

PICO® 304 Series – 277V Intrinsically Safe Fuse



Description

The PICO® 304 Series offers a range of surface mountable encapsulated fuses certified as intrinsically safe components that can be used in hazardous locations. Ideal for use in oil, gas, mine, chemical, pharmaceutical and process industries, the PICO® 304 Series surface mountable fuse was designed to limit the energy and temperature generated during its operation. The fuse design and its encapsulant are suitable for use in intrinsically safe apparatus and associated apparatus for peak voltage not exceeding 375V.

Features

- Surface Mountable
- Encapsulated and sealed (1mm minimum)
- High breaking capacity of 1500A at 277V AC/DC
- Current rating options from 0.050 to 0.750A
- Global hazardous location certifications
- Suitable for Class I, Class II, Class III, and Zone 0 Hazardous Location.

Applications

- Testing, measuring or processing electronic and electrical equipment
- Motor controllers
- Communication handsets/ two-way radios
- Process control and automation
- Sensors
- Lighting
- Flow/gas meters

Electrical Characteristics for Series

% of Ampere Rating	Opening Time
110%	4 Hours, Minimum
300%	10 Seconds, Maximum

Agency Approvals

Agency	Agency File Number	Ampere Rating
	DEMKO 13 ATEX 1200U Ex II 1 G Ex ia IIC	50 - 750mA
	E358130	50 - 750mA
	IECEX UL 13.0077U Ex ia IIC	50 - 750mA

Reference Standards

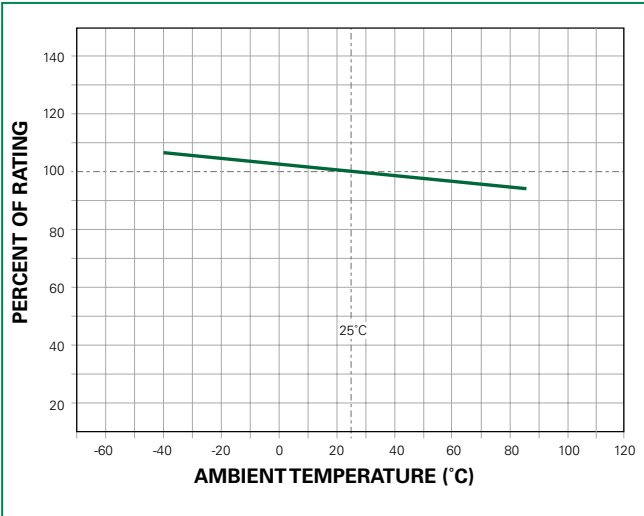
Agency	Standards
ATEX	EN 60079-0, EN 60079-11, EN 60079-26
IECEX	IEC 60079-0, IEC 60079-11, IEC 60079-26
United States	UL 913, UL 60079-0, UL 60079-11, UL 248-1, UL 248-14
Canada	CAN/CSA C22.2 No. 157, CAN/CSA C22.2 No. 60079-0, CAN/CSA C22.2 No. 60079-11, CSA 248-1, CSA 248-14

Electrical Specifications by Items

Catalog Number	Ampere Rating (A)	Amp Code	Interrupting Rating	Nominal Melting I ² t (A ² Sec.)	Minimum Cold Resistance at -20°C (Ohms)	Minimum Cold Resistance at -40°C (Ohms)	Nominal Cold Resistance at 25°C (Ohms)	Agency Approvals		
0304.050	0.050	.050	1500A @ 277VAC/DC	0.00019	9.202	9.010	12.00	X	X	X
0304.080	0.080	.080		0.00035	6.031	5.963	8.19	X	X	X
0304.100	0.100	.100		0.00070	2.709	2.668	5.00	X	X	X
0304.160	0.160	.160		0.00202	2.297	2.292	3.00	X	X	X
0304.200	0.200	.200		0.00288	1.935	1.839	2.68	X	X	X
0304.250	0.250	.250		0.00662	1.268	1.105	1.60	X	X	X
0304.500	0.500	.500		0.04462	0.392	0.368	0.46	X	X	X
0304.750	0.750	.750		0.13448	0.219	0.196	0.27	X	X	X

Notes: 1) The fuse must be mounted so that creepage and clearance distances are not impaired in any way.
2) The fuse is suitable for use in intrinsically safe equipment and associated apparatus for voltage not exceeding 375V peak.
3) Maximum surface temperature rise at 170% rated current: ≤200mA = 88°C, 250mA = 52°C, 500mA = 52°C, and 750mA = 45°C.

Temperature Derating Curve



- Notes:**
- 1) Derating depicted in this curve is in addition to the standard derating of 25% for continuous operation.
 - 2) The temperature derating curve represents the nominal conditions. For questions about temperature derating curve, please consult Littelfuse technical support for assistance.

