463 Series



Description

The 463 series NANO²® fuse is a fast-acting, very high current fuse designed for high operating current applications. It offers superior thermal cycling endurance of 500 cycles with its low temperature rise and excellent temperature stability characteristics, it is ideal to be used in datacom and telecom equipment such as high end server, base station, power supplies, and blade computing applications.

The 463 series offers high-amp circuit protection, ultra-high interrupting ratings (up to 500A@ 72VDC) and small size (10.1 mm x 3.12 mm x 3.12 mm) and surface-mount form-factor to help space saving.

Agency Approvals

Agency	Agency File Number	Ampere Range
c UL us	E10480	15A - 30A
PS E	NBK101105-E184655	15A

Features

- Surface mount fuse in a small footprint
- High current rating 15A-30A
- Higher voltage rating up to 100VDC and 250VAC
- High melting i2t
- Enhanced thermal cycling endurance
- Operating temperature range from -55°C to 125°C
- RoHS Compliant and Halogen-Free

Electrical Characteristics for Series

% of Ampere Rating	Opening Time
100%	4 Hours, **Min.**
200%	60 Second, **Max.**

Applications

- High end servers / Blade computing
- Base station power supply
- Voltage regulator module
- Cooling fan system for PC Server
- Advance Telecommunication Computing Architecture (ATCA) applications for cloud computing
- Battery Management System (Industrial Tools)

Electrical Characteristic Specifications by Item

Ampere Rating (A)	Ampere Code	Max Voltage Rating (V)	Interrupting Rating	Nominal Cold Resistance (Ohms)	Nominal Melting I²t (A² sec)	Agency Approvals	
						c UL us	PS E
15	015.	250	100A@250VAC 300A@65VAC 500A @ 72VDC 50A@100VDC 1000A @ 32VDC 800A @ 57VDC 1400A @ 48VDC 2500A @ 12VDC	0.0047	142	x	x
20	020.	250		0.0027	433	x	
25	025.	250	100A @ 250VAC 300A @ 65 VAC 500A @ 72VDC 50A@100VDC 1000A @ 32VDC 800A @ 57VDC 1400A @ 48VDC 2500A @ 12VDC	0.00215	668	x	
30	030.	250		0.00193	916	x	

Notes:
1. Cold resistance measured at less than 10% of rated current at 23°C.
2. Agency Approval Table Key: X=Approved or Certified, P=Pending and Blank=Not Approved.
3. I2t values stated for 10 msec opening time.

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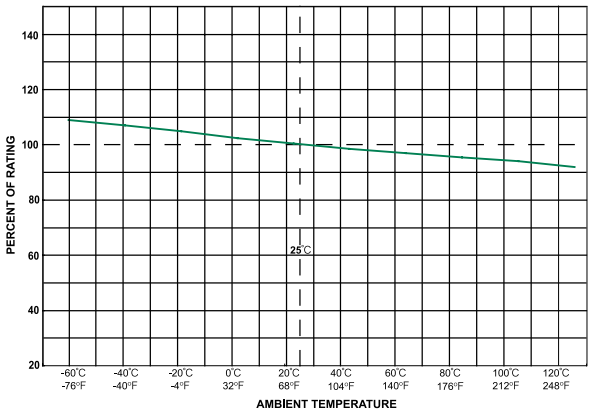
Revised: 01/05/16

