

# 1245UMFT

## Universal modular fuse, time delay, SMT



### Product features

- 12.5 x 4.8 x 4.8 mm surface mount package
- Complies with IEC60127-4 Universal modular fuse-links
- Time delay
- 250 Vac Voltage rating brick fuse
- Ceramic square body with end cap design
- Moisture sensitivity level (MSL): 1

### Applications

- Power supply
- White goods
- Lighting system
- Industrial equipment
- Lighting ballast
- AC/DC adaptor primary protection
- Medical Equipment
- Battery protection
- LCD monitor
- Office electronic equipment
- Industrial equipment

### Agency information

Universal modular fuse: UL file number: E526626

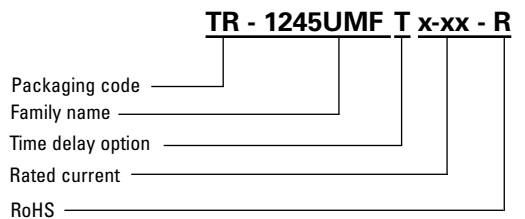


### Environmental compliance



### Ordering part number

The ordering code is the packaging code and part number replacing the "." with a "-" i.e. 1.25=1-25



### Packaging prefix

TR- (1000 parts on a 13" diameter tape and reel)



Powering Business Worldwide

### Electrical characteristics

Amp Rating	1.25 In minimum	2 In maximum	10 In
1.0 A ~ 6.3 A	1 hour	120 seconds	10 - 100 milliseconds

### Product specifications

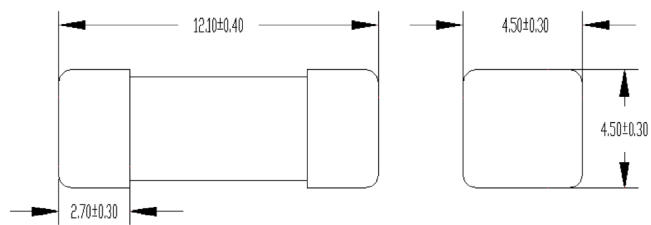
Part number	Current rating (A)	Voltage rating (Vac)	Interrupting rating @ rated voltage <sup>1</sup> (A) Vac	Typical cold resistance <sup>2</sup> (mΩ)	Typical voltage drop (mV)	Part marking
1245UMFT1-R	1	250	100	118	165	BUSS T1AL AC250V
1245UMFT1-25-R	1.25	250	100	85	150	BUSS T1.25AL AC250V
1245UMFT1-6-R	1.6	250	100	62	140	BUSS T1.6AL AC250V
1245UMFT2-R	2	250	100	42	116	BUSS T2AL AC250V
1245UMFT2-5-R	2.5	250	100	33	115	BUSS T2.5AL AC250V
1245UMFT3-15-R	3.15	250	100	23.6	95	BUSS T3.15AL AC250V
1245UMFT4-R	4	250	100	20	125	BUSS T4AL AC250V
1245UMFT5-R	5	250	100	14.5	100	BUSS T5AL AC250V
1245UMFT6-3-R	6.3	250	100	11	100	BUSS T6.3AL AC250V

1. AC Interrupting rating (measured at rated voltage, >95% power factor);

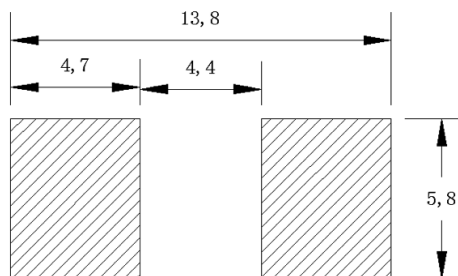
2. Typical cold resistance is measured at <10% of rated current in ambient temperature of +25 °C

### Dimensions- mm

Drawing not to scale



### Recommended pad layout



Recommended trace thickness is 35 μm;  
the minimum trace width is 5 mm  
Recommended stencil thickness is 0.15 mm

### General specifications

Operating temperature: -40 °C to +125 °C with proper derating factor applied

Thermal shock: MIL-STD-202, Method 107, -40 °C to +125 °C, number of cycles 1000, transfer time 20 seconds, dwell time 15 minutes air-air.

