

3-Electrode Gas Discharge Tube (GDT)

QX3E5 Series

Description

Gas discharge Tubes (GDT) are classical components for protecting the installations of the telecommunications. It is essential that IT and telecommunications systems -with their high-grade but sensitive electronic circuits - be protected by arresters. They are thus fitted at the input of the power supply system together with varistors and at the connection points to telecommunication lines. They have become equally indispensable for protecting base stations in mobile telephone systems as well as extensive cable television (CATV) networks with their repeaters and distribution systems.

These protective components are also indispensable in other sectors, In AC power transmission systems, they are often used with current-limiting varistors, In customer premises equipment such as DSL modems, WLAN routers, TV sets and cable modems In air-conditioning equipment, the integral black-box concept offers graduated protection by combining arresters with varistors, PTC, diodes and inductor.

Features

- u Non-Radioactive
- u RoHS compliant
- u Low insertion loss
- u Excellent response to fast rising transients
- u Ultra low capacitance
- u 5KA surge capability tested with 8/20µs pulse as defined by IEC 61000-4-5

Applications

- u Communication equipment
- u CATV equipment
- u Test equipment
- u Data lines
- u Power supplies
- u Telecom SLIC protection
- u Broadband equipment
- u ADSL equipment, including ADSL2+
- u XDSL equipment
- u Satellite and CATV equipment
- u Consumer electronics

QX3E5-XXXLM



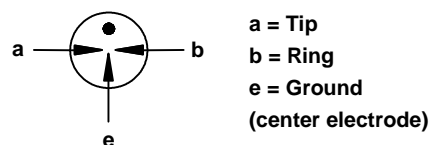
QX3E5-XXXL




QX3E5-XXXLSMD



Schematic Symbol



Agency Approvals

AGENCY	AGENCY FILE NUMBER
	E466847

Product Characteristics

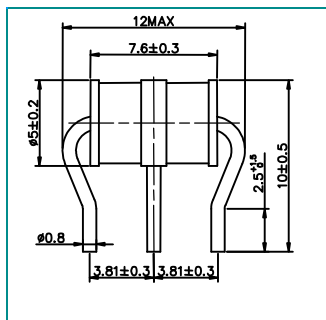
Materials	Leaded Device: Nickel-plated with Tinplated wires Surface Mount: Dull Tin-plated	
Product Marking	XXXL XXX -Nominal voltage L -5KA	
Glow to Arc Transition Current	< 0.5 Amps	
Glow Voltage	~60 Volts	
Storage and Operational Temperature	-40 to +90°C	
Weight	QX3E5-XXXLM	~0.78g
	QX3E5-XXXLM	~0.66g
	QX2E5-XXXLSMD	~0.68g

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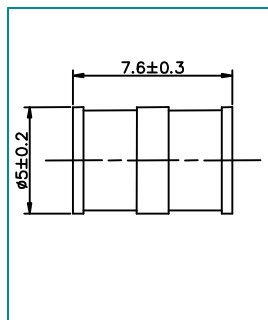
QX3E5 Series

Dimensions (Unit: mm)

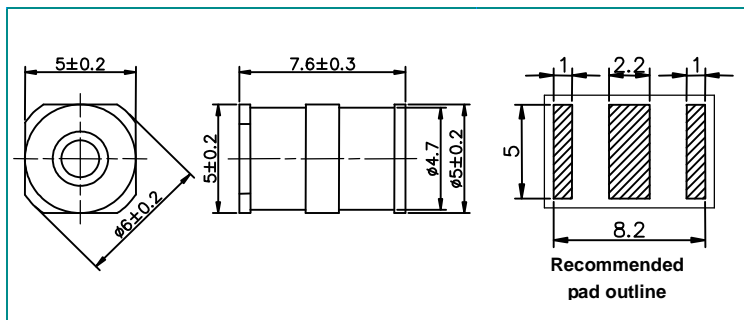
Radial Leaded Devices
QX3 E5-XXXLM)



Without wire Devices
(QX3E5-XXXL)



Surface Mount Devices (QX3E5-XXXLSMD)



