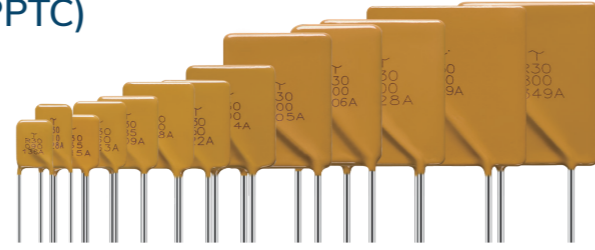


# R30

## Polymeric Positive Temperature Coefficient (PPTC)



### Agency Approvals

Agency	Agency File Number
UL	E201504 / E319079
TUV	R50274672

### Packaging

Packaging Option	Applicable Products	Quantity
Bulk	All	500 pieces per box
Reel Pack	R30-090 to R30-250	3,000 pieces per box
	R30-300 to R30-400	1,500 pieces per box

### Electrical Properties

Model	V <sub>max</sub> (VDC) <sup>1</sup>	I <sub>max</sub> (A) <sup>2</sup>	I <sub>hold</sub> at 25°C (A) <sup>3</sup>	I <sub>trip</sub> at 25°C (A) <sup>4</sup>	P <sub>d</sub> max (W) <sup>5</sup>	Maximum Time to Trip		Resistance			Agency Approval	
						Current (A)	Time (Sec)	R <sub>imin</sub> (Ω) <sup>6</sup>	R <sub>imax</sub> (Ω) <sup>6</sup>	R <sub>1max</sub> (Ω) <sup>7</sup>	UL	TUV-PS
R30-030	30	40	0.30	0.60	0.44	8.00	0.3	0.370	0.720	1.080		
R30-040	30	40	0.40	0.80	0.45	8.00	0.3	0.250	0.430	0.645		
R30-050	30	40	0.50	1.00	0.46	8.00	0.3	0.150	0.400	0.600		
R30-065	30	40	0.65	1.30	0.47	8.00	0.4	0.120	0.300	0.450		
R30-075	30	40	0.75	1.50	0.48	8.00	0.4	0.100	0.250	0.375		
R30-090	30	40	0.90	1.80	0.60	4.50	5.9	0.070	0.145	0.220	•	•
R30-110	30	40	1.10	2.20	0.70	5.50	6.6	0.050	0.120	0.170	•	•
R30-135	30	40	1.35	2.70	0.80	6.75	7.3	0.040	0.085	0.130	•	•
R30-160	30	40	1.60	3.20	0.90	8.00	8.0	0.030	0.070	0.110	•	•
R30-185	30	40	1.85	3.70	1.00	9.25	8.7	0.030	0.060	0.090	•	•
R30-250	30	40	2.50	5.00	1.20	12.50	10.3	0.020	0.040	0.070	•	•
R30-300	30	40	3.00	6.00	2.00	15.00	10.8	0.020	0.050	0.080	•	•
R30-400	30	40	4.00	8.00	2.50	20.00	12.7	0.010	0.030	0.050	•	•
R30-500	30	40	5.00	10.00	3.00	25.00	14.5	0.010	0.030	0.050	•	•
R30-600	30	40	6.00	12.00	3.50	30.00	16.0	0.005	0.020	0.040	•	•
R30-700	30	40	7.00	14.00	3.80	35.00	17.5	0.005	0.020	0.030	•	•
R30-800	30	40	8.00	16.00	4.00	40.00	18.8	0.005	0.020	0.020	•	•
R30-900	30	40	9.00	18.00	4.20	40.00	20.0	0.005	0.010	0.020	•	•

