

# 1245UMFF

## Universal modular fuse, fast acting, SMT



### Product features

- 12.5 x 4.8 x 4.8 mm surface mount package
- Complies with IEC60127-4 Universal modular fuse-links
- Fast acting
- 350 Vac/250 Vdc 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

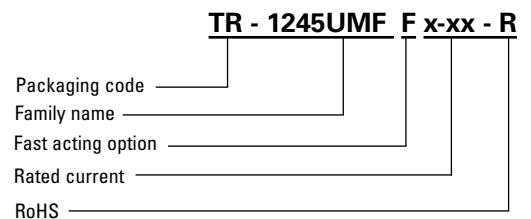


### Environmental compliance



### 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
500 mA ~ 6.3 A	1 hour	120 seconds	1 - 10 milliseconds

**Product specifications**

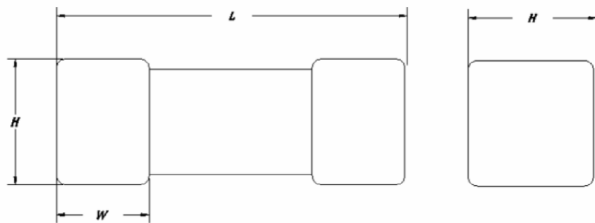
Part number	Current rating (A)	Voltage rating (Vac)	Voltage rating (Vdc)	Interrupting rating @ rated voltage <sup>1</sup> (A) Vac	Interrupting rating @ rated voltage (A) Vdc	Typical cold resistance <sup>2</sup> (mΩ)	Maximum voltage drop (mV)	Part marking
1245UMFF500-R	0.5	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	300	600	BUSS F500 mA L 250 V
1245UMFF630-R	0.63	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	160	500	BUSS F630 mA L 250 V
1245UMFF800-R	0.8	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	110	400	BUSS F800 mA L 250 V
1245UMFF1-R	1	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	95	300	BUSS F1A L 250 V
1245UMFF1-25-R	1.25	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	70	300	BUSS F1.25 A L 250 V
1245UMFF1-6-R	1.6	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	58	300	BUSS F1.6 A L 250 V
1245UMFF2-R	2	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	40	300	BUSS F2A L 250 V
1245UMFF2-5-R	2.5	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	40	300	BUSS F2.5 A L 250 V
1245UMFF3-15-R	3.15	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	30	300	BUSS F3.15 A L 250 V
1245UMFF4-R	4	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	19	300	BUSS F4A L 250 V
1245UMFF5-R	5	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	16	300	BUSS F5A L 250 V
1245UMFF6-3-R	6.3	350	250	200 A @ 250 Vac 100 A @ 350 Vac	100	13	300	BUSS F6.3 A L 250 V

1. AC Interrupting rating (measured at designated voltage, >95% power factor and 30 ° closing angle)

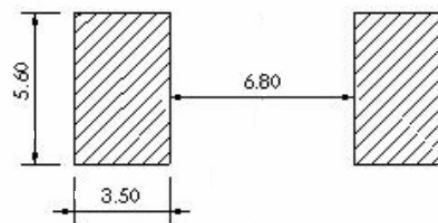
2. Typical cold resistance is measured at <10% of rated current in ambient temperature of +25 °C

**Dimensions- mm**

Drawing not to scale



**Recommended pad layout**



Rating	L	W	H
0.5 A to 6.3 A	12 maximum	2.7 ± 0.30	4.5 ± 0.30

**General specifications**

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

Thermal shock: MIL-STD-202 Method 107, -40 °C/+125 °C, 1000 cycles, Maximum transfer time 20 seconds, Dwell time 15 minutes. Air-Air

Humidity bias: MIL-STD-202 Method 103, 1000 hours +85 °C/85%RH.

