



CTCD SERIES

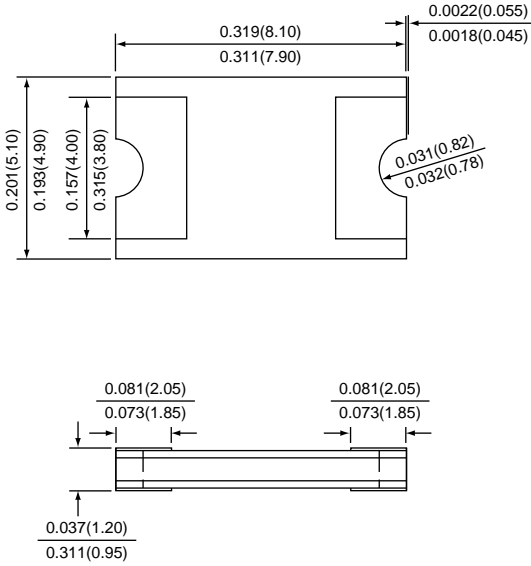
SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Voltage - 5.0 to 220 Volts

Peak Pulse Power - 1500 Watts

PATENTED

3220



*Dimensions in inches and (millimeters)

SuperChipTM



FEATURES

- * Lead free product
- * Leadless chip form , no lead damage
- * Lead-free solder joint , no wire bond & lead frame
- * Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- * For surface mounted applications in order to optimize board space
- * Low profile package
- * Built-in strain relief
- * Glass passivated junction
- * Low inductance
- * High temperature soldering: 260°C/10 seconds at terminals

MECHANICAL DATA

Case : Packed with FRP substrate and epoxy underfilled
 Terminals : Pure Tin plated (Lead-Free), solderable per MIL-STD-750, Method 2026.
 Polarity : Laser marking
 Standard Packaning : 16mm tape (EIA-481)
 Marking : Part Number
 Weight : 0.084 gram

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000uS waveform (Note 1, 2, FIG.1)	P _{PPM}	1500	Watts
Peak Pulse Current on 10/1000uS waveform (Note 1,FIG.3)	I _{PPM}	see Table1	Amps
Peak forward Surge Current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (Note 2, 3)	I _{FSM}	100	Amps
Operating junction and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

NOTES : (1) Non-repetitive current pulse , per Fig. 3 and derated above TA= 25°C per Fig. 2 .
 (2) Mounted on 5.0mm² copper pads to each terminal.
 (3) 8.3ms single half sine-wave , or equivalent square wave, duty cycle = 4 pulses per minutes maximum.