Product Characteristics

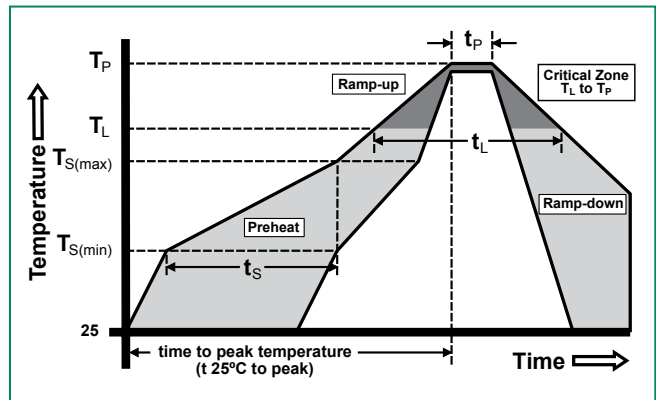
Operating Temperature	
Current Rating	Ambient Temperature
≤0.200A	-40°C to +60°C
0.250A	-40°C to +56°C
0.500A	-40°C to +84°C
0.750A	-40°C to +56°C

- Notes:**
- 1) Any use of the 304 Series fuse outside of the ambient temperature ranges specified in the table is subject to additional investigation.
 - 2) Specified ambient temperature range is for intrinsic safety certification.

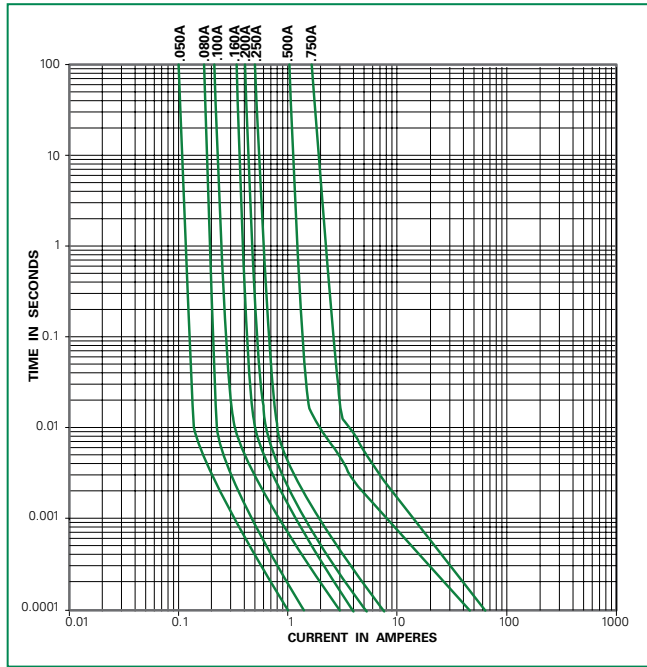
Molding Material	Polyamide 6T/66 CTI 175 volts minimum Continuous Operating Temperature: 140°C
Thermal Shock	Withstands 5 cycles of -55°C to 125°C
Mechanical Shock	MIL-STD-202, Method 213
Insulation Resistance (After Opening)	Greater than 10,000 ohms (at twice rated DC voltage)
Resistance to Soldering Heat	MIL-STD-202, Method 210
Moisture Resistance	MIL-STD-202, Method 106
Salt Fog Test	MIL-STD-202, Method 101

Soldering Parameters

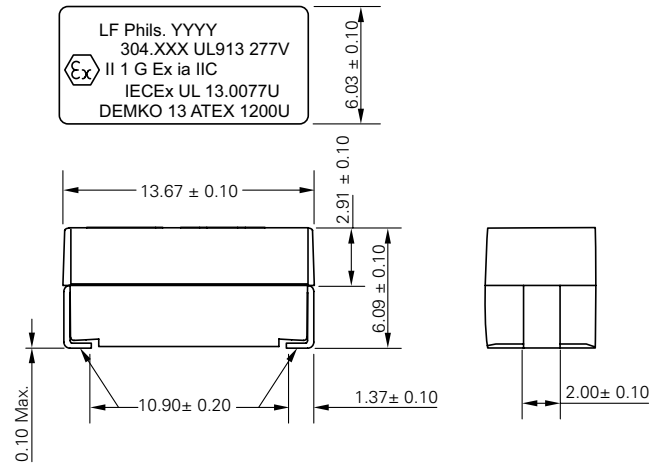
Reflow Condition	Pb-free assembly	
Pre Heat	- Temperature Min ($T_{S(min)}$)	150°C
	- Temperature Max ($T_{S(max)}$)	200°C
	- Time (Min to Max) (t_s)	60 – 120 seconds
Average Ramp-up Rate (Liquidus Temp (T_L) to peak)	5°C/second max	
$T_{S(max)}$ to T_L - Ramp-up Rate	5°C/second max	
Reflow	- Temperature (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	
Wave Soldering	260°C, 10 sec. max	



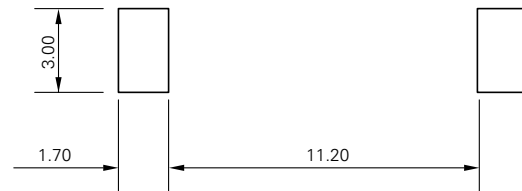
Average Time Current Curves



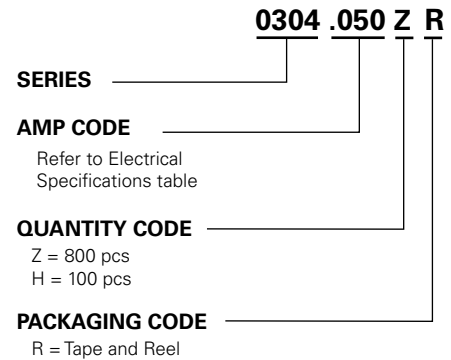
Dimensions (mm)



RECOMMENDED PAD LAYOUT



Part Numbering System



Packaging

Packaging Option	Packaging Specification	Quantity	Quantity & Packaging Code
24mm Tape and Reel	EIA 481-1	800	ZR
		100	HR