

# S520

## 5 mm x 20 mm Fast-acting ceramic tube fuses



### Product features

- 5 mm x 20 mm physical size
- Fast-acting ceramic tube
- 420 Vac rating
- Nickel/silver plated brass end construction
- Available in cartridge and axial lead

### Environmental compliance



### Applications

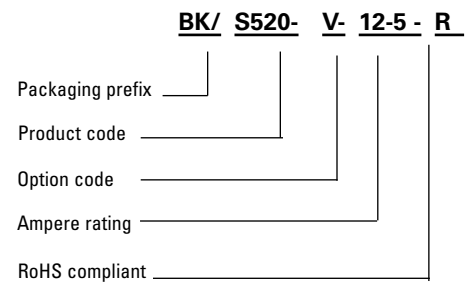
- Data center server power supplies
- Intelligent commercial buildings
- Telecom power supplies
- High-energy and power efficient applications (3-phase power supplies, inverters, and ballasts)

### Agency information

- UR Recognition: File: E19180, Guide: JDYX2
- TUV: T 50484820 02

### Catalog symbol

- See page 4 for ordering codes



### Packaging prefix

- Blank 5 pieces in one case (5 in tin, only for cartridge version)
- BK/ 100 pieces packed into a cardboard carton
- BK1/ 1000 pieces packed into a polybag (only cartridge version)
- TR2/ 1500pcs in one reel (only for axial lead version)

### Option code

- -V- (Axial leads - copper tinned wire with nickel-plated brass end caps)

**Electrical characteristics**

$I_n$	1.0I <sub>n</sub> min hours	2.1I <sub>n</sub> max minutes	2.75I <sub>n</sub> min seconds	2.75I <sub>n</sub> max seconds	4.0I <sub>n</sub> min seconds	4.0I <sub>n</sub> max seconds	10I <sub>n</sub> max ms
8 A to 20 A	1	30	0.04	20	0.01	1	30

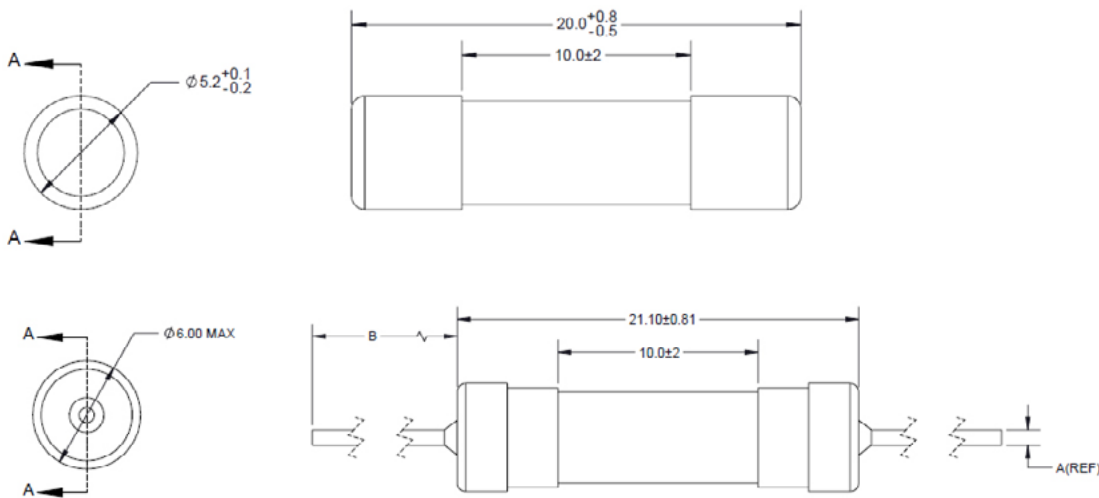
**Product specifications**

Part number <sup>5</sup> Cartridge	Axial lead	Current rating (A)	Voltage rating (Vac)	Interrupting rating <sup>4</sup> at 420/250 Vac (A)	Typical DC cold resistance <sup>1</sup> (mΩ)	Typical melting <sup>2</sup> I <sup>2</sup> t (A <sup>2</sup> s)	Typical voltage drop <sup>3</sup> (mV)
S520-8-R	S520-V-8-R	8	420	200/1500	9	104	102
S520-10-R	S520-V-10-R	10	420	200/1500	8	155	111
S520-12-5-R	S520-V-12-5-R	12.5	420	300/1500	8.1	160	180
S520-15-R	S520-V-15-R	15	420	300/1500	6.8	220	195
S520-16-R	S520-V-16-R	16	420	300/1500	6.1	280	200
S520-20-R	S520-V-20-R	20	420	300/1500	5	420	205

1. Typical DC cold resistance measured at <10% of rated current
2. Typical I<sup>2</sup>t measured at 10I<sub>n</sub> and rated voltage
3. Typical voltage drop measured at +20 °C at rated current
4. PF=1 for 420 Vac, PF= 0.7 to 0.8 for 250 Vac