RATINGS AND CHARACTERISTIC CURVES OF CTCD SERIES

FIG.1- PEAK PULSS POWER RATING CURVE

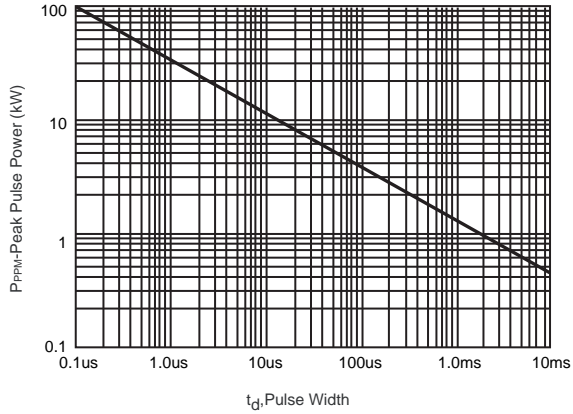


FIG.2 - PULSE DERATING CURVE

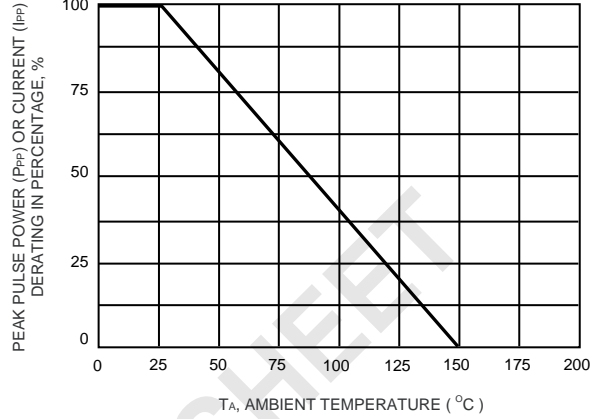


FIG.3 - PULSE WAVEFORM

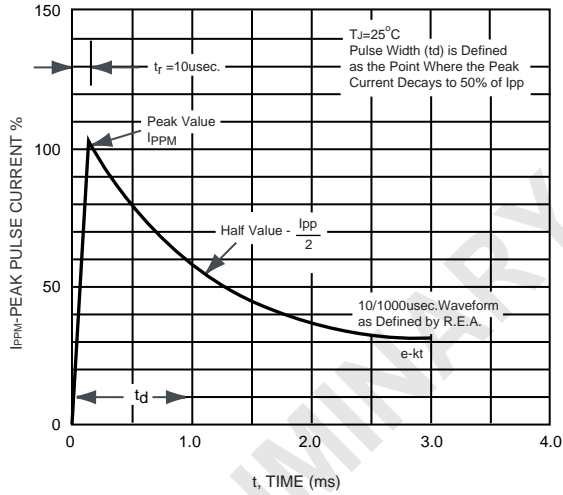


FIG.4 - TYPICAL JUNCTION CAPACITANCE UNI-DIRECTIONAL

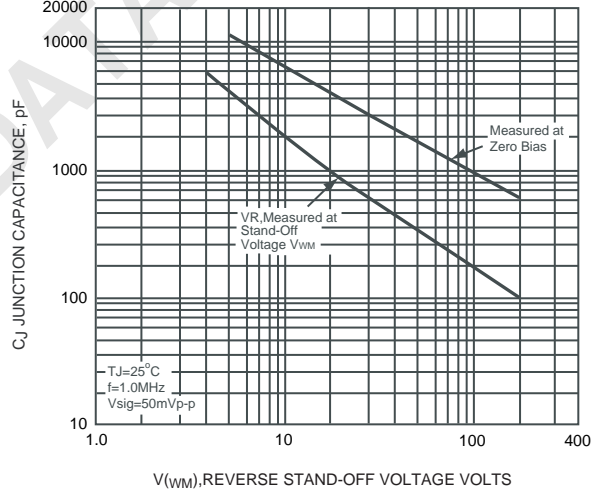
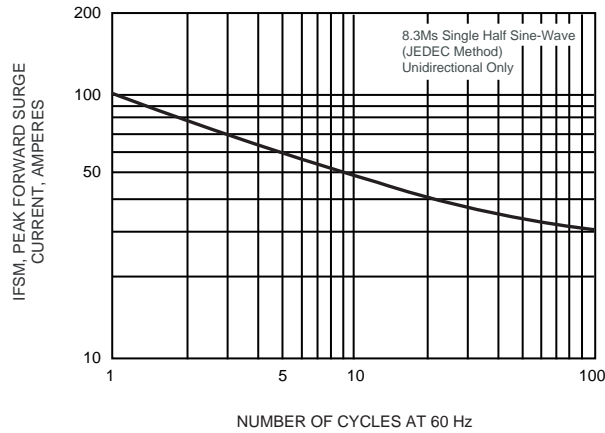


