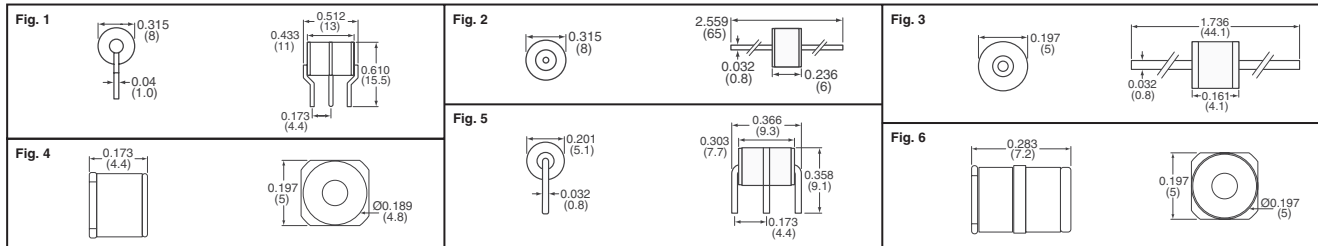




Gas Discharge Tubes



Dimensions: Inch (mm)



Gas Discharge Tubes (GDTs) are used to protect personnel and sensitive equipment from hazardous transient voltages. Bourns GDTs are used in primary and secondary applications and can withstand multiple applications of high surge current energy in excess of 25KA. Bourns offers standard 6mm GDTs and a 5mm mini series GDT in two and three electrode versions featuring long service life and low capacitance and insertion loss. An optional, proprietary Switch-Grade Fail-Short is offered on the three electrode versions to provide superior protections from thermal runaway.

Fig.	Number of Poles	Fail-Short	DC Sparkover ±20% @ 100V/s	Impulse Sparkover 100V/µs	Impulse Sparkover 1000V/µs	Digi-Key Part No.	Price Each			Digi-Key Part No.	Tape and Reel		Bourns Part No.
							1	10	100		Qty.	Pricing	
1	3	—	230V	450V	650V	2026-23-C2LF-ND	3.71	3.22	2.48	—	—	2026-23-C2LF	
		—	250V	475V	700V	2026-25-C2LF-ND	3.71	3.22	2.48	—	—	2026-25-C2LF	
		—	350V	625V	875V	2026-35-C2LF-ND	3.71	3.22	2.48	—	—	2026-35-C2LF	
		X	600V	925V	1250V	2026-60-C2LF-ND	3.71	3.22	2.48	—	—	2026-60-C2LF	
		X	230V	450V	650V	2026-23-C2F-ND	4.76	4.13	3.18	—	—	2026-23-C2F	
		X	250V	475V	700V	2026-25-C2F-ND	4.76	4.13	3.18	—	—	2026-25-C2F	
2	2	—	150V†	350V	575V	2027-15-BLF-ND	1.84	1.60	1.23	—	—	2027-15-BLF	
		—	230V†	450V	675V	2027-23-BLF-ND	1.84	1.60	1.23	—	—	2027-23-BLF	
		—	350V†	600V	875V	2027-35-BLF-ND	1.84	1.60	1.23	—	—	2027-35-BLF	
3	2	—	90V	300V	550V	2035-09-BLF-ND	1.76	1.53	1.18	—	—	2035-09-BLF	
		—	150V†	350V	550V	2035-15-BLF-ND	1.76	1.53	1.18	—	—	2035-15-BLF	
		—	230V†	450V	600V	2035-23-BLF-ND	1.76	1.53	1.18	—	—	2035-23-BLF	
4	2	—	350V†	600V	750V	2035-35-B-ND	1.76	1.53	1.18	—	—	2035-35-B	
		—	90V	350V	525V	2035-09-SM-RPLFCT-ND	1.29	1.09	.60	2035-09-SM-RPLFTR-ND	1,500	495.00/M	2035-09-SM-RPLF
		—	150V†	400V	550V	2035-15-SM-RPLFCT-ND	1.29	1.09	.60	2035-15-SM-RPLFTR-ND	1,500	495.00/M	2035-15-SM-RPLF
		—	230V†	450V	600V	2035-23-SM-RPLFCT-ND	1.29	1.09	.60	2035-23-SM-RPLFTR-ND	1,500	495.00/M	2035-23-SM-RPLF
		—	350V†	600V	750V	2035-35-SM-RPLFCT-ND	1.29	1.09	.60	2035-35-SM-RPLFTR-ND	1,500	495.00/M	2035-35-SM-RPLF
		—	600V†	950V	1100V	2035-60-SM-RPLFCT-ND	1.29	1.09	.60	2035-60-SM-RPLFTR-ND	1,500	495.00/M	2035-60-SM-RPLF
5	3	—	800V†	—	1250V	2039-80-SM-RPLFCT-ND	1.29	1.09	.60	2039-80-SM-RPLFTR-ND	1,500	495.00/M	2039-80-SM-RPLF
		—	1100V†	—	1500V	2039-110-SM-RPLFCT-ND	1.37	1.16	.63	2039-110-SM-RPLFTR-ND	1,500	495.00/M	2039-110-SM-RPLF
		—	150V	250V	550V	2036-09-B2LF-ND	3.71	3.22	2.48	—	—	2036-09-B2LF	
		—	230V	450V	600V	2036-23-B2LF-ND	3.71	3.22	2.48	—	—	2036-23-B2LF	
		—	350V	600V	750V	2036-35-B2LF-ND	3.71	3.22	2.48	—	—	2036-35-B2LF	
		X	600V	850V	1100V	2036-60-B2LF-ND	3.71	3.22	2.48	—	—	2036-60-B2LF	
6	3	X	230V	450V	600V	2036-23-B2F-ND	4.76	4.13	3.18	—	—	2036-23-B2F	
		X	350V	600V	750V	2036-35-B2F-ND	4.76	4.13	3.18	—	—	2036-35-B2F	
		—	90V	250V	550V	2036-09-SM-RPLFCT-ND	2.28	1.52	1.20	2036-09-SM-RPLFTR-ND	1,000	1001.00	2036-09-SM-RPLF
		—	150V	350V	500V	2036-15-SM-RPLFCT-ND	2.28	1.52	1.20	2036-15-SM-RPLFTR-ND	1,000	1001.00	2036-15-SM-RPLF
		—	230V	450V	600V	2036-23-SM-RPLFCT-ND	2.28	1.52	1.20	2036-23-SM-RPLFTR-ND	1,000	1001.00	2036-23-SM-RPLF
		—	350V	600V	750V	2036-35-SM-RPLFCT-ND	2.28	1.52	1.20	2036-35-SM-RPLFTR-ND	1,000	1001.00	2036-35-SM-RPLF
—	600V	850V	1100V	2036-60-SM-RPLFCT-ND	2.28	1.52	1.20	2036-60-SM-RPLFTR-ND	1,000	1001.00	2036-60-SM-RPLF		