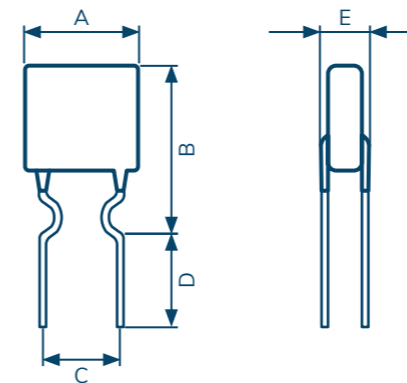
- V<sub>max</sub> = Maximum voltage device can withstand without damage at rated current (I<sub>max</sub>)
- I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>)
- I<sub>hold</sub> = hold current: maximum current device will sustain for 4 hours without tripping (at 25 °C, still air)
- I<sub>trip</sub> = trip current: minimum current at which the device will trip (at 25 °C, still air)
- P<sub>d</sub> = power dissipated from device when in the tripped state (at 25 °C, still air)
- R<sub>imin/max</sub> = minimum/maximum resistance of device in initial (un-soldered) state
- R<sub>1max</sub> = maximum resistance of device at 25 °C, measured one hour after tripping

CAUTION: operation beyond the specified ratings may result in damage and possible arcing and flame

### Product Characteristics

Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature	In Tripped State, 125 °C
Passive Aging	85 °C, 1000 hours, ±5% Typical Resistance Change
Humidity Aging	85 °C, 85% R.H., 1000 hours, ±5% Typical Resistance Change
Thermal Shock	+85 °C to -40 °C, 20 times, ±10% Typical Resistance Change
Vibration	MIL-STD-202, Method 201, 1 No Change

### Mechanical Dimensions



### Physical Dimension

Model	Material	Physical Dimensions (Unit: mm/In)					Lead Style	
		A (Max.)	B (Max.)	C (Typ.)	D (Min.)	E (Max.)		
R30-030	Tin Plated Copper-Clad Steel (24 AWG), Ø 0.51 mm (0.020 in)	7.4 / 0.29	10.2 / 0.40	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight	
R30-040		7.4 / 0.29	11.4 / 0.45	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight	
R30-050		7.4 / 0.29	11.4 / 0.45	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight	
R30-065		7.4 / 0.29	11.4 / 0.45	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight	
R30-075		7.4 / 0.29	11.4 / 0.45	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight	
R30-090		7.4 / 0.29	12.2 / 0.48	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Kink	
R30-110		7.4 / 0.29	14.2 / 0.56	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Kink	
R30-135		8.9 / 0.35	13.5 / 0.53	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Kink	
R30-160		8.9 / 0.35	15.2 / 0.60	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Kink	
R30-185		10.2 / 0.40	15.7 / 0.62	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Kink	
R30-250		11.4 / 0.45	18.3 / 0.72	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Kink	
R30-300		Tin Plated Copper (20 AWG), Ø 0.81 mm (0.032 in)	11.4 / 0.45	17.3 / 0.68	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight
R30-400			14.0 / 0.55	20.1 / 0.79	5.1 / 0.2	7.6 / 0.3	3.0 / 0.12	Straight
R30-500			14.0 / 0.55	24.9 / 0.98	10.2 / 0.4	7.6 / 0.3	3.0 / 0.12	Straight
R30-600	16.5 / 0.65		24.9 / 0.98	10.2 / 0.4	7.6 / 0.3	3.0 / 0.12	Straight	
R30-700	19.1 / 0.75		26.7 / 1.05	10.2 / 0.4	7.6 / 0.3	3.0 / 0.12	Straight	
R30-800	21.6 / 0.85		29.2 / 1.15	10.2 / 0.4	7.6 / 0.3	3.0 / 0.12	Straight	
R30-900	24.1 / 0.95		29.7 / 1.17	10.2 / 0.4	7.6 / 0.3	3.0 / 0.12	Straight	

# R60

## Polymeric Positive Temperature Coefficient (PPTC)



### Agency Approvals

Agency	Agency File Number
UL	E201504 / E319079
TUV	R50274672

### Packaging

Packaging Option	Applicable Products	Quantity
Bulk	All	500 pieces per box
	R60-010 to R60-090	3,000 pieces per box
Reel Pack	R60-017	2,500 pieces per box
	R60-110 to R60-185	1,500 pieces per box
	R60-250 to R60-375	-

