USBQNM50403 to USBQNM50424

500W, Uni-directional TVS array

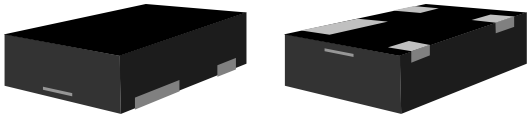
Main product characteristics

V_{WM}	3.3V – 24.0V
$V_{BR(min)}$ / $V_{BR(max)}$	4.0V / 26.7V
C_{MAX}	3pF
P_{PP}	500W

RoHS COMPLIANT

HALOGEN FREE

NON MAGNETIC FOR MRI



QFN-143

Description and applications

This Transient Voltage Suppressor (TVS) is assembled in a QFN143 package which is compatible (pin for pin) with the SOT-143 package. The configuration gives protection to 1 uni-directional data or interface line. It is designed for use in applications where protection is required at the board level from voltage transients caused by electrostatic discharge (ESD) as defined in IEC 61000-4-2, electrical fast transients (EFT) per IEC 61000-4-4 and effects of secondary lightning.

These TVS arrays have a peak power rating of 500 watts for an 8/20 µs pulse (figure 1). This array is suitable for protection of sensitive circuitry consisting of TTL, CMOS, DRAMs, SRAMs, HCMOS, HSIC microprocessors, UNIVERSAL SERIAL BUS (USB) and I/O transceivers. The USBQNM504xx product provides board level protection from static electricity and other induced voltage surges that can damage or upset sensitive circuitry. This particular device is aimed specifically at MRI application due to the absence of ferrous elements in the metal lead frame.

Features

- Protects 1 uni-directional line
- Surge protection per IEC 61000-4-2 & IEC 61000-4-4
- Ultralow capacitance (3pF per line pair)
- Ultralow leakage
- Use of C7025 non-magnetic alloy

Applications

- EIA RS485 data rates : 5Mbps
- 10 Base-T ethernet
- USB data rate 900Mbps
- MRI applications

Electrical characteristics

PART NUMBER	DEVICE MARKING	STAND OFF VOLTAGE, V_{WM} (V)	BREAKDOWN VOLTAGE, V_{BR} (V) @ 1mA	CLAMPING VOLTAGE, V_{CL} (V) @ 1A (see figure 2)	CLAMPING VOLTAGE, V_{CL} (V) @ 5A (see figure 2)	STANDBY CURRENT, I_D (µA) @ V_{WM}	CAPACITANCE, C (pF) @ 0V & 1MHz	TEMPERATURE COEFFICIENT of V_{BR}, α_{VBR} (mV/°C)
		Max	Min	Max	Max	Max	Max	Max
USBQNM50403e3	N03	3.3	4.0	8.0	11	200	3	-5
USBQNM50405e3	N05	5.0	6.0	10.8	12	40	3	1
USBQNM50412e3	N12	12.0	13.3	19.0	26	1	3	8
USBQNM50415e3	N15	15.0	16.7	24.0	32	1	3	11
USBQNM50424e3	N24	24.0	26.7	43.0	57	1	3	28

Absolute maximum ratings(1)

Symbol	Parameter	Value	Unit
T_{STG}	Storage temperature	-55 to +150	ºC
T_J	Junction temperature	-55 to +125	ºC
P_{PP}	Peak Pulse Power (using 8/20µs pulse)	500	W
P_{RR}	Pulse repetition rate	0.01	%