5. Part Number Definition: S520--x-xxx-R  
 S520 = Product code  
 x= Use "V" code for axial lead, leave blank for cartridge  
 xxx = Ampere rating  
 -R suffix = RoHS compliant

**Dimensions--mm**



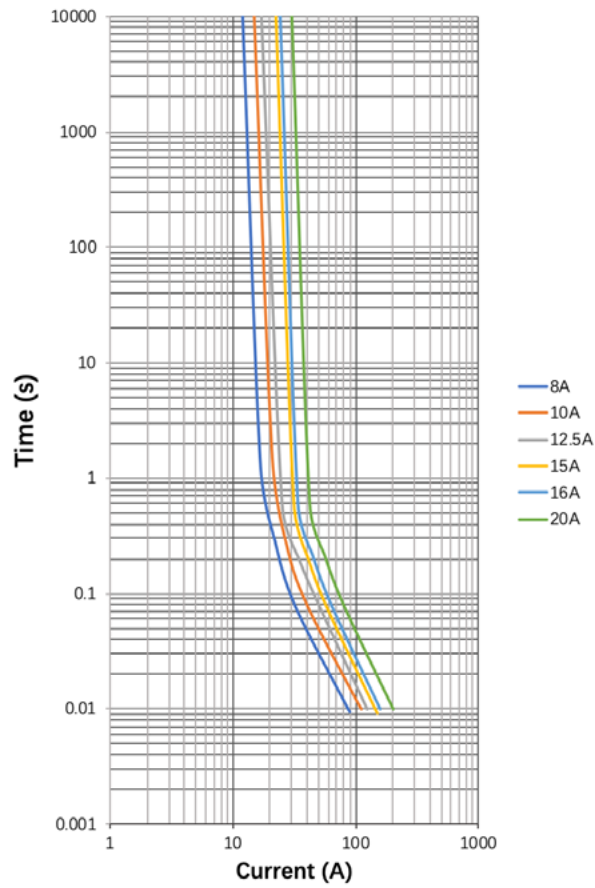
**Dimension A (ref):**

- 0.80 mm for 8 A to 10 A
- 1.00 mm for 12.5 A to 16 A
- 1.20 mm for 20 A

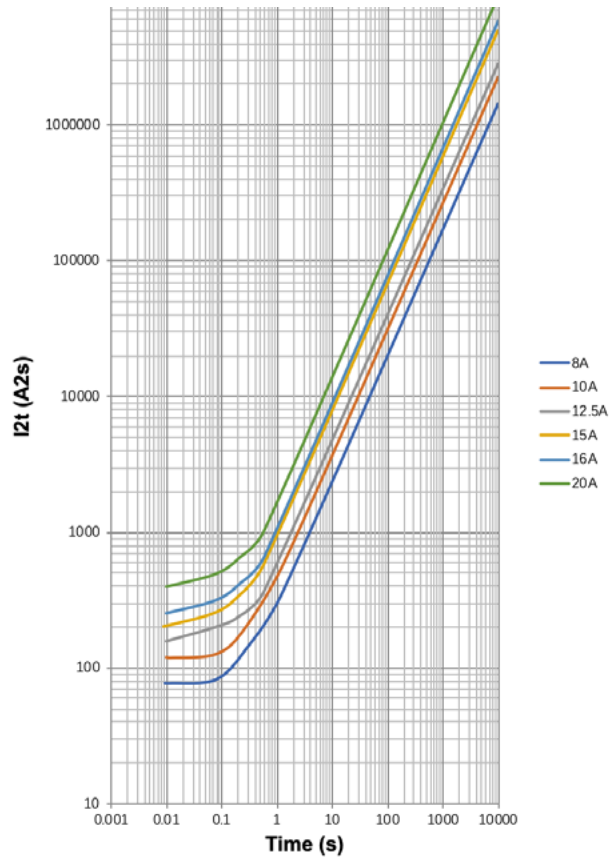
**Dimension B:**

- (BK) packaging- 38.1 ± 0.38 mm
- (TR2) packaging- 15.8 ± 2 mm

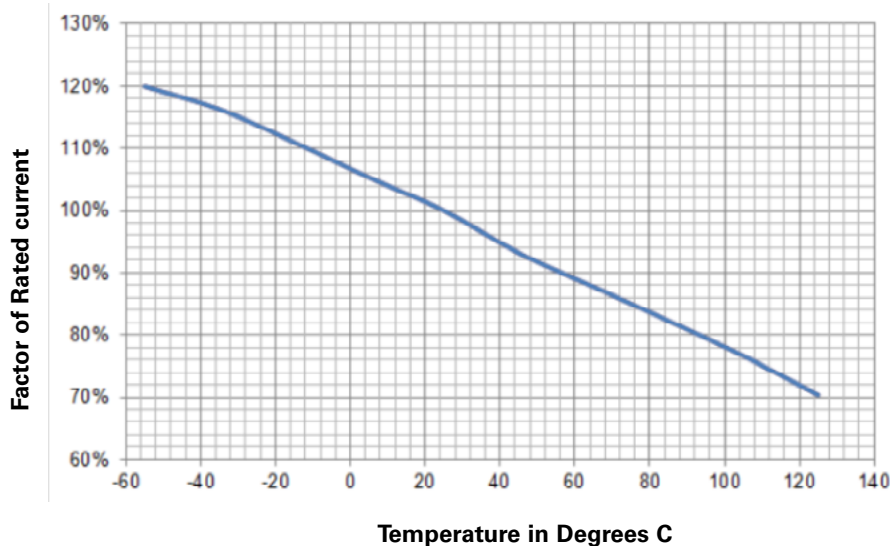
**Time vs. current curve**



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



### Temperature derating curve



### General specifications

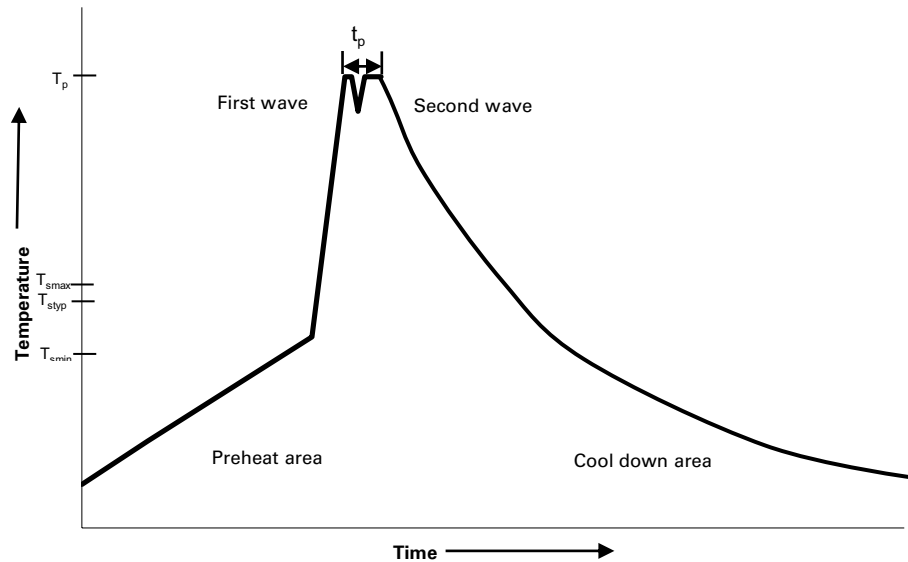
Operating temperature: -55 °C to +125 °C (with derating)
Storage temperature: -55 °C to +125 °C
Humidity Test: MIL-STD-202G Method 103B, 85% ±2% relative humidity @ +85 ±2 °C, 72 hours
Thermal shock: MIL-STD-202G Method 107G air-to-air, -55 °C -125 °C, 100 cycles
Mechanical shock: MIL-STD-202G Method 213 A, 50 g, 11 ms
Vibration: MIL-STD-202, Method 204D, condition D, 20 g, 10 - 500 Hz
Solderability: J-STD-002, Method A1
Resistance to solder: MIL-STD-202, Method 210, +260 °C, 10 s
Terminal strength: 10 N

