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

BUSSMANN SERIES

- 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

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

voltage Part marking	Typical voltage drop (V)		Typical DC resistance ²	Interrupting ing rating ¹ (A)	Voltage rating (Vdc)	Current rating (A)	Part Number⁵
F	0.60	0.0019	1.025	50	63	0.5	0603HV500-R
G	0.50	0.003	0.51	50	63	0.75	0603HV750-R
Н	0.211	0.007	0.15	50	63	1	0603HV1-R
J	0.201	0.008	0.132	50	63	1.25	0603HV1.25-R
К	0.138	0.0319	0.086	50	63	1.5	0603HV1.5-R
-							

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 I²t 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

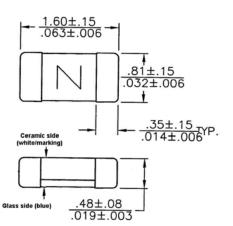
4. Typical voltage drop measured at rated current after temperature stabilizes

5. Part Number Definition: 0603HVxxx-R

0603HV = Product code and size xxx - Ampere rating

-R suffix = RoHS complaint

Dimensions-mm



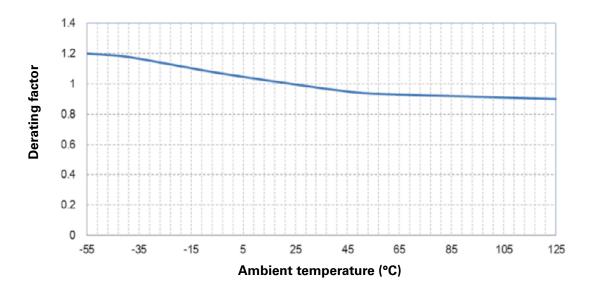
 $\begin{array}{c|c} & & 1.25 \\ \hline & & 0.05 \end{array} \end{array} \xrightarrow{\bullet} \\ & & & + \end{array} \\ & & & + \end{array} \\ & & & & + \end{array} \\ & & & & - \end{array} \xrightarrow{0.50} \left[\bullet \\ & & & 0.50 \\ \hline & & & 0.005 \end{array} \right]$

Recommended pad layout

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

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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

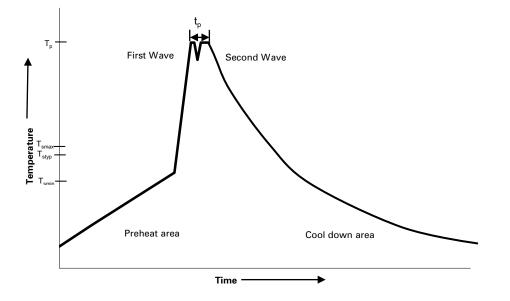
The ordering code is the part number replacing the " with a "-" plus adding the packaging preffix.

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 featu	Ire	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 r	nax Temperature	150 °C max.	150 °C max.
Peak temperat	ure (T _P)*	235 °C – 260 °C	250 °C – 260 °C
Time at peak t	emperature (t _p)	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down ra	te	~ 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 2	25°C	4 minutes	4 minutes

Manual solder

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

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Solder reflow profile

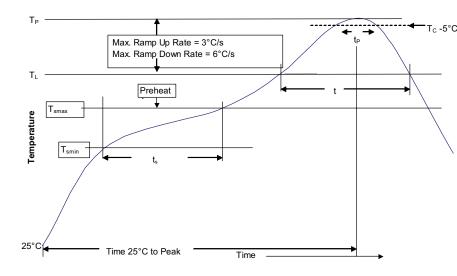


Table 1 - Standard SnPb solder (T_c)

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 mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >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 (TL) Time (tL) maintained above T_{L}	183 °C 60-150 seconds	217 °C 60-150 seconds
Peak package body temperature (Tp)*	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 TL)	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_{D}) is defined as a supplier minimum and a user maximum.

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