

# 2410TD

## High current time-delay SMT Brick fuse



### Product features

- 2410 (6125 metric) surface mount package
- Time-delay
- Designed to UL248
- Overcurrent protection of systems up to 250 Vac/60 Vdc
- Current rating: 500 mA to 7.0 A
- High inrush withstand capability
- Moisture sensitivity level: (MSL): 1

### Applications

- Power supplies
- Servers
- LED lighting drivers
- Appliances and white goods
- LCD monitor/backlight inverters
- Vac chip-on-board (COB) lighting
- Industrial electronics and computing

### Agency information

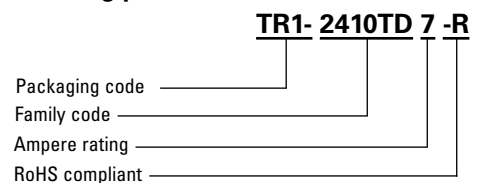
cURus Recognition file number: E19180



### Environmental compliance



### Ordering part number



### Packaging prefix

TR1-(1000 parts on a 8.66" diameter tape and reel, 1 reel per box)

PK-(1000 parts on a 8.66" diameter tape and reel, 10 reels per carton)



Powering Business Worldwide

### Electrical characteristics

Amp Rating	% of Amp rating	Opening time
500 mA to 7 A	100	4 hours minimum
500 mA to 7 A	200	1 to 60 seconds

### Product specifications

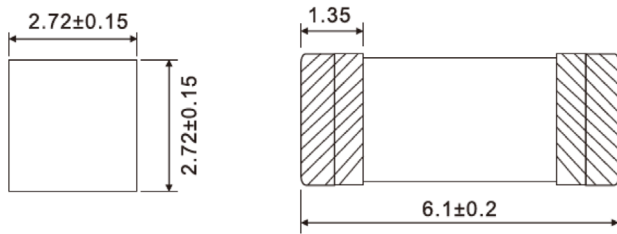
Part number	Current rating (A)	Voltage rating (Vac)	Voltage rating (Vdc)	Interrupting rating <sup>1</sup> at rated voltage (A)	Interrupting rating <sup>1</sup> at rated voltage (A) (Vdc)	Typical DC cold resistance <sup>2</sup> (ohm)	Typical voltage drop (mV)	Part marking
2410TD500-R	0.5	250	60	50	50	0.4025	245	T0.5
2410TD750-R	0.75	250	60	50	50	0.235	250	T0.75
2410TD1-R	1	250	60	50	50	0.168	256	T1
2410TD1-5-R	1.5	250	60	50	50	0.063	125	T1.5
2410TD2-R	2	250	60	50	50	0.048	133	T2
2410TD2-5-R	2.5	250	60	50	50	0.035	130	T2.5
2410TD3-R	3	250	60	50	50	0.0263	97	T3
2410TD3-5-R	3.5	250	60	50	50	0.0195	95	T3.5
2410TD4-R	4	250	60	50	50	0.0185	106	T4
2410TD5-R	5	250	60	50	50	0.0133	100	T5
2410TD7-R	7	250	60	50	50	0.0087	99	T7

1. AC Interrupting rating (measured at designated voltage, 100% power factor random closing); DC Interrupting rating (measured at designated voltage, time constant of less than 50 microseconds, battery source)

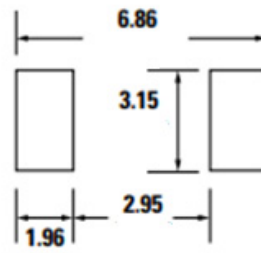
2. DC Cold Resistance measured at <10% of rated current in the ambient temperature of +25 °C

