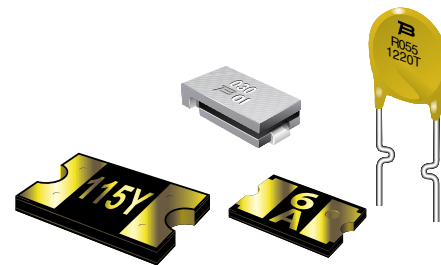




Multifuse® Polymer Positive Temperature Coefficient (PTC) Resettable Fuses

Bourns Multifuse® PTC resettable fuses protect against overcurrent conditions, such as short circuit, overcurrent, and over-temperature. During fault conditions, the PTC flips from low to high impedance, or tripped mode. Once tripped, the fuse can then be reset by cycling the power. These devices are available in thru-hole, surface-mount, and strap configurations and can be used in a wide variety of applications.



Features ▶

- Protects against short circuit, overcurrent, and over-temperature conditions
- UL, CSA, and TUV agency approvals and RoHS compliant
- Device is resettable
- Compact surface-mount packages, down to 0805
- Standard process used to customize mechanical and electrical parameters

Benefits ▶

- Reduces repairs, service requirements, downtime, and warranty costs
- Prevents potentially hazardous conditions
- Reduces manufacturing costs
- Easily customizable solution for most applications
- Does not need to be replaced; no need to be board-accessible

Applications ▶

- Over-current protection for USB, IEEE 1394, and Power-Over-Ethernet ports
- Over-current and over-temperature protection for motor windings
- Battery, battery-pack, and battery-charger over-current protection
- Portable electronics over-current protection
- Industrial controls over-current protection

Product Specifications ▶

Product Series	Mounting Configuration (package)	Operating Voltage (V)	Hold Current (Must not trip) 23°C	Trip Current (Must trip) 23°C
MF-SM	SMT - 2920 and 3425	6-60	300 mA-3A	600 mA-6A
MF-SMDF	SMT - 2018	10-60	550 mA-2A	1.2A-4A
MF-MSMF	SMT - 1812	6-60	100 mA-2.6A	300 mA-2.6A
MF-USMF	SMT - 1210	6-30	50 mA-2A	150 mA-4A
MF-NSMF	SMT - 1206	6-30	120 mA-2A	290 mA-4A
MF-PSMF	SMT - 0805	6-15	100 mA-1.1A	300 mA-2.2A
MF-R	Thru-hole	16-60	50 mA-11A	100 mA-22A
MF-RX/72	Thru-hole	72	1.1A-3.75A	2.2A-7.5A
MF-R/90	Thru-hole	90	550 mA-750 mA	1.1A-1.5A
MF-RX/250	Thru-hole	60 (250 interrupt)	120 mA-18mA	240 mA-650 mA
MF-R/600	Thru-hole	60 (500 interrupt)	150 mA-160 mA	300 mA-320 mA
MF-SVS	Axial leaded/battery strap	10	1.7A-2.3A	4.1A-5.2A
MF-VS	Axial leaded/battery strap	16	1.7A-2.4A	3.4A-5.9A
MF-LR	Axial leaded/battery strap	15-20	1.9A-9.0A	3.9A-16.7A
MF-LS	Axial leaded/battery strap	15-24	700 mA-3.4A	1.5A-6.8A
MF-S	Axial leaded/battery strap	15-30	1.2A-4.2A	2.7A-7.6A

Related Information ▶



MF-SM
2920



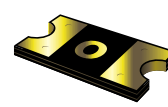
MF-SMDF
2018



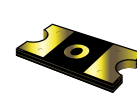
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1812



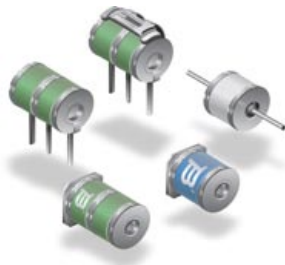
MF-USMF
2920



MF-NSMF
2920



MF-PSMF
2920



GDT Surge Protection for Industrial Applications

Bourns® Gas Discharge Tubes (GDT) can be used for protection of sensitive circuitry from surges of any polarity or magnitude. Ideal for protection against high-energy transients, they support low loss on high speed data lines, provide long and stable life performance, and feature low capacitance of less than 2 pF. GDTs are designed to prevent damage from transient disturbances by acting as a “crowbar” to create a short-to-ground circuit during conduction.

Features ▶

- Ideal for board-level protection of signaling circuits
- High surge-current rating
- Low insertion loss
- Stable breakdown throughout life
- UL recognized
- RoHS compliant versions available

Benefits ▶

- Long surge life in harsh environments
- Surface-mount available for automated assembly
- High energy handling for severe exposure applications
- Very low loss characteristics for high speed applications

Applications ▶

- Industrial electronics
- Commercial electronics
- Signaling systems
- Aircraft and military electronics
- Communications systems