◆ RoHS Compliant ‡ Not UL Recognized † ±15%

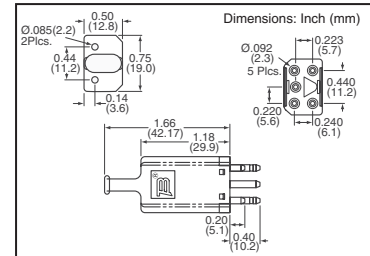
5-Pin Multi-Stage Protector and Gas Discharge Tube Protector

2410 Series – 5-Pin Multi-Stage Protector (MSP)®: This is the latest generation telecommunications protector for high performance and long life in overvoltage protection of copper pair voice-band and high-speed data circuits. Bourns MSP combines the advantages of gas tube and solid state protection while integrating three advanced technologies: a proprietary high-efficiency gas discharge tube, precision matched metal oxide varistors and a patented Switch-Grade Fail-Short mechanism. The Switch-Grade Fail-Short mechanism ensures superior thermal protection with fast acting, highly reliable response to thermal overload conditions. This combined technology provides lower capacitance, higher reliability and longer life than competitive hybrid technologies.

FEATURES: • Solid Brass, Gold-Plated Pins • Storage Temperature: -55°C – 85°C • Operating Temperature: -55°C – 85°C

2420 Series – 5-Pin Gas Discharge Tube (GDT) Protector: The 2420 overvoltage protection modules utilize Bourns' proprietary high-efficiency gas discharge tube with our patented Switch-Grade Fail-Short mechanism to provide robust and reliable surge and thermal overload protection at a very competitive price. This series is based on Bourns' three-terminal common chamber GDT. This design provides greatly improved and balanced turn-on characteristics for overvoltage protection. The GDT is UL approved for use without a back-up device. Air back-up devices can become contaminated; the circuitry of the 2420 eliminates this possibility. Our unique Switch-Grade Fail-Short device provides more reliable thermal overload protection compared to commonly used solder pellet or insulation burn-through designs.