### Ordering Codes

The ordering code is the Catalog part number replacing the "/" and ":" with a "-"  
When using the -V option code, the parentheses "(" ")" are not used.

Catalog part number	Order part number	Catalog part number	Order part number
BK/S520(-V)-8-R	BK-S520(-V)-8-R	S520-8-R	S520-8-R
BK/S520(-V)-10-R	BK-S520(-V)-10-R	S520-10-R	S520-10-R
BK/S520(-V)-12.5-R	BK-S520(-V)-12.5-R	S520-12.5-R	S520-12.5-R
BK/S520(-V)-15-R	BK-S520(-V)-15-R	S520-15-R	S520-15-R
BK/S520(-V)-16-R	BK-S520(-V)-16-R	S520-16-R	S520-16-R
BK/S520(-V)-20-R	BK-S520(-V)-20-R	S520-20-R	S520-20-R
BK1/S520(-V)-8-R	BK1-S520(-V)-8-R	TR2/S520-V-8-R	TR2-S520-V-8-R
BK1/S520(-V)-10-R	BK1-S520(-V)-10-R	TR2/S520-V-10-R	TR2-S520-V-10-R
BK1/S520(-V)-12.5-R	BK1-S520(-V)-12.5-R	TR2/S520-V-12.5-R	TR2-S520-V-12.5-R
BK1/S520(-V)-15-R	BK1-S520(-V)-15-R	TR2/S520-V-15-R	TR2-S520-V-15-R
BK1/S520(-V)-16-R	BK1-S520(-V)-16-R	TR2/S520-V-16-R	TR2-S520-V-16-R
BK1/S520(-V)-20-R	BK1-S520(-V)-20-R	TR2/S520-V-20-R	TR2-S520-V-20-R

**Wave solder profile (Axial lead only)**



**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
$\Delta$ 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

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