

## APPROVAL SHEET

MODEL NO.: \_\_\_\_\_

CUSTOMER:

CUSTOMER'S APPROVAL:

AUTHORIZED SIGNATURE/STAMP

DATE

MANUFACTURER:

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Submitted by:

Approved by:

Date:

## Performance Specification

Model	V <sub>max</sub> (Vdc)	I <sub>max</sub> (A)	I <sub>hold</sub> (A)	I <sub>trip</sub> (A)	P <sub>d</sub> Typ. (W)	Maximum Time		Resistance		
						To Trip		R <sub>imin</sub> (Ω)	R <sub>imax</sub> (Ω)	R <sub>1max</sub> (Ω)
						Current (A)	Time (Sec)			
60R005	60	40	0.05	0.10	0.30	0.25	8.0	10.0	25.0	50.0
60R010	60	40	0.10	0.20	0.38	0.50	8.0	3.30	7.50	12.5
60R017	60	40	0.17	0.34	0.48	0.85	5.0	1.40	3.20	5.50
60R020	60	40	0.20	0.40	0.52	1.00	4.5	1.20	2.75	4.40
60R025	60	40	0.25	0.50	0.52	1.25	3.6	0.88	1.95	3.00
60R030	60	40	0.30	0.60	0.59	1.50	3.0	0.70	1.33	2.10
60R040	60	40	0.40	0.80	0.66	2.00	5.0	0.47	0.86	1.50
60R050	60	40	0.50	1.00	0.77	2.50	4.5	0.40	0.77	1.20
60R065	60	40	0.65	1.30	0.88	3.25	5.3	0.25	0.48	0.72
60R075	60	40	0.75	1.50	0.95	3.75	6.3	0.20	0.42	0.63
60R090	60	40	0.90	1.80	0.99	4.50	7.2	0.17	0.38	0.55
60R110	60	40	1.10	2.20	1.50	5.50	8.2	0.14	0.26	0.39
60R135	60	40	1.35	2.70	1.70	6.75	9.6	0.11	0.195	0.31
60R160	60	40	1.60	3.20	1.90	8.00	11.4	0.08	0.145	0.22
60R185	60	40	1.85	3.70	2.10	9.25	12.6	0.07	0.13	0.195
60R250	60	40	2.50	5.00	2.50	12.50	15.6	0.045	0.08	0.13
60R300	60	40	3.00	6.00	2.80	15.00	19.8	0.04	0.06	0.10
60R375	60	40	3.75	7.50	3.20	18.75	24.0	0.03	0.05	0.08

V<sub>max</sub> = Maximum operating 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 not trip in 25°C still air.

I<sub>trip</sub> = Trip Current. Minimum current at which the device will always trip in 25°C still air.

P<sub>d</sub> = Power dissipation when device is in the tripped state in 25°C still air environment at rated voltage.

R<sub>i min/max</sub> = Minimum/Maximum device resistance prior to tripping at 25°C.

R<sub>1max</sub> = Maximum device resistance is measured one hour post reflow.

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

## Environmental Specifications



Test	Conditions	Resistance change
Passive aging	+85°C, 1000 hrs.	±5% typical
Humidity aging	+85°C, 85% R.H. , 168 hours	±5% typical

# R HuiZhou DaRong Electronic Technology CO.,LTD

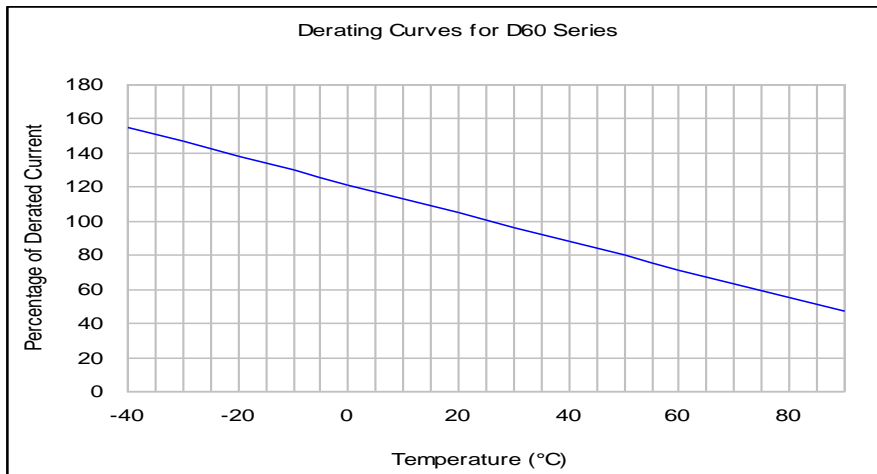
## 60R HF Series PTC Devices

Thermal shock	+85°C to -40°C, 20 times	±33% typical
Resistance to solvent	MIL-STD-202,Method 215	No change
Vibration	MIL-STD-202,Method 201	No change
Ambient operating conditions : - 40 °C to +85 °C		
Maximum surface temperature of the device in the tripped state is 125 °C		