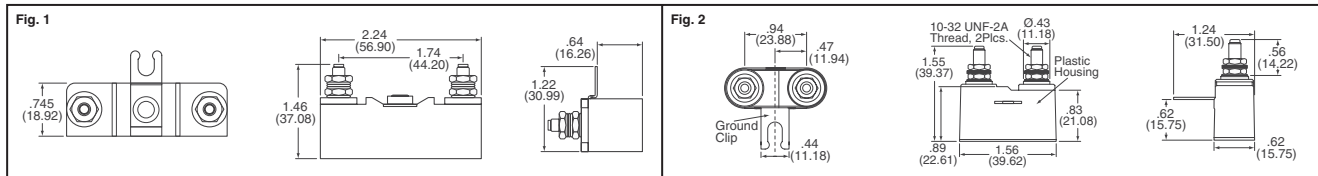
FEATURES: • Solid Brass, Gold-Plated Pins • Storage Temperature: -55°C – 85°C • Operating Temperature: -55°C – 85°C



DC Breakdown	AC Breakdown @ 60Hz	Impulse Breakdown		Digi-Key Part No.	1	Price Each	10	100	Bourns Part No.
		100V/µs	1000V/µs						
300-400V	300-400V	600V	650V	2410-31-G-MSP-ND	6.38	4.72	3.91	3.55	2410-31-G-MSP
300-400V	300-400V	625V	675V	2420-31-G-ND	5.95	4.36	—	—	2420-31-G

155HS and 455HS Digi.Guard II – MSP® Heavy Duty Station Protectors

Dimensions: Inch (mm) (UL)



Bourns' Models 155HS and 455HS Digi.Guard II Multi-Stage Protectors are new generation telecommunications Station Protectors designed to be the best all around choice for protecting copper pair voice-band and high speed data circuits. Combining the strengths of Gas Tube and solid-state protectors,

these models integrate three advanced protection technologies: a proprietary sixth-generation Gas Tube, a precision matched metal oxide varistor and a patented Switch-Grade Failsafe mechanism. Operating Temperature: -55°C – 85°C

Fig.	Model	DC Breakdown	AC Breakdown @ 60Hz	Impulse Breakdown		Digi-Key Part No.	1	Price Each	10	100	Bourns Part No.
				100V/µs	1000V/µs						
1	455HS-MSP	300-400V	300-400V	600V	650V	2377-45-HS-ND	9.91	7.23	6.20	6.20	2377-45-HS
2	155HS-MSP	300-400V	300-400V	600V	650V	2378-35-HS-ND	7.98	5.75	4.79	4.79	2378-35-HS

Digi-Reel® Most SMT cutdown parts are available on a Digi-Reel®. For Digi-Reel part number, change 1-ND to 6-ND or CT-ND to DKR-ND. See Digi-Key® Services on page 2 for additional information.

More Product Available Online: www.digikey.com

1916 (T083)

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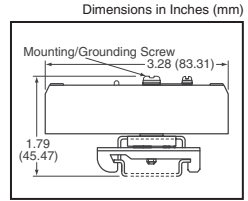
1800 Series – Signal and Dataline Protector

Bourns 1800 Series Signal and Dataline Protectors are designed to protect sensitive electronic circuits and components from damaging surge voltages and currents. Their extremely fast response and low clamping voltages make them particularly suitable for the protection of signal and data lines associated with computer, data communications, instrumentation, broadcasting and industrial controls. They may be used directly with EIA standard interfaces RS-232, RS-422, RS-423, RS-485 and with 20mA and 50mA instrumentation loops. These protectors are fast, rugged and capable of protecting against fast rising voltage transients, as well as the severe current surges associated with lightning discharges.

