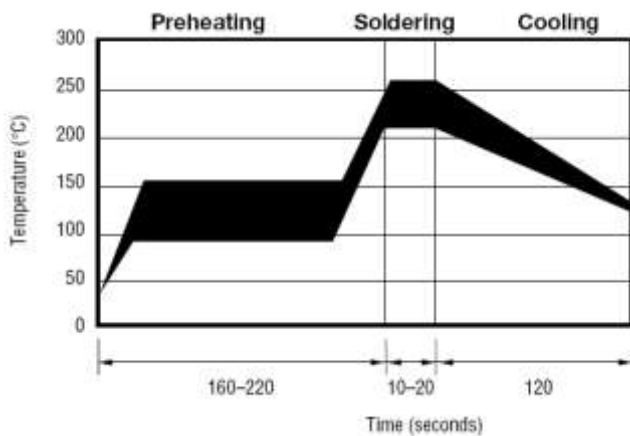
Operating Temperature: -40°C to 85°C

Device Surface Temperature in Tripped State: 125°C max

8.2 Environmental Specifications

TEST ITEM	Condition	Resistance Change
Passive aging	85°C, 1000hr	±5% typical
Humidity aging	85°C, 85%R.H, 1000hr	±5% typical
Thermal shock	85°C to -40°C, 20times	±10% typical
Resistance to solvent	MIL-STD-202, Method 215	No change
Vibration	MIL-STD-883C, Method 2007.1 Condition A	No change

8.3 Solder Reflow Recommendations



- Recommend reflow methods : IR, vapor phase oven, hot air oven.
 - Devices are not designed to be wave soldered to the bottom side of the board.
 - Recommended maximum paste thickness is 0.25 mm(0.010 inch).
 - Devices can be cleaned using standard method and solvents.
- Note : If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

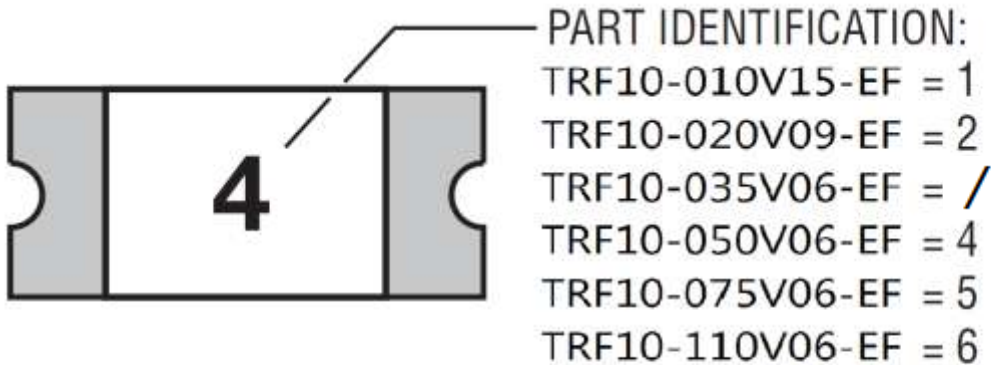


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9. Typical Part Marking

Represents total content. Layout may vary.



BIWEEKLY DATE CODE WILL APPEAR ON THE PACKAGING LABEL:
WEEK 1 AND 2 = A
WEEK 51 AND 52 = Z

10. Storage Conditions:

Temperature : 40°C max, Humidity : 40%~70%

11. Shelf Life:

2 years from manufacturing date



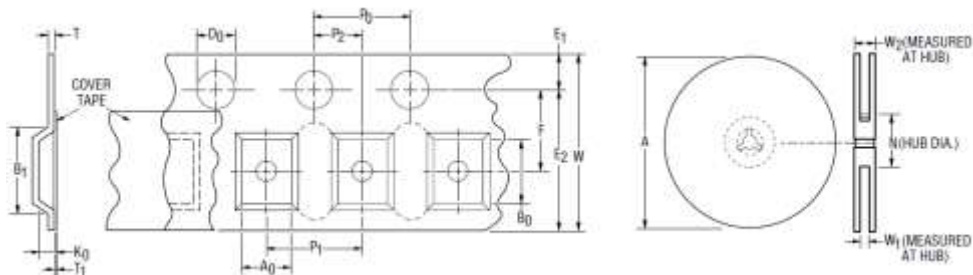
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12. Taping & Reel

Tape Dimensions	TRF10-010V15-EF TRF10-020V09-EF TRF10-035V06-EF TRF10-050V06-EF per EIA 481-1	TRF10-075V06-EF TRF10-110V06-EF per EIA 481-1
	W	$\frac{8.0 - 0.30}{(0.315 - 0.012)}$
P ₀	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$
P ₁	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$
P ₂	$\frac{2.0 - 0.05}{(0.079 - 0.002)}$	$\frac{2.0 - 0.05}{(0.079 - 0.002)}$
A ₀	$\frac{1.65 - 0.10}{(0.065 - 0.004)}$	$\frac{1.65 - 0.10}{(0.065 - 0.004)}$
B ₀	$\frac{2.4 - 0.10}{(0.094 - 0.004)}$	$\frac{2.4 - 0.10}{(0.094 - 0.004)}$
B ₁ max.	$\frac{4.35}{(0.171)}$	$\frac{4.35}{(0.171)}$
D ₀	$\frac{1.50 + 0.10/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.50 + 0.10/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{3.5 - 0.05}{(0.138 + 0.002)}$	$\frac{3.5 - 0.05}{(0.138 + 0.002)}$
E ₁	$\frac{1.75 - 0.10}{(0.069 - 0.004)}$	$\frac{1.75 - 0.10}{(0.069 - 0.004)}$
E ₂ min.	$\frac{6.25}{(0.246)}$	$\frac{6.25}{(0.246)}$
T max.	$\frac{0.6}{(0.024)}$	$\frac{0.6}{(0.024)}$
T ₁ max.	$\frac{0.10}{(0.004)}$	$\frac{0.10}{(0.004)}$
K ₀	$\frac{0.95 - 0.10}{(0.037 - 0.004)}$	$\frac{1.25 - 0.10}{(0.049 - 0.004)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$
Reel Dimensions		
A max.	$\frac{185}{(7.28)}$	$\frac{185}{(7.28)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W ₁	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0)}$	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0)}$
W ₂ max.	$\frac{14.4}{(0.567)}$	$\frac{14.4}{(0.567)}$

UNIT = $\frac{\text{MM}}{\text{(INCHES)}}$



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