

### Features

- Fast response time
- Wide temperature range
- High surge current rating
- Low capacitance and insertion loss
- Stable performance throughout life
- Small surface mount package
- RoHS compliant\*

## **Applications**

- Set top boxes
- Industrial communications
- HVAC controls
- xDSL, POTS, G.Fast
- Antennae

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GDT21 Series - Next-generation 2-Electrode Gas Discharge Tube Arrestor

#### General Information

Bourns' new chip size surface mount 2-electrode GDT surge protection devices offer maximum impulse voltage limiting specifications in a very small, surface mount package. The performance delivered in the Bourns® GDT21 Series helps to significantly heighten protection against induced voltage transients such as lightning and AC induction. Plus, the enhanced level of protection with tighter voltage limiting provided during fast-rising events will reduce stress on downstream components compared to current GDT designs in the same application.

#### **Product Characteristics**

Storage Temperature Range	-40 °C to +105 °C
Operating Temperature Range	
Climate Category (IEC 60068-1)	
Moisture Sensitivity Level (MSL)	
ESD Classification - HBM.	

#### How to Order

		GDT 2 1 - xx - S1 - RP
Description ——		
GDT = Gas Dis	scharge Tube - Next-Generation Series	
Electrodes —		
2 = 2-Electrode	e	
Size —		
	x 1.6 mm W x 1.6 mm H	
Voltage		
15 = 150 V	42 = 420 V	
20 = 200 V	50 = 500 V	
40 = 400 V	60 = 600 V	
Package Designate	or	
0 0	x 1.6 mm W x 1.6 mm H SMD (Standard)	
Packaging —		
BP = Beel Pac	k (Standard)	

RP = Reel Pack (Standard)

### **Additional Information**

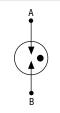
Click these links for more information:



#### **Agency Recognition**

Agency	Category	Agency File No.
<b>N</b> ® UL	497B - 4th Edition	<u>E313168</u>

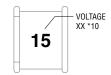
#### Circuit Diagram



Note: Gas discharge tubes are bidirectional and non-polarized.

#### **Typical Part Marking**

Represents total content. Layout may vary.



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Americas: Tel: +1 951-781-5500 • Email: <u>americus@bourns.com</u> Mexico: Tel: +52-614-478-0400 • Email: <u>mexicus@bourns.com</u> Asia: Tel: +886-2-2562-4117 • Email: <u>asiacus@bourns.com</u> EMEA: Tel: +36 88 885 877 • Email: <u>eurocus@bourns.com</u> www.bourns.com



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### GDT21 Series – Next-generation 2-Electrode Gas Discharge Tube Arrestor

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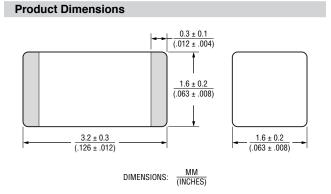
#### **Electrical Characteristics**

Test Methods per ITU-T K.12, IEEE C62.31

	Device Specifications (1)			
Bourns Part No.	DC Sparkover Voltage ±30 % (2) (3)	Insulation Resistance (IR) (4)	Capacitance	
	100 V/s	(1)	1 MHz	
GDT21-15	150 V		< 0.3 pF	
GDT21-20	200 V			
GDT21-40	400 V	>100 MΩ		
GDT21-42	420 V			
GDT21-50	500 V			
GDT21-60	600 V			

#### Notes:

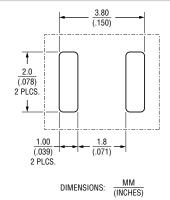
- (1) At delivery AQL 0.65 Level II, DIN ISO 2859.
- (2) Bourns recommends reflowing surface mount devices per IPC/ JEDEC J-STD-020 rev. D.
- (3) Surface mount GDTs may exhibit a temporary increase in the DC Sparkover Voltage after the solder reflow process. The DC Sparkover Voltage will recover within 24 hours. There is no quality defect nor change in protection levels during the temporary increase in DC Sparkover Voltage.



	Life Ratings <sup>(5)</sup>			
Bourns Part No.	Nominal Impulse Discharge Current			Nominal AC Discharge Current
Part No.	8/20 µs	Impulse Life 8/20 µs, 100 A	10/700 µs	1 Second @ 50 Hz
GDT21-15	500 A 10 Operations (5 per polarity)			
GDT21-20				
GDT21-40		200 times	6 kV	0.5 Arms
GDT21-42		300 times	R= 40 Ω 10 times	10 Operations
GDT21-50				
GDT21-60				

- (4) IR Test Voltage: 50 V for GDT21-15, 100 V for GDT21-200 to GDT21-40, 250 V for GDT21-42 and GDT21-60
- (5) DC Sparkover Voltage limits after Life Ratings may exceed +20 % but will continue to protect without venting (per *ITU-T K.12 Edition 9.0, Section 6*, where applicable).

#### **Recommended Pad Layout**



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

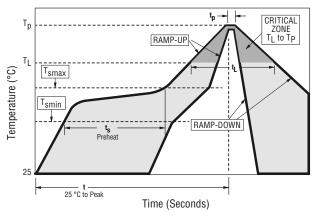
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### GDT21 Series – Next-generation 2-Electrode Gas Discharge Tube Arrestor

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150 °C

Pb-free Assembly



#### **Soldering Parameters - Reflow Soldering**

#### Notes:

Bourns recommends reflowing surface mount devices per *IPC/JEDEC J-STD-020 rev D*.

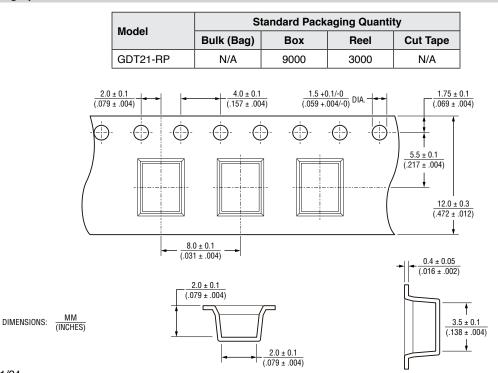
Surface mounted components (SMD) may exhibit a temporary increase in the DC Sparkover Voltage after the solder reflow process. The components should recover within 24 hours. There is no quality defect nor change in protection levels during the temporary change in DC Sparkover Voltage.

#### 200 °C Preheat Temperature Max. (T<sub>S(max)</sub>) Time (Min. to Max.) (T<sub>S</sub>) 60 - 120 seconds Average Ramp-up Rate 3 °C / second max. (Liquidus Temperature (TL) to Peak) T<sub>S(max)</sub> to T<sub>L</sub> - Ramp-up Rate 5 °C / second max. 217 °C Temperature (T<sub>L</sub>) (Liquidus) Reflow 60 - 150 seconds Temperature (T<sub>L</sub>) Peak Temperature (Tp) 260 +0/-5 °C Time within 5 °C of Actual Peak 10-30 seconds Temperature (Tp) Ramp-down rate 6 °C / second max. Time from 25 °C to Peak Temperature 8 minutes max. $(T_p)$ Do not Exceed 260 ° C

**Reflow Condition** 

Temperature Min. (T<sub>S(min)</sub>)

#### **Packaging Specifications**



#### REV. 1 – 11/24

Specifications are subject to change without notice.

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Users should verify actual device performance in their specific applications.
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