Mechanical shock: MIL-STD-202, Figure 1 of Method 213, Condition C, 100 g, 6 ms

Vibration: MIL-STD-202 Method 201, 2 hours each of 3 orientations. Test from 10 - 55 Hz in 1 minute

Resistance to solder heat: MIL-STD-202 Method 210, Solder temperature +260 °C ± 5 °C, solder immersion time 10 s ± 5 s

Solderability test: J-STD-002, Method B1 Steam aging 1 hour, Solder temperature +255 °C ± 5 °C, solder immersion time 5 s

Humidity bias: MIL-STD-202 Method 103, 1000 hours +85 °C/85% RH. Specified conditions: 10% of operating power.

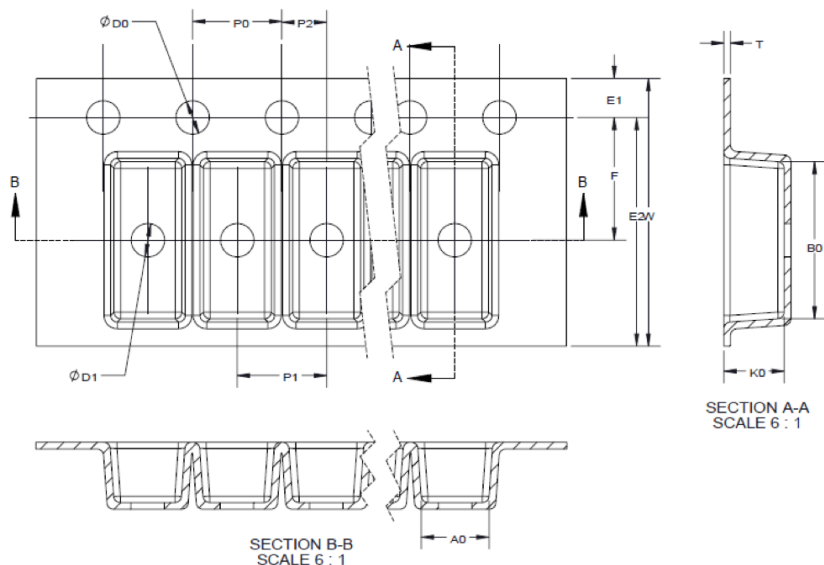
Breaking capacity: Spec, Ambient Temperature +25 °C + -5 °C UMF-6.3 A: 250 Vac, 100 A

High temperature operating life: MIL-STD-202 Method 108, Condition D, Steady state +70 °C at 60% rated current.

**Packaging information - mm**

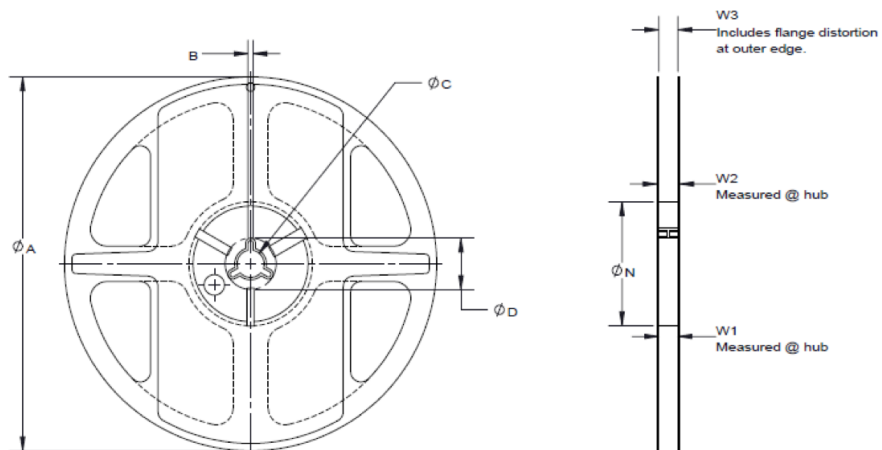
1000 parts per 13" diameter reel (EIA-481 compliant)

