Triggergaps



DESCRIPTION

CP Clare's Triggergaps are high-energy spark gaps that are capable of switching stored energy in a fraction of a microsecond. Triggergaps require no standby power, are extremely rugged, and require only a low-energy, high-voltage triggering pulse. The miniature TA series (1-15kV) provides switching capability for pulses with energy content as high as 50 joules. The larger TB series (2.5-25 kV) will reliably switch pulses with up to 300 joules of energy. The TG-221 to 226 (1-60 kV) can switch pulses with energy contents of up to 6000 joules and feature adjustable self-breakdown voltages.

FEATURES

- Tight self-breakdown voltage tolerance (±10%;TA & TB series)
- Adjustable self-breakdown voltage (TG-221 to TG-226)
- Rugged ceramic-metal construction
- Refractory metal electrodes
- Corrosion-resistant stainless steel external surfaces (TB series)

APPLICATIONS

- High current surge generators
- Exploding bridge wire systems
- Crowbars
- Flashtube triggers

STANDARD VOLTAGES

Series or P/N	Self-Breakdown Voltage (typ)	Units
TA	1.0	kV
	2.0	kV
	5.0	kV
	7.0	kV
	10.0	kV
	15.0	kV
TB	2.5	kV
	5.0	kV
	10.0	kV
	15.0	kV
	20.0	kV
	25.0	kV
TG-221	1.0-20.0	kV
TG-222	18.0-40.0	kV
TG-224	1.0-20.0	kV
TG-225	18.0-40.0	kV
TG-226	35.0-60.0	kV

SPECIFICATIONS

All characteristics at 25˚C

PARAMETER	CONDITIONS	SYMBOL	TA-1.0 MIN	TA-1.0 TYP	TA-1.0 MAX	TA-2.0 MIN	TA-2.0 TYP	TA-2.0 MAX	TA-5.0 MIN	TA-5.0 TYP	TA-5.0 MAX	UNITS
Device Specifications												
Self-Breakdown Voltage	100V/s	E_Z	0.9	1.0	1.1	1.8	2.0	2.2	4.5	5.0	5.5	kV
Applied Voltage		E_{bb}	0.4	-	0.85	0.7	-	1.7	1.2	-	4.2	kV
Trigger Voltage[1]	t_r=0.5µs, PW=3.0µs	e_{trig}	3.0	-	2.5	3.0	-	2.5	3.5	-	2.5	kV pk
Dimension A		-	0.687	0.750	0.813	0.697	0.760	0.823	0.697	0.760	0.823	inches
Life Ratings												
Discharge Life[2]	≥1000 shots into .2Ω	-	45	-	-	50	-	-	50	-	-	J

PARAMETER	CONDITIONS	SYMBOL	TA-7.0 MIN	TA-7.0 TYP	TA-7.0 MAX	TA-10.0 MIN	TA-10.0 TYP	TA-10.0 MAX	TA-15.0 MIN	TA-15.0 TYP	TA-15.0 MAX	UNITS
Device Specifications												
Self-Breakdown Voltage	100V/s	E_Z	6.3	7.0	7.7	9.0	10.0	11.0	13.5	15.0	16.5	kV
Applied Voltage		E_{bb}	1.9	-	5.8	3.5	-	8.5	7.0	-	12.5	kV
Trigger Voltage[1]	t_r=0.5µs, PW=3.0µs	e_{trig}	3.7	-	2.8	5	-	3.5	8.0	-	4.5	kV pk
Dimension A		-	0.697	0.760	0.823	0.727	0.790	0.853	0.767	0.830	0.893	inches
Life Ratings												
Discharge Life[2]	≥1000 shots into .2Ω	-	50	-	-	60	-	-	70	-	-	J

PARAMETER	CONDITIONS	SYMBOL	TB-2.5 MIN	TB-2.5 TYP	TB-2.5 MAX	TB-5.0 MIN	TB-5.0 TYP	TB-5.0 MAX	TB-10.0 MIN	TB-10.0 TYP	TB-10.0 MAX	UNITS
Device Specifications												
Self-Breakdown Voltage	100V/s	E_Z	2.25	2.50	2.75	4.5	5.0	5.5	9.0	10.0	11.0	kV
Applied Voltage		E_{bb}	0.8	-	2.0	1.5	-	4.0	3.0	-	8.0	kV
Trigger Voltage[1]	t_r=0.5µs, PW=3.0µs	e_{trig}	3.1	-	1.8	3.2	-	1.9	4.6	-	2.1	kV pk
Dimension A		-	-	1.99	-	-	1.99	-	-	1.99	-	inches
Dimension B		-	-	-	0.23	-	-	0.23	-	-	0.58	inches
Dimension C		-	-	-	2.03	-	-	2.03	-	-	2.10	inches
Life Ratings												
Discharge Life[2]	discharges into .3Ω	-	150	-	-	150	-	-	300	-	-	J

PARAMETER	CONDITIONS	SYMBOL	TB-15.0 MIN	TB-15.0 TYP	TB-15.0 MAX	TB-20.0 MIN	TB-20.0 TYP	TB-20.0 MAX	TB-25.0 MIN	TB-25.0 TYP	TB-25.0 MAX	UNITS
Device Specifications												
Self-Breakdown Voltage	100V/s	E_Z	13.5	15.0	16.5	18.0	20.0	22.0	22.5	25.0	27.5	kV
Applied Voltage		E_{bb}	4.5	-	12.0	6.0	-	16.0	7.5	-	20.0	kV
Trigger Voltage[1]	t_r=0.5µs, PW=3.0µs	e_{trig}	6.3	-	3.5	8.0	-	4.5	9.7	-	5.2	kV pk
Dimension A		-	-	2.67	-	-	2.79	-	-	2.79	-	inches
Dimension B		-	-	-	0.58	-	-	0.58	-	-	0.58	inches
Dimension C		-	-	-	2.10	-	-	2.10	-	-	2.10	inches
Life Ratings												
Discharge Life[2]	discharges into .3Ω	-	300	-	-	300	-	-	300	-	-	J

