0603HV

Fast-acting chip fuses

Product features

- 0603 (1608 metric) compact design utilizes less board space
- Rapid interruption of excessive current
- Compatible with reflow and wave solder
- Rugged ceramic and glass construction
- Excellent environmental integrity
- One time positive disconnect
- High breaking capacity up to 63 V
- Mositure sensitivity level (MSL): 1

Applications

Secondary circuit protection

- I/O Switch modules
- Printers
- Laptop, notebook, netbook
- Tablets, e-readers
- Flat panel displays
- High definition television (HDTV)
- Gaming console systems
- Handheld/portable equipment
- Mobile device chargers

Agency information

- UL Recognized File: File E19180

Environmental compliance

- Values less than 1 A are not lead free

Ordering

- Use ordering codes (see page 3 for details)

Packaging prefixes

- TR- (5,000 parts in paper tape on a 178 mm (7”) reel)

Electrical characteristics

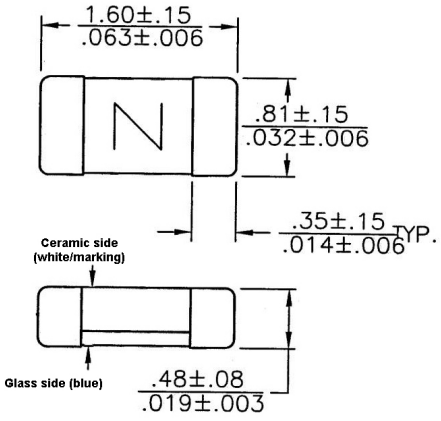
Amp Rating	% of Amp Rating	Opening Time
500 mA – 1.5 A	100%	4 hours minimum
500 mA – 1.5 A	200%	60 seconds maximum

Product specifications

Part Number[5]	Current rating (A)	Voltage rating (Vdc)	Interrupting rating[1] (A)	Typical DC cold resistance[2] (Ω)	Typical pre-arcing[3] I^2t (A^2s)	Typical voltage drop (V)	Part marking
0603HV500-R	0.5	63	50	1.025	0.0019	0.60	F
0603HV750-R	0.75	63	50	0.51	0.003	0.50	G
0603HV1-R	1	63	50	0.15	0.007	0.211	H
0603HV1.25-R	1.25	63	50	0.132	0.008	0.201	J
0603HV1.5-R	1.5	63	50	0.086	0.0319	0.138	K

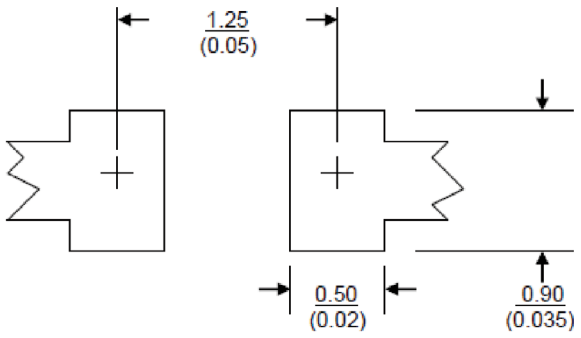
1. DC interrupting rating measured at rated voltage, time constant less than 50 microseconds, battery source
2. DC cold resistance measured at <10% of rated current
3. Typical pre-arcing I^2t measured with a battery bank at rated dc voltage, 10x-rated current, not to exceed IR, time constant of calibrated circuit less than 50 microsecond
4. Typical voltage drop measured at rated current after temperature stabilizes
5. Part Number Definition: 0603HVxxx-R
   - 0603HV = Product code and size
   - xxx - Ampere rating
   - -R suffix = RoHS complaint

Dimensions–mm

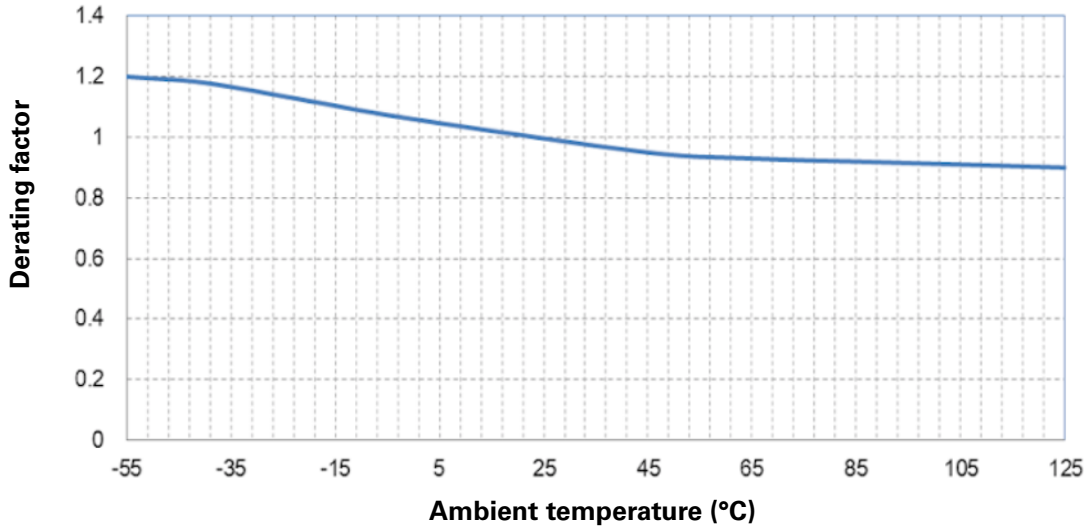


Fuse to be installed with ceramic side up (white/marking)