### Electrical Properties

Model	V <sub>max</sub> (VDC) <sup>1</sup>	I <sub>max</sub> (A) <sup>2</sup>	I <sub>hold</sub> at 25°C (A) <sup>3</sup>	I <sub>trip</sub> at 25°C (A) <sup>4</sup>	P <sub>d</sub> max (W) <sup>5</sup>	Maximum Time to Trip		Resistance			Agency Approval	
						Current (A)	Time (Sec)	R <sub>imin</sub> (Ω) <sup>6</sup>	R <sub>imax</sub> (Ω) <sup>6</sup>	R <sub>1max</sub> (Ω) <sup>7</sup>	UL	TUV-PS
R60-010	60	40	0.10	0.20	0.38	0.50	4.0	2.50	4.50	7.50	•	•
R60-017	60	40	0.17	0.34	0.48	0.85	3.0	2.50	5.21	8.00	•	•
R60-020	60	40	0.20	0.40	0.41	1.00	2.2	1.25	2.75	4.40	•	•
R60-025	60	40	0.25	0.50	0.45	1.25	2.5	0.65	1.95	3.00	•	•
R60-030	60	40	0.30	0.60	0.49	1.50	3.0	0.45	1.33	2.10	•	•
R60-040	60	40	0.40	0.80	0.56	2.00	3.8	0.40	0.86	1.29	•	•
R60-050	60	40	0.50	1.00	0.77	2.50	4.0	0.35	0.77	1.17	•	•
R60-065	60	40	0.65	1.30	0.88	3.25	5.3	0.25	0.48	0.72	•	•
R60-075	60	40	0.75	1.50	0.92	3.75	6.3	0.20	0.40	0.60	•	•
R60-090	60	40	0.90	1.80	0.99	4.50	7.2	0.15	0.31	0.47	•	•
R60-110	60	40	1.10	2.20	1.50	5.50	8.2	0.13	0.25	0.38	•	•
R60-135	60	40	1.35	2.70	1.70	6.75	9.6	0.10	0.19	0.30	•	•
R60-160	60	40	1.60	3.20	1.90	8.00	11.4	0.07	0.14	0.22	•	•
R60-185	60	40	1.85	3.70	2.10	9.25	12.6	0.06	0.12	0.19	•	•
R60-250	60	40	2.50	5.00	2.50	12.50	15.6	0.04	0.08	0.13	•	•
R60-300	60	40	3.00	6.00	2.80	15.00	19.8	0.03	0.06	0.10	•	•
R60-375	60	40	3.75	7.50	3.20	18.75	24.0	0.02	0.05	0.08	•	•

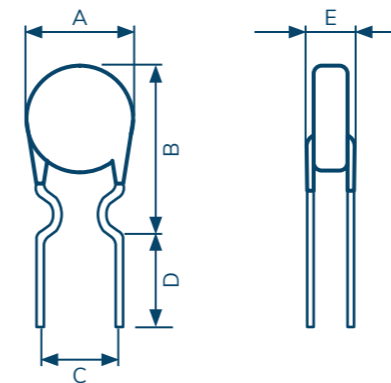
- V<sub>max</sub> = Maximum voltage device can withstand without damage at rated current (I<sub>max</sub>)
- I<sub>max</sub> = Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>)
- I<sub>hold</sub> = hold current: maximum current device will sustain for 4 hours without tripping (at 25 °C, still air)
- I<sub>trip</sub> = trip current: minimum current at which the device will trip (at 25 °C, still air)
- P<sub>d</sub> = power dissipated from device when in the tripped state (at 25 °C, still air)
- R<sub>imin/max</sub> = minimum/maximum resistance of device in initial (un-soldered) state
- R<sub>1max</sub> = maximum resistance of device at 25 °C, measured one hour after tripping

CAUTION: operation beyond the specified ratings may result in damage and possible arcing and flame

### Product Characteristics

Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature	In Tripped State, 125 °C
Passive Aging	85 °C, 1000 hours, ±5% Typical Resistance Change
Humidity Aging	85 °C, 85% R.H., 1000 hours, ±5% Typical Resistance Change
Thermal Shock	+85 °C to -40 °C, 20 times, ±10% Typical Resistance Change
Vibration	MIL-STD-202, Method 201, 1 No Change