FEATURES: • Low peak clamping voltage even during severe current surges • Ability to repeatedly protect against surge currents in excess of 10,000 amperes • Convenient mounting and grounding to any flat surface or to Din-3 (TS-35) rail • Cable shields are passed through and may be either grounded or not grounded at the protector • Vibration-proof screw-type clamp terminals • Flame-resistant epoxy-filled housing

Note: See data sheets for specifications

1820-28-A3-ND \$69.62



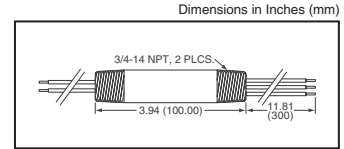
1669 Series – Transient Protector

Used for full weather protection of field transmitters and instrumentation operating on 24-28V systems, the 1669 Series protects sensitive I/O circuitry from surges of any polarity or magnitude. Principal use is on 4-20mA control loops and can be used on grounded (+ or -) or ungrounded circuits. Able to survive and protect even from direct lightning strikes to the transmitter ground or field wiring. Automatic recovery after passage of the surge. Long life and high operational reliability.

FEATURES: • Fits single or dual conduit ports • Weatherproof • Long life, high operational reliability • Stainless steel construction

Note: See data sheets for specifications

1669-02-ND \$79.14



Thru-Hole Surge Arresters — GDTs

Dimensions in Inches (mm)



AC120 and AC240 Series: Specifically designed for protection on the AC line voltages for a high degree of surge protection in AC powered equipment. UL1449 recognized, CSA approved.

CG, CG2 and CG3 Series: Designed for a high degree of surge protection at a very low cost. Use the CG series for protection of test and communication equipment where low voltage limits and extremely low arc voltages are required. UL recognized, CSA approved (CG3 Series).

CG5 Series: Physically smaller sized than the CG series but are able to handle currents that far surpass other types of TVS protection.

PMT3 Series: Designed for telecommunication equipment in which simultaneous crowbar action of two signal lines is required. UL recognized.

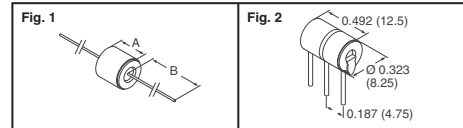


Fig.	Description	Dimensions - Inches (mm)		Digi-Key Part No.	1	10	50	100	Littelfuse Part No.
AC120/240V									
1	120VAC Line Voltage Surge Arrester, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2724-ND	2.93	2.70	2.25	2.03	AC120L
	240VAC Line Voltage Surge Arrester, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2725-ND	2.93	2.70	2.25	2.03	AC240L
CG/CG2 Series									
1	75VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2726-ND	2.93	2.70	2.25	2.03	CG75L
	90VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2727-ND	2.93	2.70	2.25	2.03	CG90L
	110VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2729-ND	2.93	2.70	2.25	2.03	CG110L
	145VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2733-ND	2.93	2.48	2.07	1.69	CG2145L
	230VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2735-ND	2.93	2.70	2.25	2.03	CG230L
	350VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2737-ND	2.93	2.70	2.25	2.03	CG2350L
	470VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2739-ND	2.93	2.70	2.25	2.03	CG2470L
	600VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2741-ND	3.22	2.97	2.48	2.23	CG2600L
	800VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2743-ND	3.22	2.97	2.48	2.23	CG2800L
	1000VDC Gas Discharge Tube, Axial Lead	0.24 (6.07)	1.50 (38.10)	F2731-ND	3.22	2.97	2.48	2.23	CG21000L
CG3 Series High Voltage									
1	1500VDC High Voltage Gas Discharge Tube, Axial Lead	0.30 (7.57)	0.96 (24.28)	F2760-ND	3.77	3.48	2.90	2.61	CG31.5L
	2500VDC High Voltage Gas Discharge Tube, Axial Lead	0.30 (7.57)	0.96 (24.28)	F2745-ND	3.77	3.48	2.90	2.61	CG32.5L
	5000VDC High Voltage Gas Discharge Tube, Axial Lead	0.40 (10.11)	0.96 (24.28)	F2759-ND	4.10	3.78	3.15	2.84	CG35.0L
	7500VDC High Voltage Gas Discharge Tube, Axial Lead	0.40 (10.11)	0.96 (24.28)	F2746-ND	4.10	3.78	3.15	2.84	CG37.5L
CG5 Series High Performance									
1	90VDC High Performance Gas Discharge Tube, Axial Lead	0.20 (5.00)	0.96 (24.28)	F2747-ND	2.67	2.46	2.05	1.85	CG590L
	230VDC High Performance Gas Discharge Tube, Axial Lead	0.20 (5.00)	0.96 (24.28)	F2749-ND	2.67	2.26	1.89	1.54	CG530L
	350VDC High Performance Gas Discharge Tube, Axial Lead	0.20 (5.00)	0.96 (24.28)	F2751-ND	2.67	2.46	2.05	1.85	CG5350L
PMT3 Series 3 Electrode Telcom									
2	250VDC 3 Pin Gas Discharge Tube, PCB Mount	—	—	F2753-ND	5.95	5.49	4.58	4.12	PMT3 (310) 25010
	350VDC 3 Pin Gas Discharge Tube, PCB Mount	—	—	F2754-ND	5.95	5.49	4.58	4.12	PMT3 (310) 35010