FIG.5 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

1500 WATTS Surface Mount TVS 3220

PART NUMBER		V _{RWM} (V)	V _{BR} @ I _T			I _R @ V _{RWM}		V _C @ I _{pp}	
UNI-POLAR	BI-POLAR		MIN. (V)	MAX. (V)	I _T (mA)	UNI-POLAR (μ A)	BI-POLAR (μ A)	(V)	(A)
CTCD5.0	CTCD5.0C	5.0	6.40	7.55	10	1000	2000	9.6	156.2
CTCD5.0A	CTCD5.0CA	5.0	6.40	7.25	10	1000	2000	9.2	163.0
CTCD6.0	CTCD6.0C	6.0	6.67	8.45	10	1000	2000	11.4	131.6
CTCD6.0A	CTCD6.0CA	6.0	6.67	7.67	10	1000	2000	10.3	145.6
CTCD6.5	CTCD6.5C	6.5	7.22	9.14	10	500	1000	12.3	122.0
CTCD6.5A	CTCD6.5CA	6.5	7.22	8.30	10	500	1000	11.2	133.9
CTCD7.0	CTCD7.0C	7.0	7.78	9.86	10	200	400	13.3	112.8
CTCD7.0A	CTCD7.0CA	7.0	7.78	8.95	10	200	400	12.0	125.0
CTCD7.5	CTCD7.5C	7.5	8.33	10.67	1	100	200	14.3	104.9
CTCD7.5A	CTCD7.5CA	7.5	8.33	9.58	1	100	200	12.9	116.3
CTCD8.0	CTCD8.0C	8.0	8.89	11.30	1	50	100	15.0	100.0
CTCD8.0A	CTCD8.0CA	8.0	8.89	10.23	1	50	100	13.6	110.3
CTCD8.5	CTCD8.5C	8.5	9.44	11.92	1	25	50	15.9	94.3
CTCD8.5A	CTCD8.5CA	8.5	9.44	10.82	1	25	50	14.4	104.2
CTCD9.0	CTCD9.0C	9.0	10.00	12.60	1	10	20	16.9	88.7
CTCD9.0A	CTCD9.0CA	9.0	10.00	11.50	1	10	20	15.4	97.4
CTCD10	CTCD10C	10.0	11.10	14.10	1	5	5	18.8	79.8
CTCD10A	CTCD10CA	10.0	11.10	12.80	1	5	5	17.0	88.2
CTCD11	CTCD11C	11.0	12.20	15.40	1	5	5	20.1	74.6
CTCD11A	CTCD11CA	11.0	12.20	14.00	1	5	5	18.2	82.4
CTCD12	CTCD12C	12.0	13.30	16.90	1	5	5	22.0	68.2
CTCD12A	CTCD12CA	12.0	13.30	15.30	1	5	5	19.9	75.3
CTCD13	CTCD13C	13.0	14.40	18.20	1	5	5	23.8	63.0
CTCD13A	CTCD13CA	13.0	14.40	16.50	1	5	5	21.5	69.7
CTCD14	CTCD14C	14.0	15.60	19.80	1	5	5	25.8	58.1
CTCD4A	CTCD4CA	14.0	15.60	17.90	1	5	5	23.2	64.7
CTCD15	CTCD15C	15.0	16.70	21.10	1	5	5	26.9	55.8
CTCD15A	CTCD15CA	15.0	16.70	19.20	1	5	5	24.4	61.5
CTCD16	CTCD16C	16.0	17.80	22.60	1	5	5	28.8	52.1
CTCD16A	CTCD16CA	16.0	17.80	20.50	1	5	5	26.0	57.7
CTCD17	CTCD17C	17.0	18.90	23.90	1	5	5	30.5	49.2
CTCD17A	CTCD17CA	17.0	18.90	21.70	1	5	5	27.6	53.3
CTCD18	CTCD18C	18.0	20.00	25.30	1	5	5	32.2	46.6
CTCD18A	CTCD18CA	18.0	20.00	23.30	1	5	5	29.2	51.4
CTCD20	CTCD20C	20.0	22.20	28.10	1	5	5	35.8	41.9
CTCD20A	CTCD20CA	20.0	22.20	25.50	1	5	5	32.4	46.3
CTCD22	CTCD22C	22.0	24.40	30.90	1	5	5	39.4	38.1
CTCD22A	CTCD22CA	22.0	24.40	28.00	1	5	5	35.5	42.2
CTCD24	CTCD24C	24.0	26.70	33.80	1	5	5	43.0	34.9
CTCD24A	CTCD24CA	24.0	26.70	30.70	1	5	5	38.9	38.6
CTCD26	CTCD26C	26.0	28.90	36.60	1	5	5	46.6	32.2
CTCD26A	CTCD26CA	26.0	28.90	33.20	1	5	5	42.1	35.6
CTCD28	CTCD28C	28.0	31.10	39.40	1	5	5	50.0	30.0
CTCD28A	CTCD28CA	28.0	31.10	35.80	1	5	5	45.4	33.0
CTCD30	CTCD30C	30.0	33.30	42.20	1	5	5	53.5	28.0
CTCD30A	CTCD30CA	30.0	33.30	38.30	1	5	5	48.4	31.0
CTCD33	CTCD33C	33.0	36.70	46.50	1	5	5	59.0	25.2
CTCD33A	CTCD33CA	33.0	36.70	42.20	1	5	5	53.3	28.1
CTCD36	CTCD36C	36.0	40.00	50.70	1	5	5	64.3	23.3
CTCD36A	CTCD36CA	36.0	40.00	46.00	1	5	5	58.1	25.8
CTCD40	CTCD40C	40.0	44.40	56.30	1	5	5	71.4	21.0
CTCD40A	CTCD40CA	40.0	44.40	51.10	1	5	5	64.5	23.2