### Mechanical Dimensions



### Physical Dimension

Model	Material	Physical Dimensions (Unit: mm/In)					Lead Style
		A (Max.)	B (Max.)	C (Typ.)	D (Min.)	E (Max.)	
R60-010	Tin Plated Copper alloy, 0.205mm <sup>2</sup> (24AWG), Ø0.51mm (0.020 in).	7.4 / 0.29	12.7 / 0.50	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-017	Tin Plated Copper-Clad Steel, 0.205mm <sup>2</sup> (24AWG), Ø0.51mm (0.020 in)	7.4 / 0.29	12.7 / 0.50	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-020		7.4 / 0.29	12.7 / 0.48	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-025		7.4 / 0.29	12.7 / 0.50	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-030		7.4 / 0.29	13.0 / 0.51	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-040	Tin Plated Copper, 0.205mm <sup>2</sup> (24AWG), Ø0.51mm (0.020 in)	7.6 / 0.30	13.5 / 0.53	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-050		7.9 / 0.31	13.7 / 0.54	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-065		9.7 / 0.38	14.5 / 0.57	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-075		10.4 / 0.41	15.2 / 0.60	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-090	Tin Plated Copper, 0.52mm <sup>2</sup> (20AWG), Ø0.81mm (0.032 in)	11.7 / 0.46	15.8 / 0.62	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Kink
R60-110		13.0 / 0.51	18.0 / 0.71	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Straight
R60-135		14.5 / 0.57	19.6 / 0.77	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Straight
R60-160		16.3 / 0.64	21.3 / 0.84	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Straight
R60-185		17.8 / 0.70	22.9 / 0.90	5.1 / 0.2	7.6 / 0.3	3.1 / 0.12	Straight
R60-250		21.3 / 0.84	26.4 / 1.04	10.2 / 0.4	7.6 / 0.3	3.1 / 0.12	Straight
R60-300		24.9 / 0.98	30.0 / 1.18	10.2 / 0.4	7.6 / 0.3	3.1 / 0.12	Straight
R60-375	28.5 / 1.12	33.5 / 1.32	10.2 / 0.4	7.6 / 0.3	3.1 / 0.12	Straight	

# mSMD(1812) Series

Polymeric Positive Temperature Coefficient (PPTC)



### Agency Approvals

Agency	Agency File Number
UL	E201504 / E319079
TUV	R50481056

### Packaging

Packaging Option	Quantity
Tape & Reel	1,500 pieces per box

### Electrical Properties

Model	V <sub>max</sub> (VDC) <sup>1</sup>	I <sub>max</sub> (A) <sup>2</sup>	I <sub>hold</sub> at 25°C (A) <sup>3</sup>	I <sub>trip</sub> at 25°C (A) <sup>4</sup>	P <sub>d</sub> max (W) <sup>5</sup>	Maximum Time to Trip		Resistance		Agency Approval	
						Current (A)	Time (Sec)	R <sub>imin</sub> (Ω) <sup>6</sup>	R <sub>1max</sub> (Ω) <sup>7</sup>	UL	TUV
mSMD010	30.0	100	0.10	0.30	0.8	0.5	1.50	0.750	15.00	•	•
mSMD014	60.0	100	0.14	0.34	0.8	1.5	0.15	0.650	6.000	•	•
mSMD020	30.0	100	0.20	0.40	0.8	8.0	0.02	0.350	5.000		•
mSMD030	30.0	100	0.30	0.60	0.8	8.0	0.10	0.250	3.000	•	•
mSMD050-15V	15.0	100	0.50	1.00	0.8	8.0	0.15	0.150	1.000	•	•
mSMD050-33V	33.0	100	0.50	1.00	0.8	8.0	0.15	0.150	1.000	•	•
mSMD050-60V	60.0	100	0.50	1.00	0.8	8.0	0.15	0.150	1.000	•	•
mSMD075	13.2	100	0.75	1.50	0.8	8.0	0.20	0.090	0.450	•	•
mSMD110	8.00	100	1.10	2.20	0.8	8.0	0.30	0.050	0.250	•	•
mSMD110-16V	16.0	100	1.10	2.20	0.8	8.0	0.30	0.050	0.250	•	•
mSMD125	16.0	100	1.25	2.50	0.8	8.0	0.40	0.050	0.140		•
mSMD150	8.00	100	1.50	3.00	0.8	8.0	0.50	0.040	0.160	•	•
mSMD150-16V	16.0	100	1.50	3.00	0.8	8.0	0.50	0.040	0.160	•	•
mSMD160	8.00	100	1.60	2.80	0.8	8.0	1.00	0.030	0.130	•	•
mSMD200	8.00	100	2.00	4.00	0.8	8.0	2.00	0.015	0.100	•	•
mSMD260	8.00	100	2.60	5.00	0.8	8.0	2.50	0.015	0.050	•	•
mSMD300	8.00	100	3.00	5.00	0.8	8.0	4.00	0.012	0.040		•
mSMD350	6.00	100	3.50	6.00	2.0	10.0	4.00	0.008	0.030		•