Electrical Characteristics

Part Number	Marking	DC Spark-over Voltage	Maximum Impulse Spark-over Voltage		Minimum Insulation Resistance	Maximum Capacitance	Arc Voltage	Service Life			
								Nominal Impulse Discharge Current	Max Impulse Discharge Current	Nominal Alternating Discharge Current	Impulse Life
								@8/20µs ⁴⁾ ±5 times	@8/20µs ⁴⁾ 1 time	@50Hz ⁴⁾ 1 Sec 10 times	@10/1000µs ⁴⁾ 300 times
QX3E5-75LM QX3E5-75L QX3E5-75LSMD	75L	75V±20%	500V	600V	1 GΩ (at 25V)	1.5pF	~15V	5KA	10KA	5A	200A
QX3E5-90LM QX3E5-90L QX3E5-90LSMD	90L	90V±20%	500V	600V	1 GΩ (at 50V)	1.5pF	~15V	5KA	10KA	5A	200A
QX3E5-150LM QX3E5-150L QX3E5-150LSMD	150L	150V±20%	500V	600V	1 GΩ (at 50V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-230LM QX3E5-230L QX3E5-230LSMD	230L	230V±20%	600V	700V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-250LM QX3E5-250L QX3E5-250LSMD	250L	250V±20%	600V	700V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-300LM QX3E5-300L QX3E5-300LSMD	300L	300V±20%	800V	900V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-350LM QX3E5-350L QX3E5-350LSMD	350L	350V±20%	800V	900V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-420LM QX3E5-420L QX3E5-420LSMD	420L	420V±20%	900V	1000V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-470LM QX3E5-470L QX3E5-470LSMD	470L	470V±20%	900V	1000V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A
QX3E5-600LM QX3E5-600L QX3E5-600LSMD	600L	600V±20%	1100V	1200V	1 GΩ (at 100V)	1.5pF	~20V	5KA	10KA	5A	200A

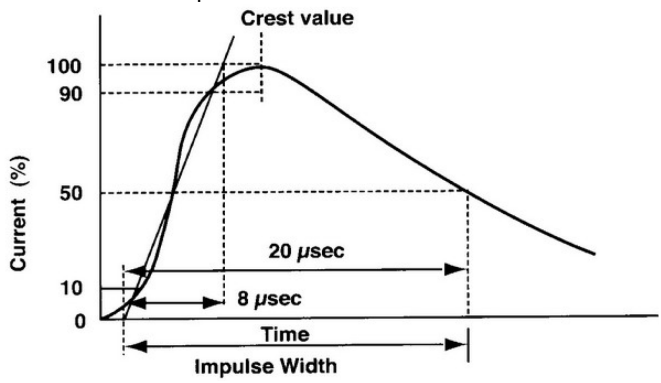
Notes:

- 1). Terms in accordance with ITU-T K.12 and GB/T 9043-2008
- 2). At delivery AQL 0.65 level II, DIN ISO 2859
- 3). Tip or ring electrode to center electrode
- 4). Total current through center electrode, half value through tip respectively ring electrode

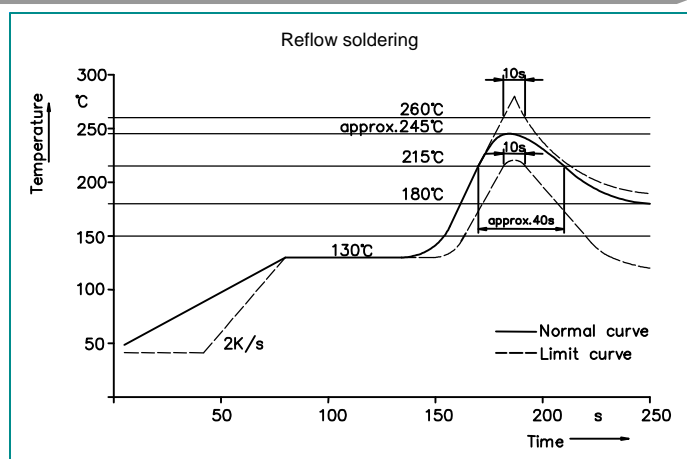
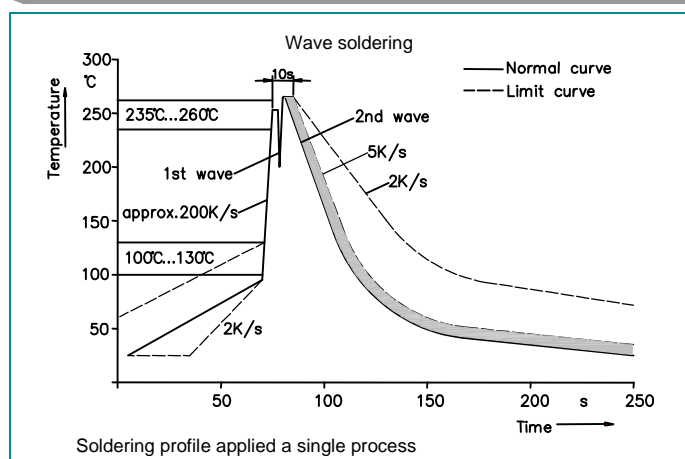
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Electrical Rating

Item	Test Condition / Description	Requirement
DC Spark-over Voltage	The voltage is measured with a slowly rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse spark-over voltage is measured with a rise time of $dv/dt=100V/\mu s$ or $1KV/\mu s$	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal, please see above spec.	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency :1MHz	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20μs that can be applied across the terminals of the gas tube. One hour after the test is completed, re-testing of the DC spark-over voltage does not exceed $\pm 30\%$ of the nominal DC spark-over voltage. Dwell time between pulses is 3 minutes.</p> 	
Nominal Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. The DC spark-over voltage does not exceed $\pm 30\%$ of the nominal DC spark-over voltage. $IR > 10^8 ohms$.	