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

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

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

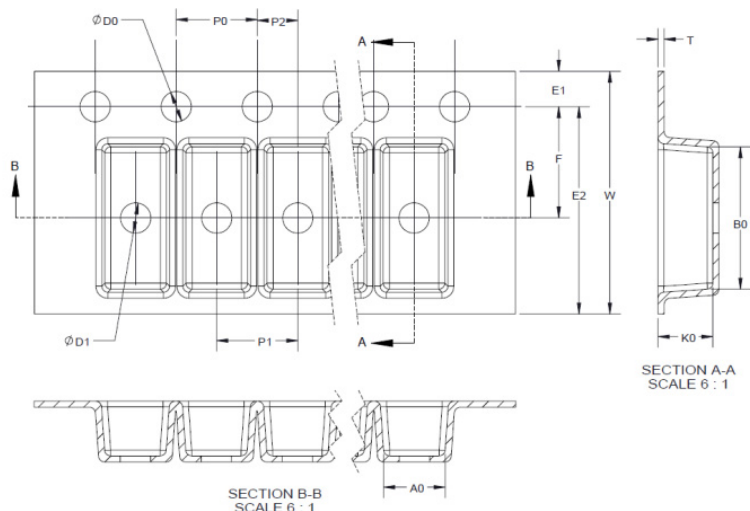
Vibration: MIL-STD-202F Method 201, 2 hours each of 3 orientations. Test from 10-55 Hz in 1 Min.

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

**Packaging information - mm**

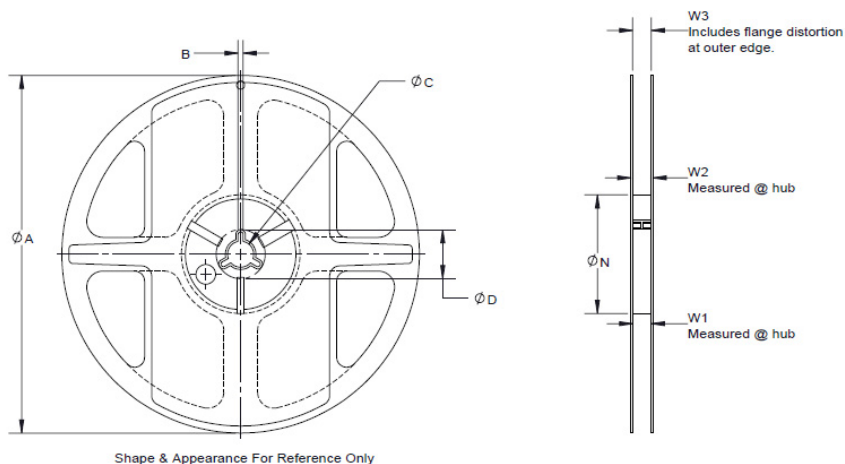
1000 parts per 13" diameter reel (EIA-481 compliant)

Drawing not to scale



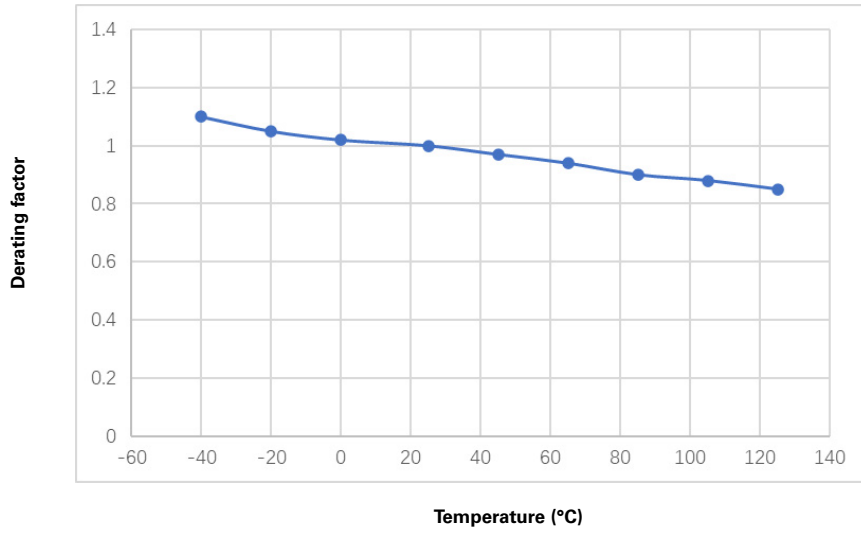
Dimension	millimeter
W	24.00
F	11.50
E1	1.75
P0	4.00
P1	8.00
P2	2.00
$\phi D0$	1.50
A0	4.90
B0	12.70
K0	4.50
T	0.40