Recommended pad layout



Temperature derating curve



Environmental data

Operating temperature: -55 °C to +125 °C (with derating)
Storage temperature (component): -55 °C to +125 °C
Terminal strength test: Force of 1.8 kg for 60 seconds (no physical evidence of mechanical or physical damage, change in resistance < 5%

Ordering codes

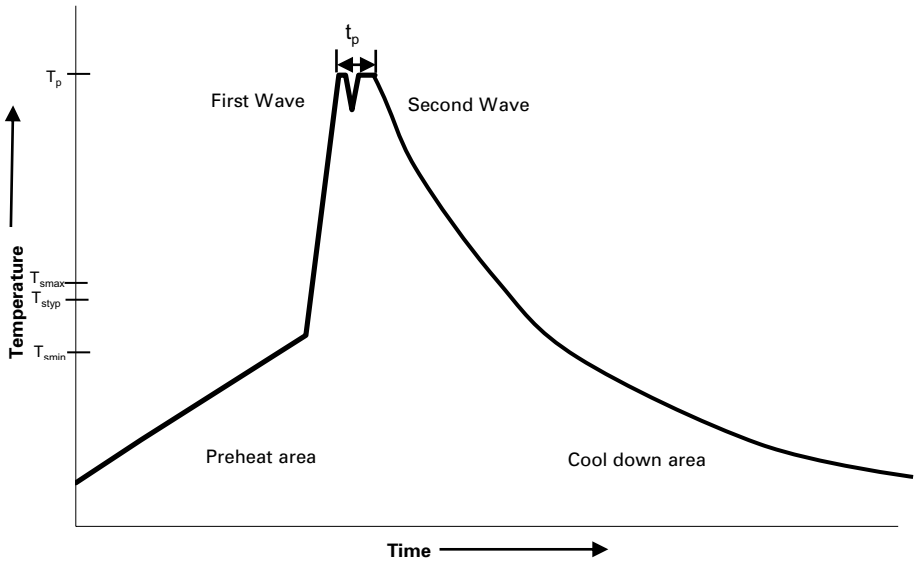
The ordering code is the part number replacing the "." with a "-" plus adding the packaging preffix.

Packaging prefix

TR- (5,000 parts in paper tape on a 178 mm (7") reel)

	Ordering code
Part Number	**TR- option**
0603HV500-R	TR-0603HV500-R
0603HV750-R	TR-0603HV750-R
0603HV1-R	TR-0603HV1-R
0603HV1.25-R	TR-0603HV1-25-R
0603HV1.5-R	TR-0603HV1-5-R

Wave solder profile



Reference EN 61760-1:2006

Profile feature		Standard SnPb solder	Lead (Pb) free solder
Preheat	• Temperature min. (T_{smin})	100 °C	100 °C
	• Temperature typ. (T_{styp})	120 °C	120 °C
	• Temperature max. (T_{smax})	130 °C	130 °C
	• Time (T_{smin} to T_{smax}) (t_s)	70 seconds	70 seconds
Δ preheat to max Temperature		150 °C max.	150 °C max.
Peak temperature (Tp)*		235 °C – 260 °C	250 °C – 260 °C
Time at peak temperature (t_p)		10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate		~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25°C to 25°C		4 minutes	4 minutes

Manual solder

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended

Solder reflow profile

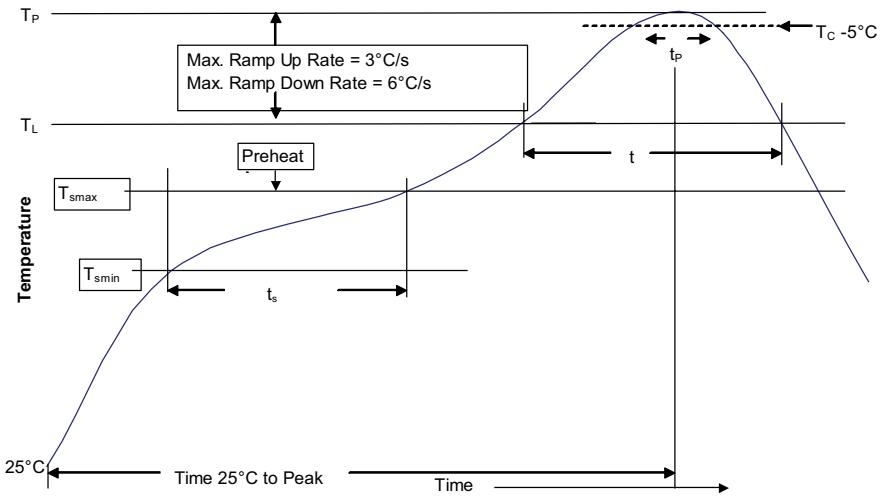


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5 mm)	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature		Standard SnPb solder	Lead (Pb) free solder
Preheat and soak	• Temperature min. (T_{smin})	100 °C	150 °C
	• Temperature max. (T_{smax})	150 °C	200 °C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Ramp up rate T_L to T_p		3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L		183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_C)		20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)		6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature		6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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