[1] The trigger voltages given in these tables are the minimum triggering voltages necessary for triggering at the corresponding applied voltage limits. As the applied trigger voltage increases, the trigger voltage required for triggering decreases. It is assumed that the trigger is applied across the trigger and adjacent main electrodes — higher trigger voltages are required if it is applied across the trigger voltage and opposite main electrodes.

[2] End point for life testing is a 15% reduction in the self-breakdown voltage.

[3] Because the self-breakdown voltage of these devices is adjustable, the trigger voltage required for any particular applied voltage cannot be specified. Clare suggests setting the self-breakdown voltage to at least 115% of the maximum applied voltage.

Triggergaps

SPECIFICATIONS

All characteristics at 25˚C

PARAMETER	CONDITIONS	SYMBOL	TG-221 MIN	TG-221 TYP	TG-221 MAX	TG-222 MIN	TG-222 TYP	TG-222 MAX	TG-224 MIN	TG-224 TYP	TG-224 MAX	UNITS
Device Specifications												
Self-Breakdown Voltage	100V/s	E_z	1.0	-	20.0	18.0	-	40.0	1.0	-	20.0	kV
Applied Voltage		E_{bb}	0.5	-	18.0	15.0	-	35.0	0.5	-	19.0	kV
Dimension A		-	-	2.25	-	-	3.25	-	-	3.00	-	inches
Dimension B		-	-	2.50	-	-	2.50	-	-	4.50	-	inches
Life Ratings												
Peak Current	PW=30µs	-	20	-	-	20	-	-	50	-	-	kA
Discharge Life[3]	1000 shots into 1Ω	-	3000	-	-	3000	-	-	6000	-	-	J

PARAMETER	CONDITIONS	SYMBOL	TG-225 MIN	TG-225 TYP	TG-225 MAX	TG-226 MIN	TG-226 TYP	TG-226 MAX	UNITS
Device Specifications									
Self-Breakdown Voltage	100V/s	E_z	18.0	-	40.0	35.0	-	60.0	kV
AppliedVoltage		E_{bb}	15.0	-	35.0	30.0	-	55.0	kV
Dimension A		-	-	3.50	-	-	4.50	-	inches
Dimension B		-	-	4.50	-	-	4.50	-	inches
Life Ratings									
Peak Current	PW=30µs	-	50	-	-	50	-	-	kA
Discharge Life[3]	1000 shots into 1Ω	-	6000	-	-	6000	-	-	J

[1] The trigger voltages given in these tables are the minimum triggering voltages necessary for triggering at the corresponding applied voltage limits. As the applied trigger voltage increases, the trigger voltage required for triggering decreases. It is assumed that the trigger is applied across the trigger and adjacent main electrodes — higher trigger voltages are required if it is applied across the trigger voltage and opposite main electrodes.

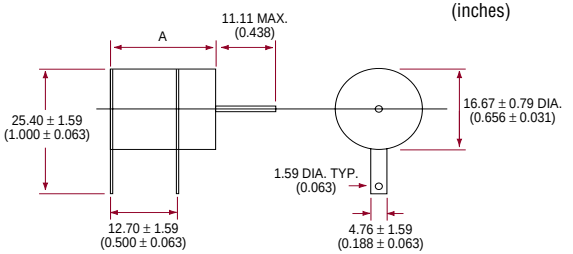
[2] End point for life testing is a 15% reduction in the self-breakdown voltage.

[3] Because the self-breakdown voltage of these devices is adjustable, the trigger voltage required for any particular applied voltage cannot be specified. Clare suggests setting the self-breakdown voltage to at least 115% of the maximum applied voltage.

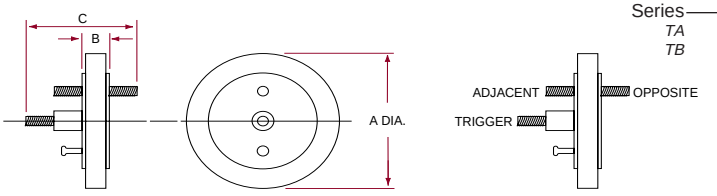
MECHANICAL DIMENSIONS

TA SERIES

DIMENSIONS
mm
(inches)



TB SERIES



ORDERING INFORMATION

Triggergaps with self-breakdown voltages other than the standard values listed (in the ranges of 1-15kV for the TA series and 2.5-25kV for the TB series) are available upon request.

A complete part number is represented by the digits below. Self-breakdown voltages are expressed in kV. For example, TA-5.0 is a 5kV TA series device and TB-25.0 is a 25kV TB series device. The TG-221 to 226 are ordered by the appropriate part number as given in the specifications.

TA- X.X for 1.0-9.0kV
TA- XX.X for 10.0-15.0kV
TB- X.X for 2.5-9.0kV
TB- XX.X for 10.0-25.0kV

Series
TA
TB

Self-breakdown voltage
See specification tables

North America: 1-800-CPCLARE Europe: 32-11-300868 Asia: 886-2-2523-6368 Japan: 81-3-3980-2212

CP Clare CORPORATION