**Reel dimension- mm**

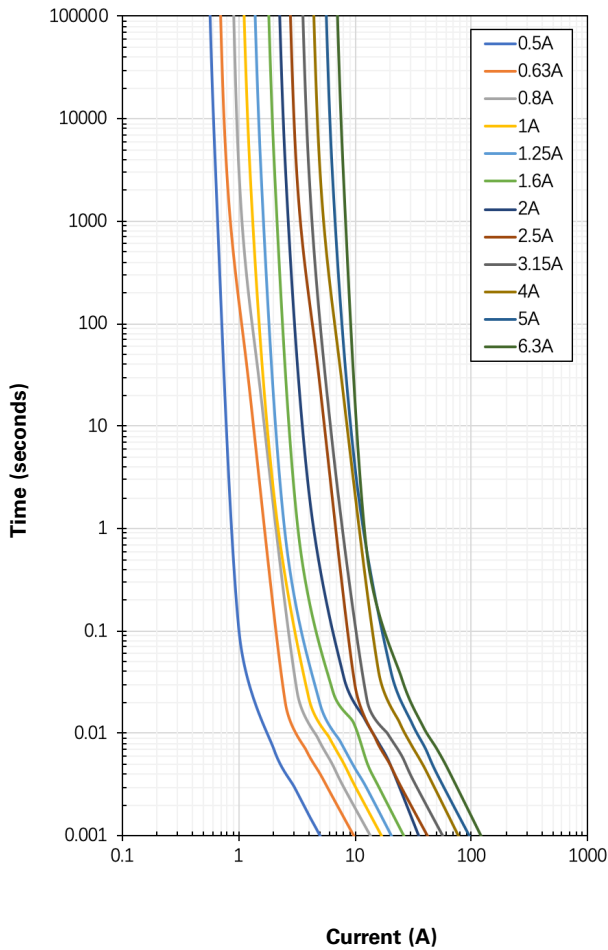


Dimension	millimeter
A	330 ± 1.0
B	2.1 ± 0.5
C	13.5 ± 0.5
W1	25 ± 0.3
W2	30.4 Max