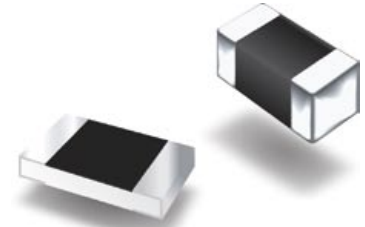
Product Specifications ▶

Part Number	Description	Packaging Type	DC Sparkover @ 100 V/sec, ± %	Impulse Sparkover 100 V/micro sec	Shipment Pack Quantity	RoHS Compliant	Order Multiple
2026-09-C2LF	3-electrode GDT, 90V	Tray	90, ±20	275	100	Yes	1000
2026-60-C2LF	3-electrode GDT, 600V	Tray	600, ±20	925	100	Yes	1000
2027-09-BLF	2-electrode GDT, 90V	Bulk	90, ±20	275	100	Yes	1000
2027-09-SM-RPLF	2-electrode GDT, 90V, surface-mount, reel pack	Reel	90, ±20	275	1000	Yes	1000
2027-60-BLF	2-electrode GDT, 600V	Bulk	600, ±15	850	100	Yes	1000
2027-60-SM-RPLF	2 electrode GDT, 600V, surface-mount, reel pack	Reel	600, ±15	850	1000	Yes	1000
2035-09-BLF	2-electrode GDT, 90V, mini	Bulk	90, ±20	300	100	Yes	1000
2035-09-SM-RPLF	2-electrode GDT, 90V, mini, surface-mount, reel pack	Reel	90, ±20	300	1500	Yes	1500
2035-60-BLF	2-electrode GDT, 600V, mini	Bulk	600, ±15	950	100	Yes	1000
2035-60-SM-RPLF	2-electrode GDT, 600V, mini, surface-mount, reel pack	Reel	600, ±15	950	1500	Yes	1500
2036-09-B3LF	3-electrode GDT, 90V, mini	Tray	90, ±20	250	100	Yes	1000
2036-09-SM-RPLF	3-electrode GDT, 90V, mini, surface-mount, reel pack	Reel	90, ±20	250	1000	Yes	1000
2036-60-B3LF	3-electrode GDT, 600V, mini	Tray	600, ±15	850	100	Yes	1000
2036-60-SM-RPLF	3-electrode GDT, 600V, mini, surface-mount, reel pack	Reel	600, ±15	850	1000	Yes	1000
2039-80-SM-RPLF	2-electrode GDT, 800V, mini, surface-mount, reel pack	Reel	800, ±20	1250	1500	Yes	1500
2039-110-SM-RPLF	2-electrode GDT, 1100V, mini, surface-mount, reel pack	Reel	1100, ±20	1500	1500	Yes	1500



ESD Protection Products

Bourns® ChipGuard® is a family of Electrostatic Sensitive Device (ESD) protection devices. ChipGuard® metal oxide technology provides a high-impulse current capability of 20A at 8/20 μ s in an ultra-small 0402 package with a low capacitance of 0.5 pF. The ChipGuard® family is available in a variety of voltage options from 5.5 VDC to 18 VDC, and in 0402-type and 0603-type packaging to meet industry standards.



Features ▶

- Protects against IEC 61000-4-2 (± 8 kV contact/ ± 15 kV air discharge) and IEC 61000-4-5
- RoHS compliant
- SMT 0402 and 0603 discrete package

Benefits ▶

- Protects against ESD, EFT, and surge transients
- Reduces repairs, service, downtime, and warranty costs
- Product integration reduces manufacturing assembly cost
- Does not need to be replaced; no need to be board-accessible
- Low-capacitance and low-leakage currents available

Applications ▶

- USB, IEEE 1394, and HDMI port over-voltage protection
- Antenna over-voltage protection
- Portable electronics over-voltage protection
- Industrial controls over-voltage protection
- Telecom, automotive, and computer over-voltage protection

Product Specifications ▶

	Part Number	Working Voltage (V)		Tolerance (%)	Clamping Voltage VC	Impulse Current ITM Max. (A)	Capacitance Cp Typ. (pF)
		Vms	VDC				
MLA Series	CG0402MLA-5.5MG	4	5.5	20	19	20	300
	CG0402MLA-14KG	11	14	10	38	20	100
	CG0402MLA-18KG	14	18	10	45	20	95
	CG0603MLA-5.5ME	4	5.5	20	19	30	300
	CG0603MLA-14KE	11	14	10	35	30	160
	CG0603MLA-18KE	14	18	10	40	30	140
MLC Series	Part Number	Continuous Operating Voltage VDC (V)		Clamping Voltage VClamp Max. (V)	Off-State Current IL Max. (nA)	Response Time TD Max. (A)	Capacitance C0F Max. (pF)
		Typ.	Max.				
	CG0603MLC-05E	5	6	35	50	1	0.5
CG0603MLC-12E	12	NA	50	50	1	0.5	
MLE Series	Part Number	Continuous Operating Voltage (V)			Clamping Voltage Typ. 8 kV Contact VClamp (V)	Off-State Current IL Max. 12V (μ A)	Capacitance 1 Vms@1 MHz Cp Max. (pF)
		Vms Max.	VDC Typ.	VDC Max.			
	CG0402MLE-18G	8.5	12	18	100	1	9
CG0603MLE-18E	8.5	12	18	40	1	50	
MLD Series	Part Number	Continuous Operating Voltage Max. VDC	Breakdown Voltage Typ. VB@1 mA	Clamping Voltage Max. VC@1A 8/20 μ s	Off-State Current IL Max. (μ A)	Capacitance C0FF Max. (pF)	
							CG0402MLD-12G
	CG0603MLD-12E	12	50-60	140	1	5	