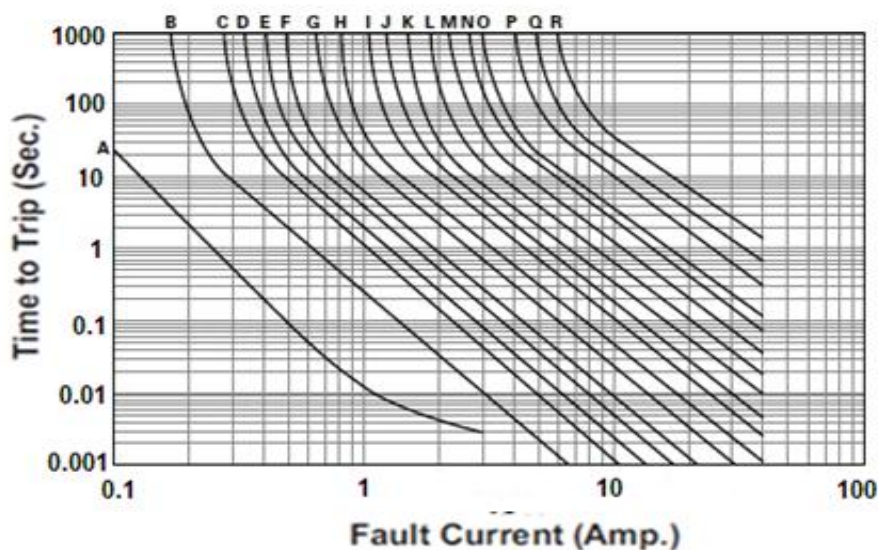
### Agency Approval and Environmental Compliance

Agency	File Number	Regulation	Standard
UL	pending		2002/95/EC
TUV	pending		EN14582

### Thermal Derating Curve



### Average Time-Current Curve

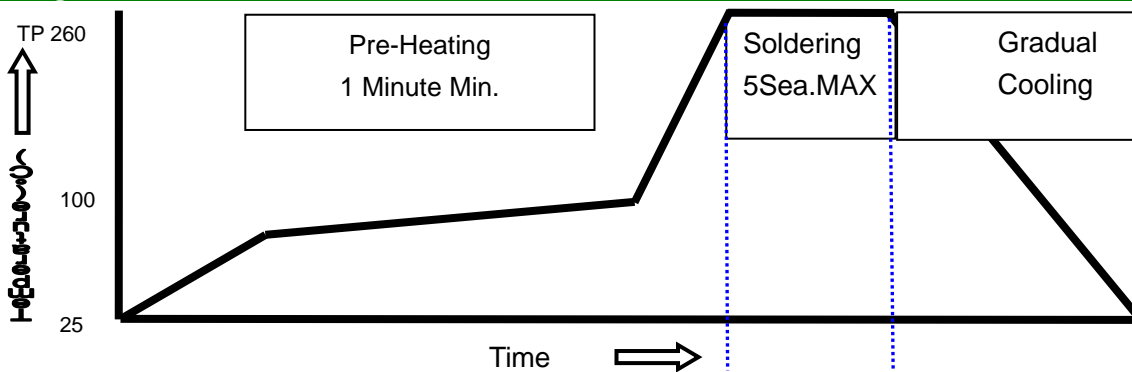


- |          |          |
|----------|----------|
| A=60-005 | J=60-075 |
| B=60-010 | K=60-090 |
| C=60-017 | L=60-110 |
| D=60-020 | M=60-135 |
| E=60-025 | N=60-160 |
| F=60-030 | O=60-185 |
| G=60-040 | P=60-250 |
| H=60-050 | Q=60-300 |
| I=60-065 | R=60-375 |

**Ihold Versus Temperature**

Model	Maximum ambient operating temperature (T <sub>mao</sub> ) vs. hold current (I <sub>hold</sub> )								
	-40°C	-20°C	0°C	25°C	40°C	50°C	60°C	70°C	85°C
60R005	0.077	0.069	0.061	0.05	0.044	0.040	0.036	0.032	0.025
60R010	0.18	0.15	0.13	0.10	0.08	0.07	0.06	0.05	0.03
60R017	0.28	0.24	0.20	0.17	0.14	0.12	0.10	0.09	0.06
60R020	0.34	0.29	0.25	0.20	0.16	0.14	0.13	0.10	0.07
60R025	0.42	0.36	0.31	0.25	0.20	0.18	0.16	0.12	0.09
60R030	0.52	0.44	0.38	0.30	0.24	0.22	0.18	0.14	0.10
60R040	0.66	0.57	0.50	0.40	0.32	0.29	0.24	0.20	0.14
60R050	0.83	0.74	0.63	0.50	0.41	0.36	0.30	0.25	0.18
60R065	1.10	0.95	0.82	0.65	0.53	0.47	0.40	0.33	0.24
60R075	1.26	1.11	0.95	0.75	0.61	0.54	0.45	0.39	0.28
60R090	1.52	1.30	1.15	0.90	0.73	0.65	0.55	0.47	0.33
60R110	1.82	1.60	1.35	1.10	0.89	0.79	0.65	0.55	0.40
60R135	2.20	1.91	1.65	1.35	1.09	0.96	0.80	0.68	0.50
60R160	2.60	2.30	1.95	1.60	1.30	1.13	1.00	0.80	0.60
60R185	3.00	2.63	2.30	1.85	1.50	1.33	1.12	0.92	0.67
60R250	4.05	3.58	3.02	2.50	2.02	1.80	1.55	1.30	0.90
60R300	4.82	4.16	3.62	3.00	2.43	2.16	1.85	1.50	1.09
60R375	6.02	5.19	4.50	3.75	3.02	2.68	2.30	1.95	1.39