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UNI-POLAR	BI-POLAR		MIN. (V)	MAX. (V)	I _r (mA)	UNI-POLAR (uA)	BI-POLAR (uA)	(V)	(A)
CTCD43	CTCD43C	43	47.8	60.5	1	5	5	76.7	19.6
CTCD43A	CTCD43CA	43	47.8	54.9	1	5	5	69.4	21.6
CTCD45	CTCD45C	45	50.0	63.3	1	5	5	80.3	18.7
CTCD45A	CTCD45CA	45	50.0	57.5	1	5	5	72.7	20.6
CTCD48	CTCD48C	48	53.3	67.5	1	5	5	85.5	17.5
CTCD48A	CTCD48CA	48	53.3	61.3	1	5	5	77.4	19.4
CTCD51	CTCD51C	51	56.7	71.8	1	5	5	91.1	18.5
CTCD51A	CTCD51CA	51	56.7	65.2	1	5	5	82.4	18.2
CTCD54	CTCD54C	54	60.0	76.0	1	5	5	96.3	15.6
CTCD54A	CTCD54CA	54	60.0	69.0	1	5	5	87.1	17.2
CTCD58	CTCD58C	58	64.4	81.6	1	5	5	103	14.6
CTCD58A	CTCD58CA	58	64.4	74.1	1	5	5	93.6	16.0
CTCD60	CTCD60C	60	66.7	84.5	1	5	5	107	14.0
CTCD60A	CTCD60CA	60	66.7	76.7	1	5	5	96.8	15.5
CTCD64	CTCD64C	64	71.1	90.1	1	5	5	114	13.2
CTCD64A	CTCD64CA	64	71.1	81.8	1	5	5	103	14.6
CTCD70	CTCD70C	70	77.8	98.6	1	5	5	125	12.0
CTCD70A	CTCD70CA	70	77.8	89.5	1	5	5	113	13.3
CTCD75	CTCD75C	75	83.3	105.7	1	5	5	134	11.2
CTCD75A	CTCD75CA	75	83.3	95.8	1	5	5	121	12.4
CTCD78	CTCD78C	78	86.7	109.8	1	5	5	139	10.8
CTCD78A	CTCD78CA	78	86.7	99.7	1	5	5	126	11.4
CTCD85	CTCD85C	85	94.4	119.2	1	5	5	151	9.9
CTCD85A	CTCD85CA	85	94.4	108.2	1	5	5	137	10.4
CTCD90	CTCD90C	90	100	126.5	1	5	5	160	9.4
CTCD90A	CTCD90CA	90	100	115.5	1	5	5	146	10.3
CTCD100	CTCD100C	100	111	141.0	1	5	5	179	8.4
CTCD100A	CTCD100CA	100	111	128.0	1	5	5	162	9.3
CTCD110	CTCD110C	110	122	154.5	1	5	5	196	7.7
CTCD110A	CTCD110CA	110	122	140.5	1	5	5	177	8.4
CTCD120	CTCD120C	120	133	169.0	1	5	5	214	7.0
CTCD120A	CTCD120CA	120	133	153.0	1	5	5	193	7.9
CTCD130	CTCD130C	130	144	182.5	1	5	5	231	6.5
CTCD130A	CTCD130CA	130	144	165.5	1	5	5	209	7.2
CTCD150	CTCD150C	150	167	211.5	1	5	5	268	5.6
CTCD150A	CTCD150CA	150	167	192.5	1	5	5	243	6.2
CTCD160	CTCD160C	160	178	226.0	1	5	5	287	5.2
CTCD160A	CTCD160CA	160	178	205.0	1	5	5	259	5.8
CTCD170	CTCD170C	170	189	239.5	1	5	5	304	4.9
CTCD170A	CTCD170CA	170	189	217.5	1	5	5	275	5.5
CTCD180	CTCD180C	180	198	253.8	1	5	5	322	4.7
CTCD180A	CTCD180CA	180	198	230.4	1	5	5	292	5.1
CTCD190	CTCD190C	190	209	267.9	1	5	5	340	4.4
CTCD190A	CTCD190CA	190	209	243.2	1	5	5	308	4.8
CTCD200	CTCD200C	200	220	282.0	1	5	5	358	4.1
CTCD200A	CTCD200CA	200	220	256.0	1	5	5	324	4.6
CTCD210	CTCD210C	210	231	296.1	1	5	5	376	4.0
CTCD210A	CTCD210CA	210	231	268.8	1	5	5	340	4.4
CTCD220	CTCD220C	220	242	310.2	1	5	5	394	3.8
CTCD220A	CTCD220CA	220	242	281.6	1	5	5	356	4.2