Drawing not to scale



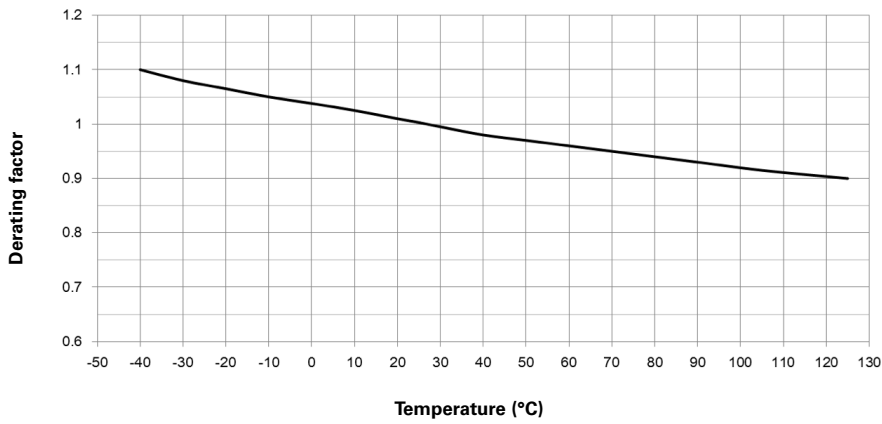
Dimension	millimeter
W	24.00
F	11.50
E1	1.75
E2	N/A
P0	4.00
P1	8.00
P2	2.00
D0	1.50
D1	1.50
A0	4.85
B0	12.75
K0	4.90
T	0.40

**Reel dimension- mm**

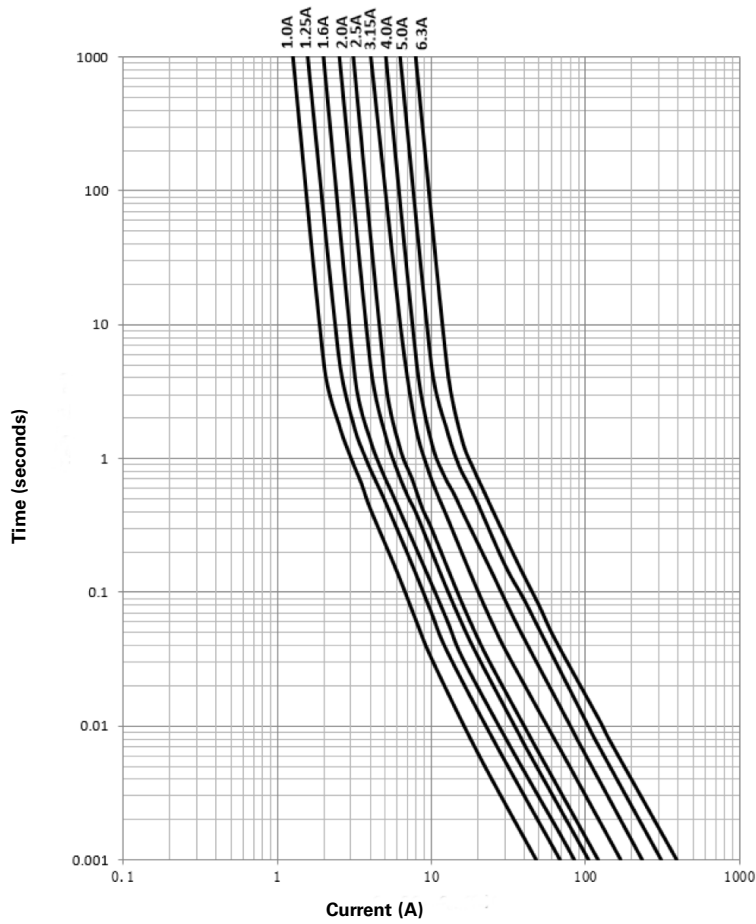


Dimension	millimeter
A	$330 \pm 1$
B	$2.5 \pm 0.2$
C	$13.5 \pm 0.2$
D	N/A
N	$100 \pm 0.5$
W1	$24.8 \pm 0.5$
W2	30.4 max
W3	N/A