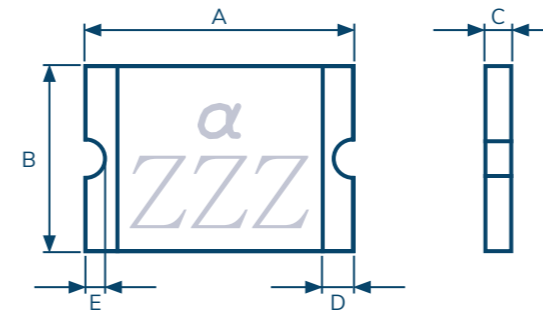
- V<sub>max</sub> = Maximum voltage device can withstand without damage at rated current (I<sub>max</sub>)
- I<sub>max</sub> = Maximum fault current device can with stand without damage at rated voltage (V<sub>max</sub>)
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- I<sub>trip</sub> = trip current: minimum current at which the device will trip (at 25 °C, still air)
- P<sub>d</sub> = power dissipated from device when in the tripped state (at 25 °C, still air)
- R<sub>imin/max</sub> = minimum/maximum resistance of device in initial (un-soldered) state
- R<sub>1max</sub> = maximum resistance of device at 25 °C, measured one hour after tripping

CAUTION: operation beyond the specified ratings may result in damage and possible arcing and flame

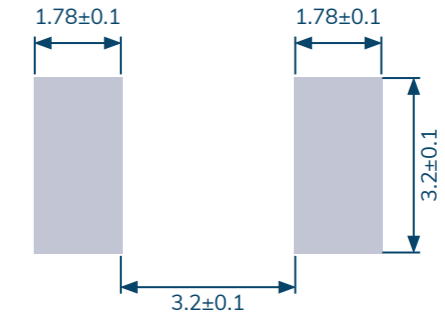
### Product Characteristics

Operating Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature	In Tripped State, 125 °C
Passive Aging	85 °C, 1000 hours, ±5% Typical Resistance Change
Humidity Aging	85 °C, 85% R.H., 1000 hours, ±5% Typical Resistance Change
Thermal Shock	+85 °C to -40 °C, 20 times, ±33% Typical Resistance Change
Vibration	MIL-STD-202, Method 201, No Resistance Change

### Mechanical Dimensions



### Recommended Layout



### Physical Properties

Model	Material	A		B		C		D	E
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
mSMD010	Tin-Plated Nickel-Copper	4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
mSMD014		4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
mSMD020		4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25
mSMD030		4.37	4.73	3.07	3.41	0.50	1.00	0.30	0.25
mSMD050-15V		4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
mSMD050-33V		4.37	4.73	3.07	3.41	0.60	1.60	0.30	0.25
mSMD050-60V		4.37	4.73	3.07	3.41	0.90	1.80	0.30	0.25
mSMD075		4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
mSMD110		4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
mSMD110-16V		4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
mSMD125		4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
mSMD150		4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
mSMD150-16V		4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
mSMD160		4.37	4.73	3.07	3.41	0.40	0.90	0.30	0.25
mSMD200		4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25
mSMD260	4.37	4.73	3.07	3.41	0.60	1.30	0.30	0.25	
mSMD300	4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25	
mSMD350	4.37	4.73	3.07	3.41	0.50	1.30	0.30	0.25	