### Dimensions- mm

Drawing not to scale



### Recommended pad layout



### General specifications

Operating temperature: -55 °C to +125 °C with proper derating factor applied

Soldering heat resistance: MIL-STD-202 method 210

Solderability test: J-STD-002, method B1

Thermal shock: MIL-STD-202 method 107, -55 °C/+125 °C, 200 cycles

Humidity bias: MIL-STD-202 method 103, 1000 hours

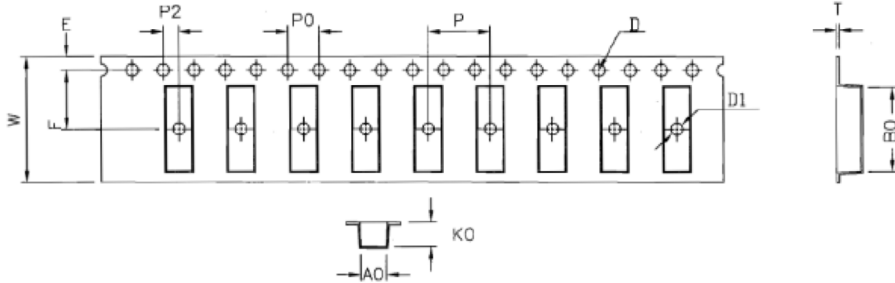
Vibration: MIL-STD-202F method 204

Mechanical shock: MIL-STD-202 method 213, condition A

Life test: MIL-STD-202 method 108, test condition D

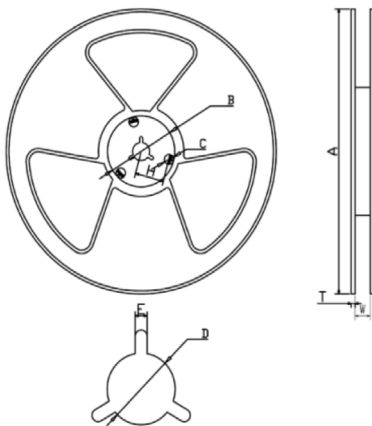
**Packaging information - mm**

1000 parts per 8.66" diameter reel (EIA-481 compliant)  
Drawing not to scale



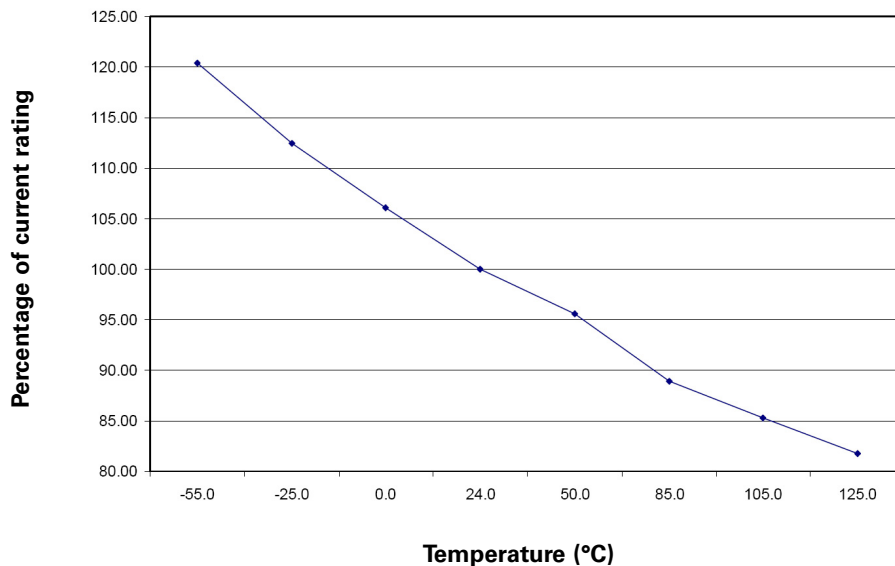
Dimension	millimeter
W	16.00
A0	2.95
B0	6.30
K0	3.00
P0	4.00
P	8.00
P2	2.00
T	0.35
E	1.80
F	7.50
D	1.50
D1	1.50

