

#### SMD4042 Series

### **Description**

Gas discharge tubes (GDT) use noble gasses enclosed in ceramic tubes to provide an alternate circuit path for voltage spikes. The ceramic envelope and with nickel connectors allow for high loads. SMD4042 Gas Discharge Tubes (GDT) series has a surge rating of 3kA, 8/20µs.Offered in a Squared Surface Mount package, which helps to make pick and place on PCB process easier.

This GDT series is perfectly suited for broadband equipment applications. The GDT's low off-state capacitance is compatible with high bandwidth applications and this capacitance loading value does not vary if the voltage across the GDT changes.

SMD4042 Gas Discharge Tube (GDT) series are specifically designed for protection of electrical, multimedia, and communication equipment against over voltage transients in surface mount assembly applications.



## **Electrical symbol**



#### **Features**

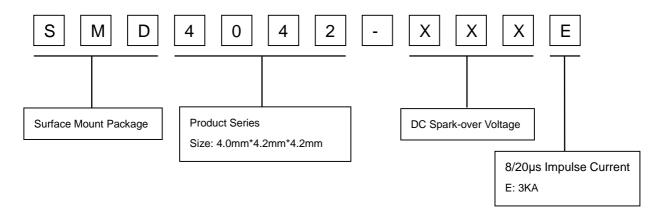
- I Excellent response to fast rising transients
- I Stable breakdown voltage
- I GHz working frequency
- I 8/20µs Impulse current capability:3KA
- I Surface Mount package
- I Non-Radioactive
- I Ultra Low capacitance (<0.8pF)
- I Size: 4.0mm\*4.2mm\*4.2mm
- I Storage and operational temperature: -40~+125°C

# **Applications**

- I CATV equipment
- I Antennas
- I RS 485
- I Telecom Base Station
- I Power Supply AC Main
- I EV power Charging
- I Inverter/Variable
- I Frequency Drivers (VFDs)
- I IEEE 802.3 compliant Ethernet interfaces

- I Broad Band equipment
- I xDSL, ADSL, ADSL2, VDSL, and VDSL2
- Medical Electronics
- I Test Equipment
- I General Telecom Equipment
- I Renewable Energy

#### **Part Number Code**





### SMD4042 Series

## **Electrical Characteristics**

Part Number	DC Spark-over Voltage <sup>1) 2)</sup> @100V/S	Impulse Spark-over Voltage		Resistance	Capacitance @1MHz	Glow Voltage @10mA	Arc Voltage @1A	Life Ratings 4)			
								Impulse E Curr @8/2	rent	Alternating Discharge Current @50Hz 1S	Impulse Life @10/1000µS
		Max	Max	Min	Max	Typical	Typical	±5 times	1 time	10 times	300 times
	V	V	٧	GΩ	pF	V	٧	KA	KA	Α	Α
SMD4042-090E	90±20%	500	600	1	0.8	60	10	5	6	5	100
SMD4042-150E	150±20%	500	600	1	0.8	60	10	3	6	3	100
SMD4042-200E	200±20%	600	700	1	0.8	60	10	3	6	3	100
SMD4042-230E	230±20%	600	700	1	0.8	60	10	3	6	3	100
SMD4042-300E	300±20%	700	800	1	0.8	60	10	3	6	3	100
SMD4042-350E	350±20%	750	850	1	0.8	60	10	3	6	3	100
SMD4042-400E	400±20%	800	900	1	0.8	135	15	3	6	3	100
SMD4042-470E	470±20%	850	950	1	0.8	135	15	3	6	3	100
SMD4042-600E	600±20%	900	1000	1	0.8	135	15	3	6	3	100
SMD4042-800E	800±20%	1200	1400	1	0.8	135	15	3	6	3	100
SMD4042-1000E	1000±20%	1400	1600	1	0.8	135	15	3	5	3	100
Glow to Arc transition Current			<0.3A								
Weight					~0.28g						
Operation temperat	ure				40~+125	5°C					
Recommended storage <sup>5)</sup>											
- Temperature				+5~+35°	+5~+35°C						
- Humidity				45~+80%	45~+80%						
- Period				≤ 2 years	,						
Climatic category (IEC 60068-1)											
Marking				Without	Without						
Surface treatment				Matte-tin	plated						

<sup>1)</sup> At delivery AQL 0.65 level II, DIN ISO 2859.

Terms and current waveforms in accordance with ITU-T K. 12, IEC61643-21 and IEC 61643-311.

<sup>2)</sup> In ionized mode.

<sup>3)</sup> Insulation Resistance Measuring Voltage: nominal voltage 90~150V at DC 50V, others at DC 100V.

<sup>&</sup>lt;sup>4)</sup> Tests according to ITU-T K.12 and UL 497B.

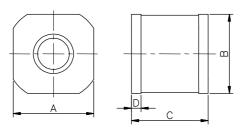
<sup>&</sup>lt;sup>5)</sup> Specified in terms of corrosion against tin plating.

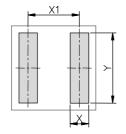
<sup>&</sup>lt;sup>6)</sup> Tests according to JEDEC J-STD-020.