SMT Surge Arresters — GDTs

Dimensions in Inches (mm)



The CG and PMT surge arresters have been specifically designed for use in SMT assembly applications for the protection of electrical and communication equipment. Low capacitance and UL recognized for surge protection in power supplies, communication and CATV equipment, data lines, ADSL equipment and more.

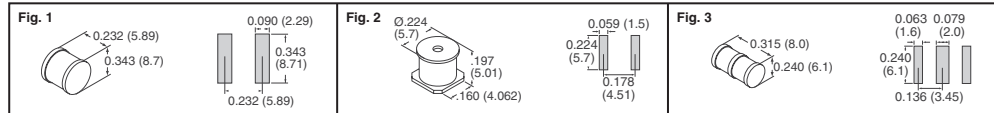


Fig.	Description	Digi-Key Part No.	Cut Tape Price Each			Digi-Key Part No.	Tape and Reel		Littelfuse Part No.
			1	10	100		Qty.	Pricing	
CG Series									
1	75VDC Gas Discharge Tube, SMT	F2723CT-ND	3.49	3.21	2.70	F2723TR-ND	500	930.00	CG75MS
	90VDC Gas Discharge Tube, SMT	F2728CT-ND	3.49	3.21	2.70	F2728TR-ND	250	465.00	CG90MS
	110VDC Gas Discharge Tube, SMT	F2730CT-ND	3.38	3.11	2.61	F2730TR-ND	250	450.00	CG110MS
	145VDC Gas Discharge Tube, SMT	F2734CT-ND	3.38	3.11	2.61	F2734TR-ND	250	450.00	CG2145MS
	230VDC Gas Discharge Tube, SMT	F2736CT-ND	3.38	3.11	2.61	F2736TR-ND	250	450.00	CG230MS
	350VDC Gas Discharge Tube, SMT	F2738CT-ND	3.38	3.11	2.61	F2738TR-ND	250	450.00	CG2350MS
	470VDC Gas Discharge Tube, SMT	F2740CT-ND	3.38	3.11	2.61	F2740TR-ND	250	450.00	CG2470MS
	600VDC Gas Discharge Tube, SMT	F2742CT-ND	3.38	3.11	2.61	F2742TR-ND	500	720.00	CG2600MS
	800VDC Gas Discharge Tube, SMT	F2744CT-ND	3.38	3.11	2.61	F2744TR-ND	500	900.00	CG2800MS
	1000VDC Gas Discharge Tube, SMT	F2732CT-ND	3.38	3.11	2.61	F2732TR-ND	250	450.00	CG21000MS
CG5 Series High Performance									
2	90VDC Mini Gas Discharge Tube, SMT	F2748CT-ND	3.08	2.83	2.38	F2748TR-ND	1,000	1189.00	CG590MS
	230VDC Mini Gas Discharge Tube, SMT	F2750CT-ND	3.08	2.83	2.38	F2750TR-ND	1,000	1189.00	CG5230MS
	350VDC Mini Gas Discharge Tube, SMT	F2752CT-ND	3.08	2.83	2.38	F2752TR-ND	500	656.00	CG5350MS
PMT6 Series 3-Terminal									
3	90VDC 3-Terminal Gas Discharge Tube, SMT	F2755CT-ND	3.84	3.43	2.36	F2755TR-ND	250	451.25	PMT6090MS

Digi-Reel® Most SMT cutdown parts are available on a Digi-Reel®. For Digi-Reel part number, change 1-ND to 6-ND or CT-ND to DKR-ND. See Digi-Key® Services on page 2 for additional information.

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