(1) All ratings at 25ºC unless specified otherwise

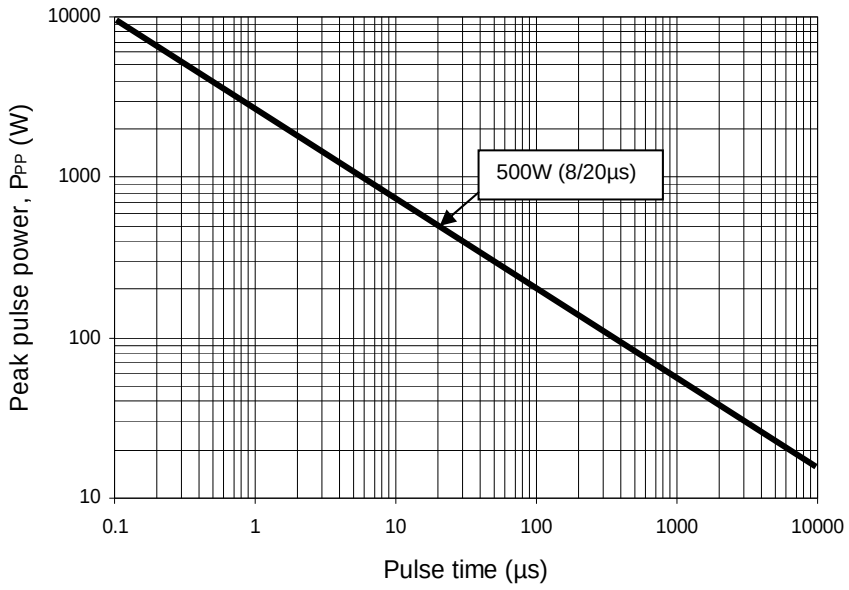


Figure 1 *Graph of peak pulse power vs pulse time*

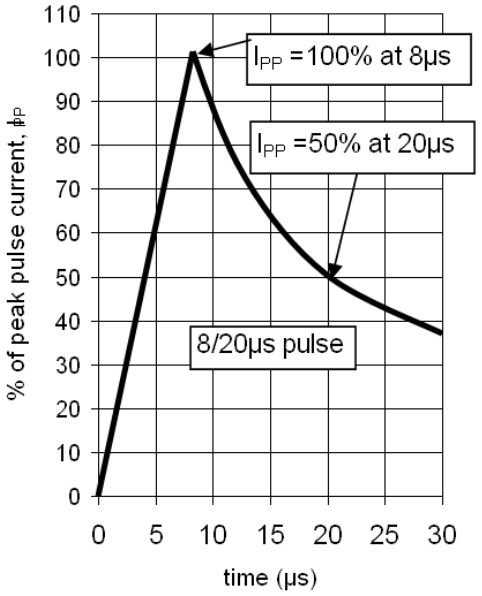
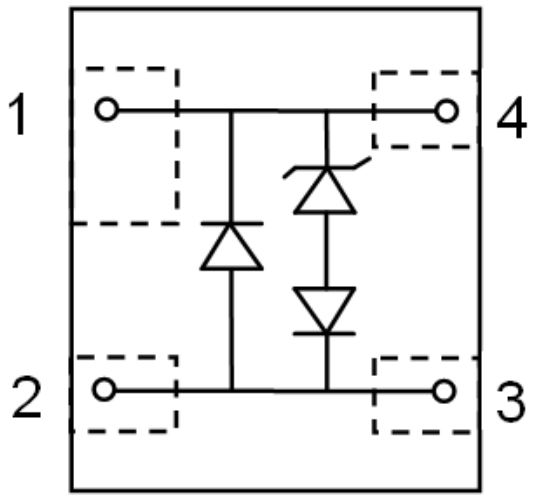


Figure 2 *8/20µs pulse curve*

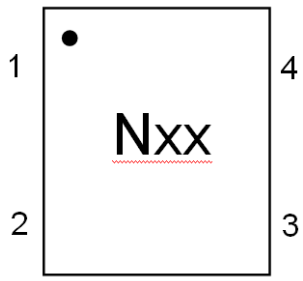
Circuit schematic



Seen from above

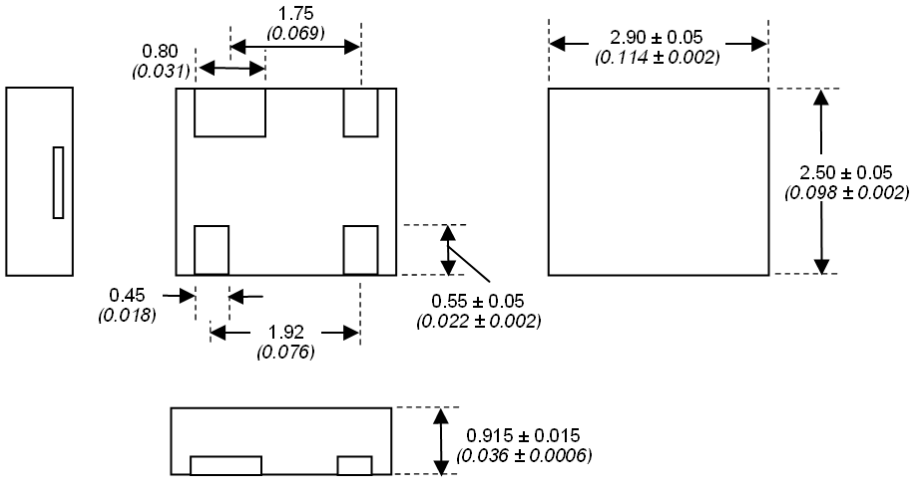
Marking and packaging information

Case : Epoxy meets UL94V-0
Electrode finish : Matte Sn plating - fully RoHS compliant
Leadframe material : C7025 non-magnetic Cu alloy
Marking Specification :



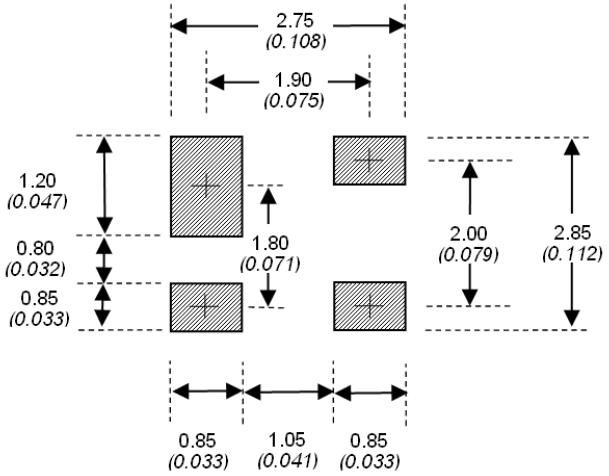
The dot in the corner is over pin 1

Package dimensions



Measurements in mm (inches)

Footprint dimensions



Ordering information

Product order code	Marking	Package	Base qty	Delivery mode
USBQNM504xxe3/TR7	Nxx	QFN143	3000	Tape and reel

Commercial Business Unit
Microsemi Corporation

Microsemi Commercial Offshore de Macau Limitada
Avenida Doutor Mario Soares
Bank of China Building, 18/F, Unit D
Macau SAR

Please refer to www.microsemi.com for the terms and conditions of purchase