### SMD4042 Series

# **Dimensions**



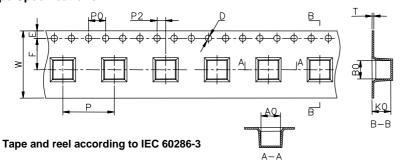


Recommended Soldering Pad Layout

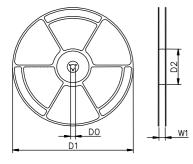
		T		
Symbol	Millimeters	Inches		
Α	4.2±0.2	0.165±0.008		
В	4.2±0.2	0.165±0.008		
С	4.0±0.2	0.157±0.008		
D	0.5±0.1	0.020±0.004		
Х	1.3	0.051		
X1	3.6	0.142		
Y	5.0	0.197		

# **Packaging Information**

### **Tape Specifications**



### **Reel Specifications**





Direction of Unreeling

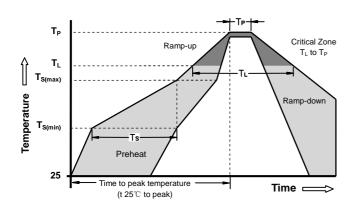
Symbol	Millimeters	Inches
w	16±0.3	0.630±0.012
A0	4.5±0.1	0.177±0.004
В0	4.3±0.1	0.17±0.004
K0	4.4±0.1	0.173±0.004
Р	12±0.1	0.472±0.004
F	7.5±0.1	0.295±0.004
E	1.75±0.1	0.069±0.004
D	1.5+0.1/-0.0	0.059+0.004/-0.0
P0	4±0.1	0.157±0.004
P2	2±0.1	0.079±0.004
Т	0.4±0.1	0.016±0.004
D0	13.3±0.15	0.524±0.006
D1	330±2	12.992±0.079
D2	100+1/-2	3.937+0.039/-0.079
W1	16.5±0.4	0.65±0.016



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	Reel	Inner Box	Carton
Size	330×20.5mm	340×333×70mm	375×353×380mm
Quantity	MPQ/MOQ: 1 reel=1,000pcs	1 Inner Box=3 reels=3,000pcs	1Carton=5 Inner boxes=15,000pcs
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# **Soldering Parameters - Reflow Soldering (Surface Mount Devices)**



Reflow Cond	ition	Pb - Free assembly		
	-Temperature Min (T <sub>s(min)</sub> )	150°C		
Preheat	-Temperature Max (T <sub>s(max)</sub> )	200°C		
	- Time (min to max) (t <sub>s</sub> )	60 -180 Seconds		
Average ram to peak	p up rate ( Liquids Temp T <sub>L</sub> )	3°C/second max		
T <sub>S(max)</sub> to TL -	Ramp-up Rate	5°C/second max		
Reflow	- Temperature (T <sub>L</sub> ) (Liquids)	217°C		
	- Time (min to max) (t <sub>s</sub> )	60 -150 Seconds		
Peak Temper	rature (T <sub>P</sub> )	260 +0/-5°C		
Time within 5	5°C of actual peak (t <sub>p</sub> )	10 - 30 Seconds		

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





#### SMD4042 Series

#### Terms and definitions

NO.	Item	Definitions				
1	Gas discharge tube(GDT)	A gap, or several gaps, in an enclosed discharge medium, other than air at atmospheric pressure,				
		designed to protect apparatus or personnel, or both, from high transient voltages. Also referred to as				
		"gas tube surge arrester".				
2	DC Spark-over	The voltage at which the good discharge take appelled a voltage				
	Voltage	The voltage at which the gas discharge tube sparks over with slowly increasing d.c. voltage.				
3	Impulse Spark-over	The highest voltage which appears across the terminals of a gas discharge tube in the period between				
	Voltage	the application of an impulse of given wave-shape and the time when current begins to flow.				
5	Arc voltage	Voltage drop across the GDT during arc current flow.				
6	Glow voltage	Peak value of voltage drop across the GDT when a glow current is flowing.				
	Impulse discharge					
7	current	Current impulse with a nominal virtual front time of 8 µs and a nominal time to half-value of 20 µs.				
	8/20µs					
8	Alternating	The rms value of an approximately sinusoidal alternating current passing through the gas discharge				
	Discharge Current	tube.				
	Insulation Resistance	Insulation resistance shall be measured from each terminal to every other terminal of the GDT. The test				
9		is performed with DC50V when normal spark-over Voltage 70~150V, others with DC100V.				
10	Capacitance	The capacitance shall be measured once at 1 MHz between all terminals unless otherwise specified.				

# **Cautions and warnings**

- I Do not operate surge arresters in power supply networks, whose maximum operating voltage exceeds the minimum spark-over voltage of the surge arresters.
- I Surge arresters may become hot in the event of longer periods of current stress (burn risk). In the event of overload the connectors may fail or the component may be destroyed.
- I Surge arresters must be handled with care and must not be dropped.
- I Do not continue to use damaged surge arresters.
- I The shown SMD pad dimensions represent a safe way to mount the arrester and are a recommendation of the manufacturer. During the reflow process it must be assured that no solder material reduces the insulation distance between the pads below the arrester.

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I SMD surge arresters should be soldered within 24 month after shipment.