Recommended soldering profile



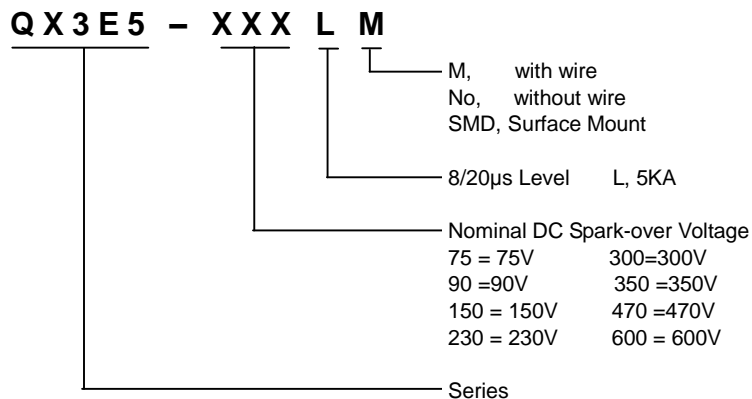
Soldering Parameters - Hand Soldering

Solder Iron Temperature: 350°C $\pm 5^\circ C$
Heating Time: 5 seconds max.

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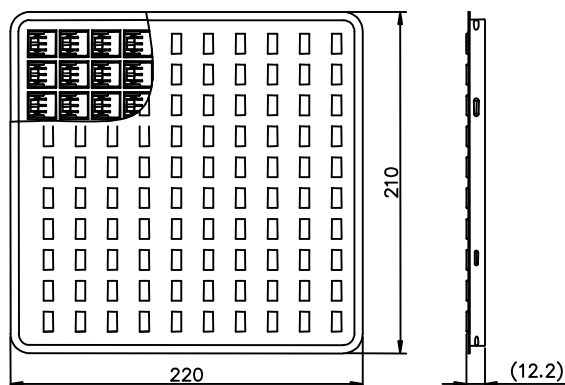
Part Numbering



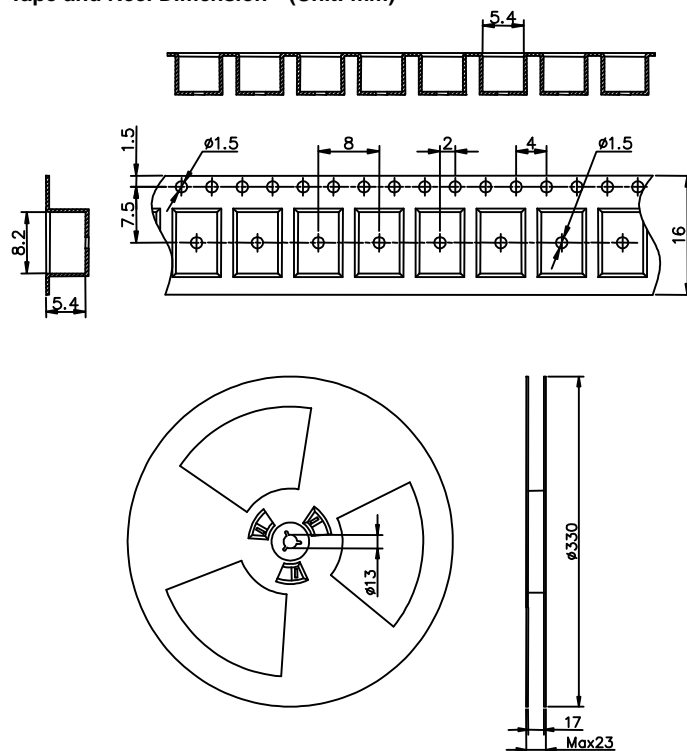
Packaging

Part Number	Description	Quantity
QX3E5-XXXLM	100PCS per Tray, 10 Trays / Inner Carton	1000
QX3E5-XXXL	100PCS per Tray, 10 Trays / Inner Carton	1000
QX3E5-XXXLSMD	100PCS per Tray, 10 Trays/ Inner Carton	1000
	16mmTape & 13" Reel	1000

Tray Dimension (Unit: mm)



Tape and Reel Dimension (Unit: mm)



Cautions and warnings

- Gas discharge tubes (GDT) must not be operated directly in power supply networks.
- Gas discharge tubes (GDT) may become hot in case of longer periods of current stress (danger of burning).
- Gas discharge tubes (GDT) may be used only within their specified values. In the event of overload, the head contacts may fail or the component may be destroyed.
- Damaged Gas discharge tubes (GDT) must not be re-used.