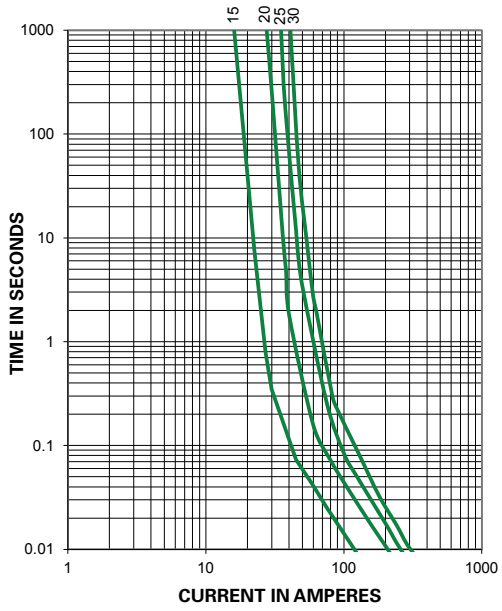
Surface Mount Fuses

NANO2® Fuse > 463 Series

Temperature Derating Curve

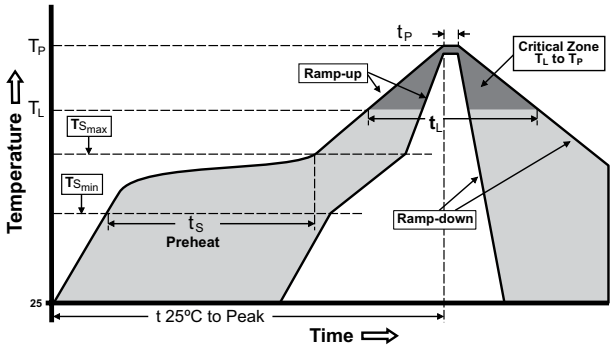


Average Time Current



Soldering Parameters

Reflow Condition		Pb-free assembly
Pre Heat	-Temperature Min ($T_{s(min)}$)	150°C
	-Temperature Max ($T_{s(max)}$)	200°C
	-Time (Min to Max) (t_s)	60 – 180 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)		5°C/second max.
$T_{S(max)}$ to T_L - Ramp-up Rate		5°C/second max.
Reflow	-Temperature (T_L) (Liquidus)	217°C
	-Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max.
Time 25°C to peak Temperature (T_P)		8 minutes max.
Do not exceed		260°C



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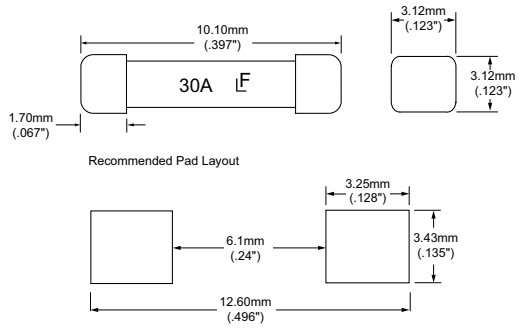
Product Characteristics

Materials	Body : Ceramic Cap : Silver Plated Brass
Product Marking	Body: Brand Logo, Current Rating
Insulation Resistance (after Opening)	MIL-STD-202, Method 302, Test Condition A (10,000 ohms, Minimum)
Solderability	MIL-STD-202, Method 208
Resistance to Soldering Heat	MIL-STD-202, Method 210, Test Condition B (10 sec at 260°C)
PCB Recommendation for Thermal Management	Min. copper layer thickness = 100µm Minimum copper trace width = 10mm Alternate methods of thermal management may be used. In such cases, under normal operations, the maximum temperature of the fuse body should not exceed 80°C in a 25°C environment.
Operating Temperature	–55°C to 125°C with proper derating

Thermal Shock	MIL-STD-202, Method 107, Test Condition B, 5 cycles, -65°C to 125°C, 15 minutes @ each extreme
Mechanical Shock	MIL-STD-202, Method 213, Test Condition I: De-energized. 100G's peak amplitude, sawtooth wave 6ms duration, 3 cycles XYZ+xyz = 18
Vibration	MIL-STD-202, Method 201: 0.03" amplitude, 10-55 Hz in 1 min. 2 hrs. each XYZ = 6hrs (10- 55 Hz)
Moisture Resistance	MIL-STD-202F, Method 106, 10 cycles
Salt Spray	MIL-STD-202, Method 101, Test Condition B (48hrs)
Thermal Cycling	500 cycles: 15 minutes at –30°C (+0/-5°C), 5°C / minute ramp rate up to 80°C, 15 minutes at 80°C (+3/-0°C), 5°C / minute ramp rate back down to –30°C.

Dimensions



Part Numbering System

0463 030. E R

Series

Amp Code*
Refer to Amp Code column of Electrical Characteristics Table

Quantity Code
E = 2,500 pieces

Packaging Code
R = Tape and Reel

***Example:** 30 Amp is 0463030.ER

Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
463 Series			
24mm Tape and Reel	EIA-RS-481-2	2500	ER

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