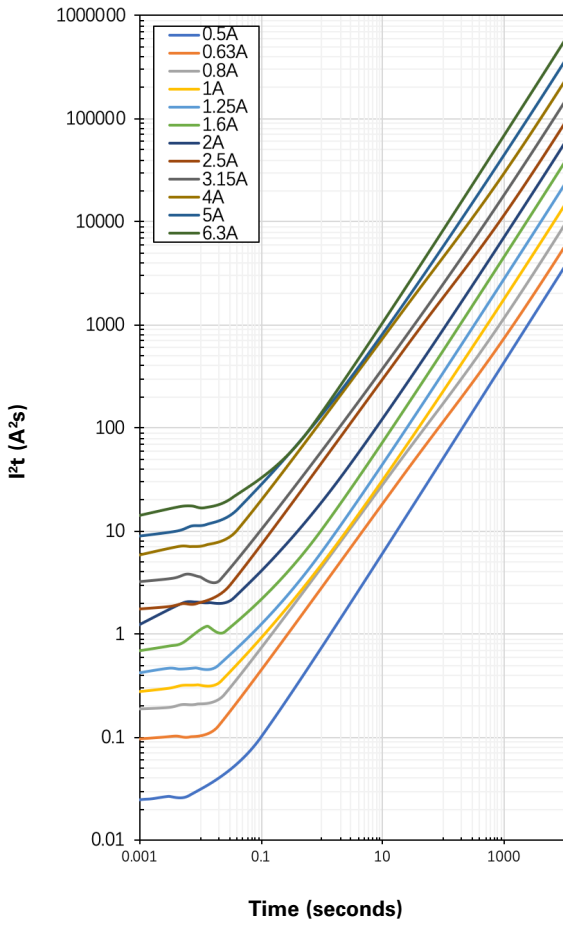
### Temperature derating curve



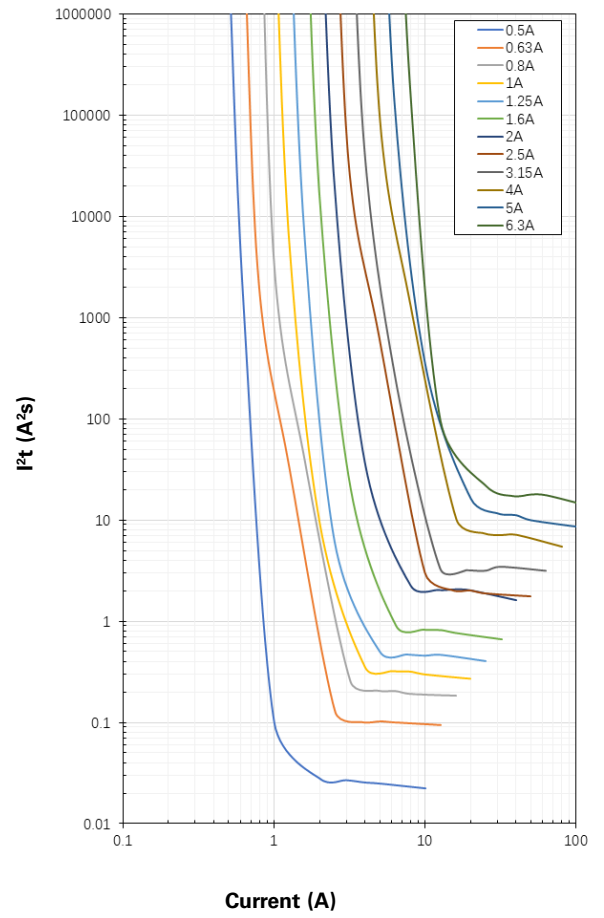
### Current vs. time curve



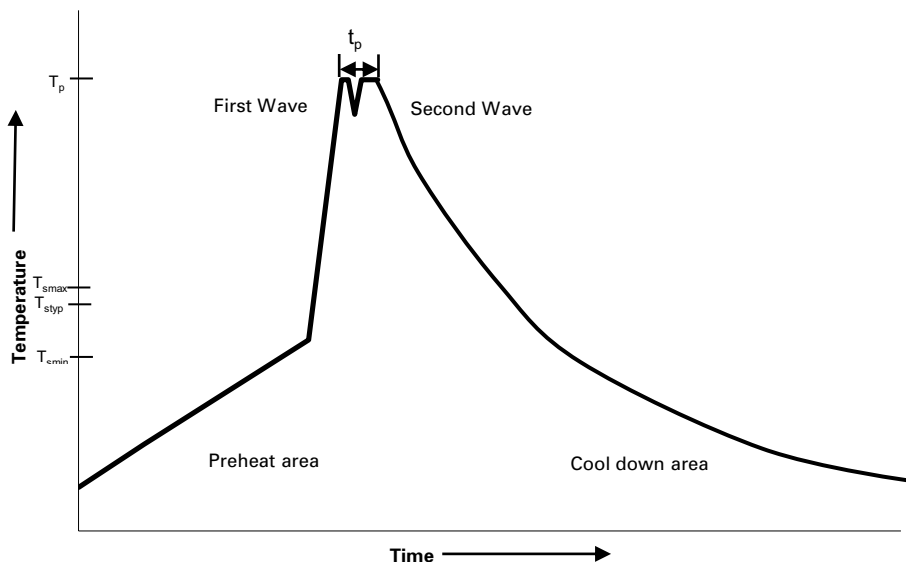
I<sup>2</sup>T vs. time curve



I<sup>2</sup>T vs. current curve



### Wave solder profile



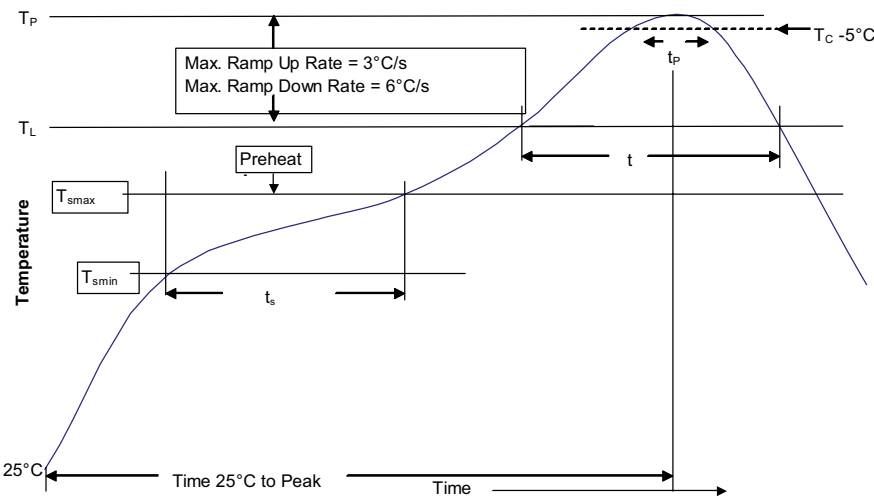
### Reference EN 61760-1:2006

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<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>)</li> <li>Temperature max. (T<sub>smax</sub>)</li> <li>Time (T<sub>smin</sub> to T<sub>smax</sub>) (t<sub>s</sub>)</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 <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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