**Soldering Parameters**

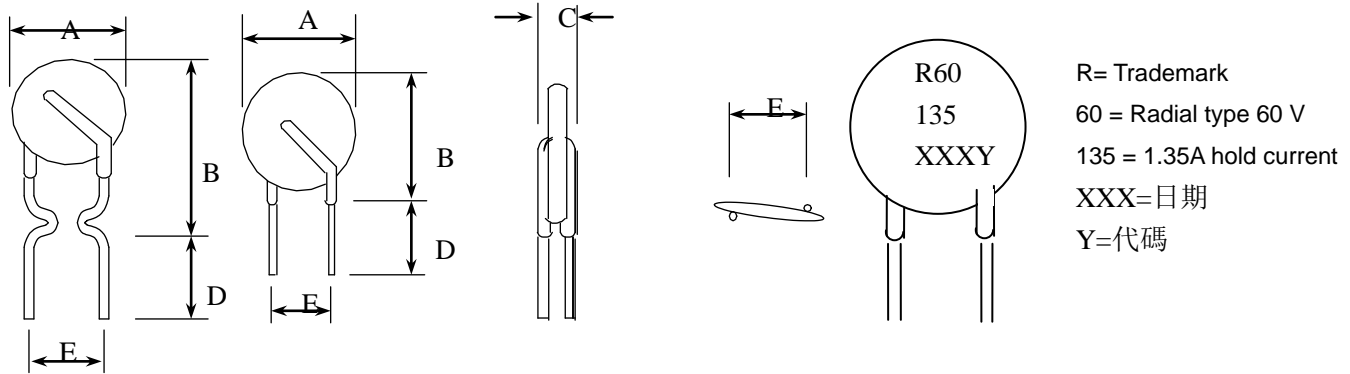


**WAVE SOLDERING INFORMATIONS**

Pre-Heating Zone	Max. ramping rate should not exceed 4°C/Sec.
Soldering Zone	Max. solder temperature should not exceed 260°C
Cooling Zone	Cooling by natural convection in air.

© Specifications are subject to change without notice.

**Physical Dimensions(mm.)**



**1 型**

**2 型**

Model	A Max.	B Max.	C Max.	D Min.	E Typ.	Lead	
						Style	直径 (φ)
60R005	5.7	7.5	3.1	7.6	5.1	2	0.5
60R010	5.7	10.9	3.1	7.6	5.1	1	0.5
60R017	5.8	11.1	3.1	7.6	5.1	1	0.5
60R020	5.9	11.2	3.1	7.6	5.1	1	0.5
60R025	6.4	11.4	3.1	7.6	5.1	1	0.5
60R030	7.6	13.4	3.1	7.6	5.1	1	0.5
60R040	7.7	13.6	3.1	7.6	5.1	1	0.5
60R050	7.9	13.7	3.1	7.6	5.1	1	0.6
60R065	9.7	14.5	3.1	7.6	5.1	1	0.6
60R075	10.7	15.5	3.1	7.6	5.1	1	0.6
60R090	11.7	16.5	3.1	7.6	5.1	1	0.6
60R110	13.0	16.7	3.1	7.6	5.1	2	0.8
60R135	15.7	17.6	3.1	7.6	5.1	2	0.8
60R160	16.7	19.7	3.1	7.6	5.1	2	0.8
60R185	17.8	22.9	3.1	7.6	5.1	2	0.8
60R250	21.8	25.4	3.1	7.6	10.2	2	0.8
60R300	24.9	27.4	3.1	7.6	10.2	2	0.8
60R375	28.5	32.5	3.1	7.6	10.2	2	0.8

**PHYSICAL SPECIFICATIONS :**

Materials : Leads 60R005 ~ 040: Tin-plated copper-clad steel, 0.205mm<sup>2</sup> (24AWG), Φ0.50mm(0.020 in).

60R050 ~ 090: Tin-plated copper , 0.205mm<sup>2</sup> (24AWG), Φ0.60mm(0.020 in).

60R110 ~200: Tin-platedcopper-cladstee , 0.52mm<sup>2</sup> (20AWG), Φ0.80mm(0.032 in).

60R250 ~375: Tin-plated copper , 0.52mm<sup>2</sup> (20AWG), Φ0.80mm(0.032 in).

Lead Solderability : MIL-STD-202, Method 208E

Device Labeling : Device is marked with Logo, amperage rating , voltage rating & date code.

**Packaging Quantity**

60	135	U	Model	Reel Q'ty	Bag Q'ty
Radial type	Hold	U= Bulk	60R005-60R375	-	500
60V	Current(A)	packaged			

Tape & Reel packaging per EIA468-B standard.