**Reel dimension- mm**

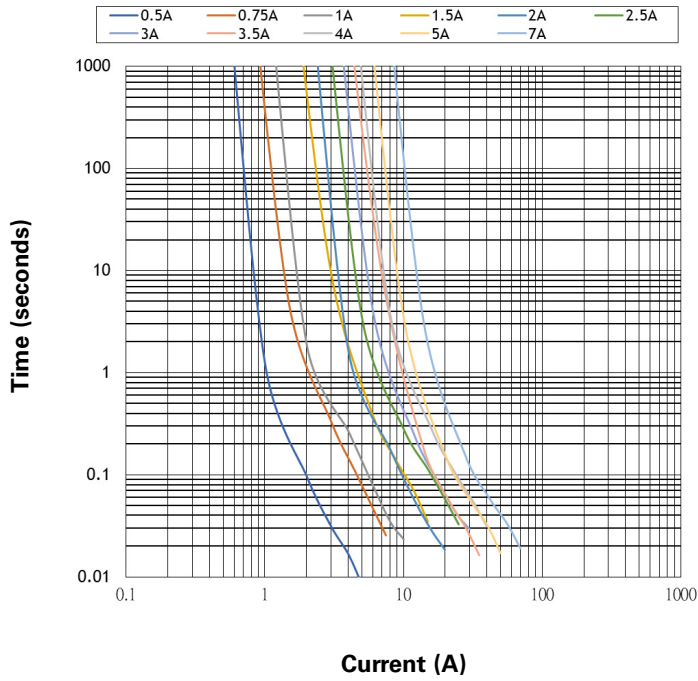


Dimension	millimeter
A	220
B	58
D	13
E	2.3
W	21
T	1.6

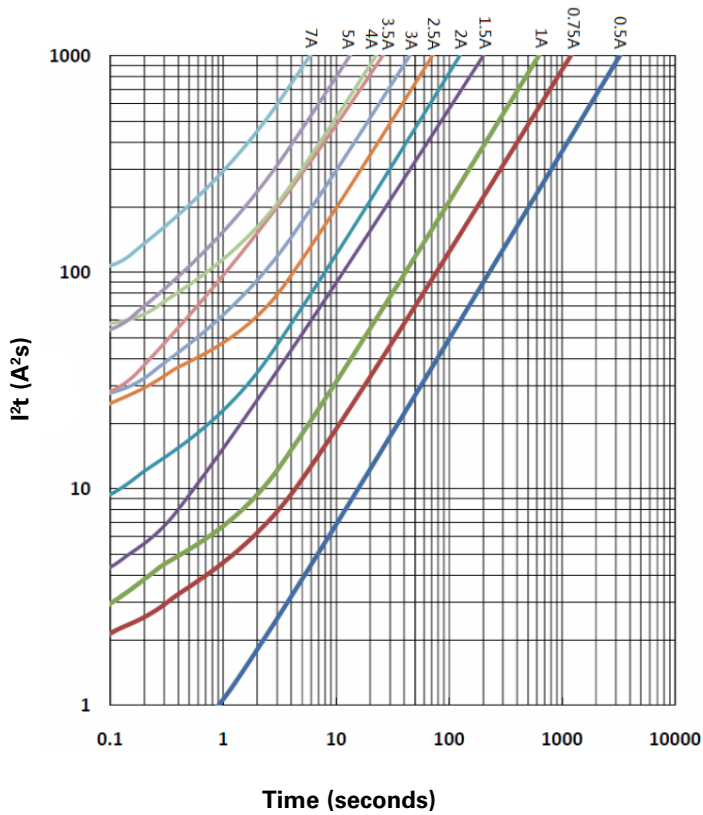
**Temperature derating curve**



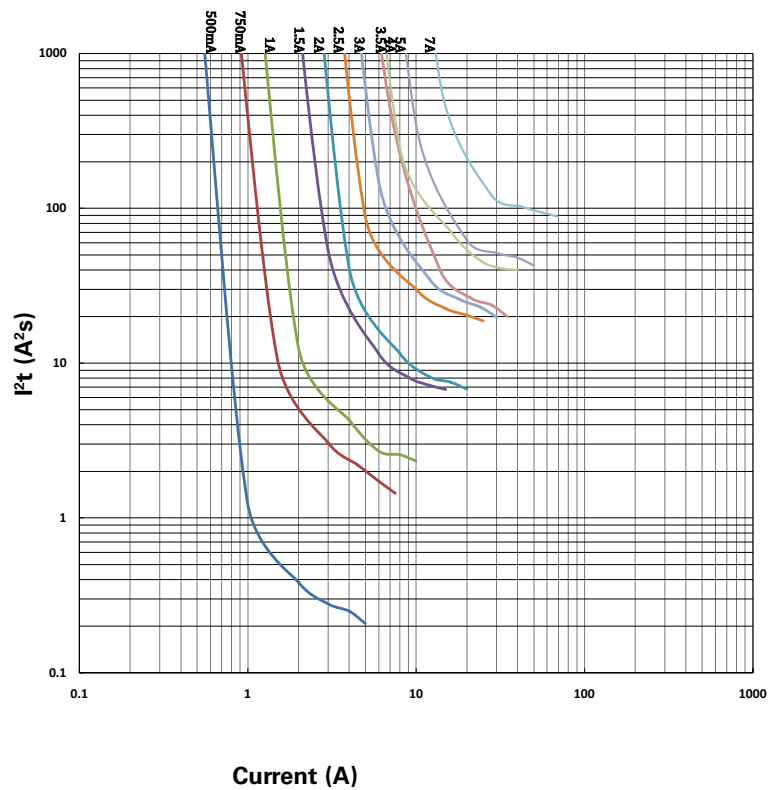
**Current vs. time curve**



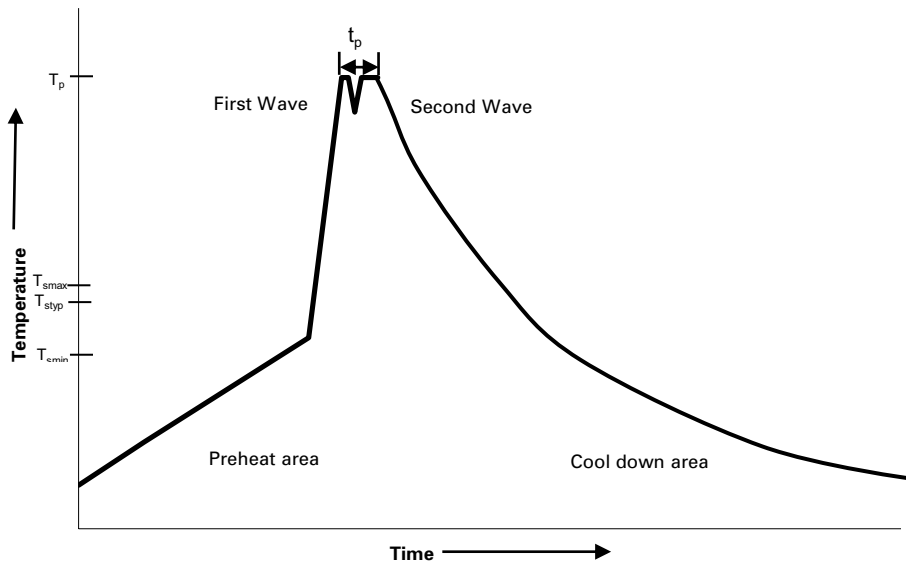
**I<sup>2</sup>t vs time curve**



**I<sup>2</sup>t vs current curve**



**Wave solder profile**



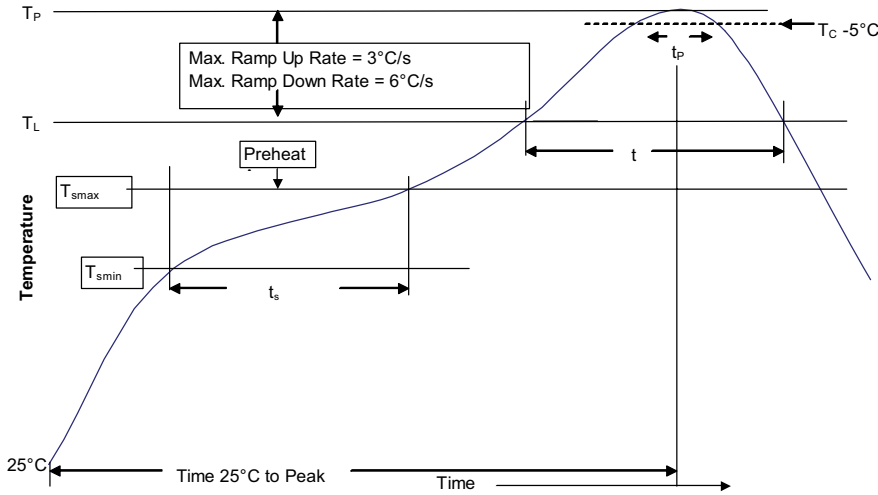
**Reference EN 61760-1:2006**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat	• Temperature min. ( $T_{smin}$ )	100 °C
	• Temperature typ. ( $T_{styp}$ )	120 °C
	• Temperature max. ( $T_{smax}$ )	130 °C
	• Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	70 seconds
$\Delta$ preheat to max Temperature	150 °C max.	150 °C max.
Peak temperature ( $T_p$ )*	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 mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥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 <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >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	<ul style="list-style-type: none"> <li>Temperature min. (<math>T_{smin}</math>)</li> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	<ul style="list-style-type: none"> <li>100 °C</li> <li>150 °C</li> <li>60-120 seconds</li> </ul>
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 $T_L$	<ul style="list-style-type: none"> <li>183 °C</li> <li>60-150 seconds</li> </ul>	<ul style="list-style-type: none"> <li>217 °C</li> <li>60-150 seconds</li> </ul>
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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**Eaton**  
Electronics Division  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com/electronics

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