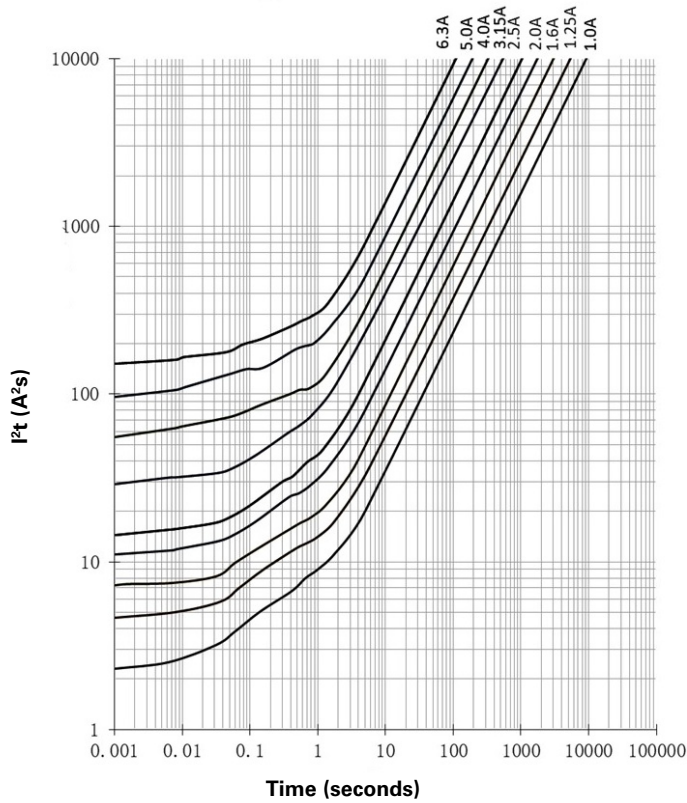
### Temperature derating curve



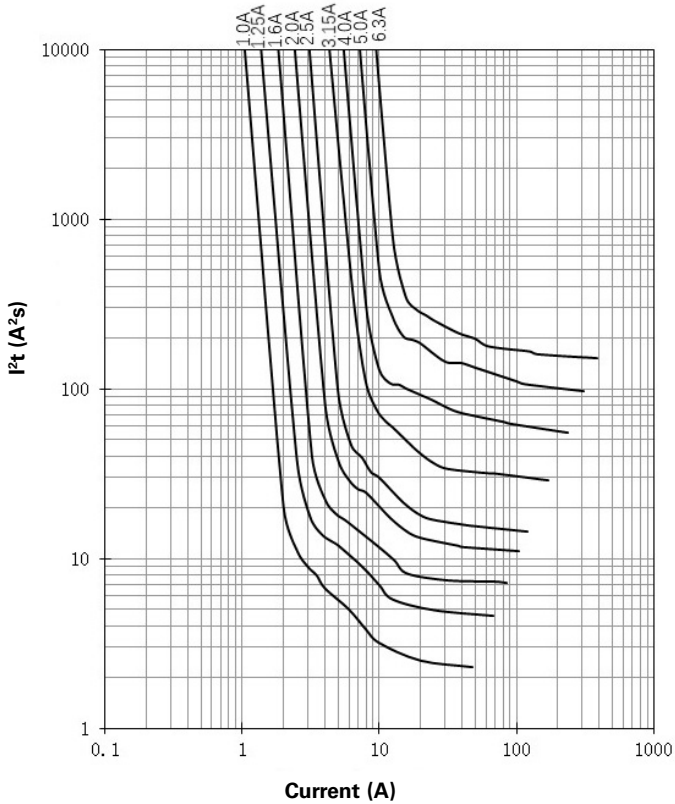
### Current vs. time curve



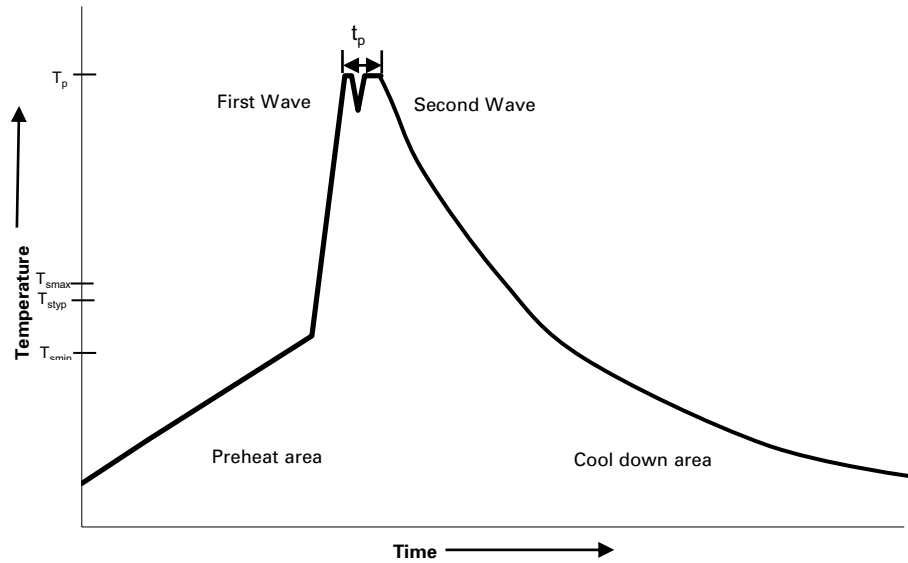
**I<sup>2</sup>t vs time curve**



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



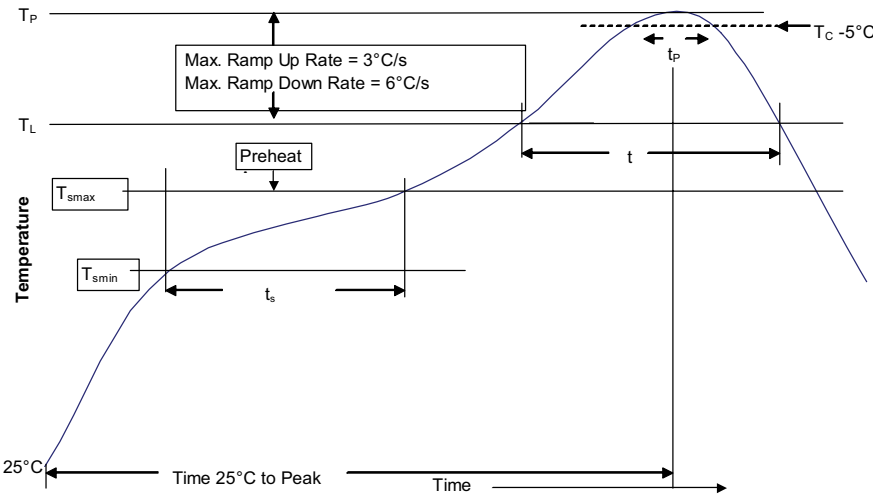
**Wave solder profile**



**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

**Solder reflow profile**



**Table 1 - Standard SnPb solder (T<sub>C</sub>)**

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<sub>C</sub>)**

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. (T<sub>smin</sub>) 100 °C</li> <li>Temperature max. (T<sub>smax</sub>) 150 °C</li> <li>Time (T<sub>smin</sub> to T<sub>smax</sub>) (t<sub>s</sub>) 60-120 seconds</li> </ul>	<ul style="list-style-type: none"> <li>150 °C</li> <li>200 °C</li> <li>60-120 seconds</li> </ul>
Ramp up rate T <sub>L</sub> to T <sub>p</sub>	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T <sub>L</sub> )	183 °C	217 °C
Time (t <sub>L</sub> ) maintained above T <sub>L</sub>	60-150 seconds	60-150 seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>C</sub> )	20 seconds*	30 seconds*
Ramp-down rate (T <sub>p</sub> to T <sub>L</sub> )	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<sub>p</sub>) is defined as a supplier minimum and a user maximum.

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