



# TCDH SERIES

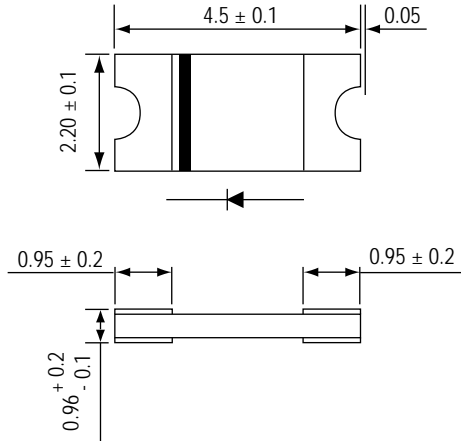
## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Breakdown Voltage - 5.0 to 190 Volts

Peak Pulse Power-400 Watts

**PATENTED**

2010



\*Dimensions : millimeters

**SuperChip**<sup>TM</sup>



### FEATURES

- \* Halogen-free type
- \* Glass passivated chip
- \* 400 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle) : 0.01%
- \* Low leakage
- \* Excellent clamping capability
- \* Very fast response time

### MECHANICAL DATA

**Case** : Packed with FRP substrate and epoxy underfilled

**Terminals** : Pure Tin plated (Lead-Free), solderable per MIL-STD-750, Method 2026.

**Polarity** : Color band denotes positive end (cathode) except for bidirectional types

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

*Ratings at 25 °C ambient temperature unless otherwise specified.  
single phase, half wave, 60Hz resistive or inductive load.  
for capacitive load, derate current by 20%*

RATING	SYMBOL	VALUE	UNITS
Peak power dissipation with a 10/1000 $\mu$ s waveform (note 1)	P <sub>PPM</sub>	400	Watts
Peak pulse current with a 10/1000 $\mu$ s waveform (note 1)	I <sub>PPM</sub>	See next table	Amps
Power dissipation on infinite heatsink at T <sub>L</sub> = 75	P <sub>D</sub>	1.0	Watts
Peak forward surge current, 8.3ms single half sine-wave unidirectional only (note 2)	I <sub>FSM</sub>	40	Amps
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	

NOTES : (1) Non-repetitive current pulse per Fig. 5 and derated above T<sub>A</sub> = 25 °C per Fig. 1  
(2) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.  
(3) Preliminary draft.

TCD PART NUMBER		Working Peak Reverse Voltage V <sub>VRWM</sub> (V)	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub>			Maximum Clamping Voltage V <sub>C</sub> (V) @ I <sub>PP</sub>	Maximum Reverse Surge Current I <sub>PP</sub> (A)	Maximum Reverse Leakage I <sub>R</sub> (μA) @ V <sub>VRWM</sub>
UNI- POLAR	BI-POLAR		Min. (V)	Max. (V)	I <sub>T</sub> (mA)			
TCD5.0AH	TCD5.0CAH	5.0	6.4	7.00	10	9.2	43.48	800
TCD6.0AH	TCD6.0CAH	6.0	6.7	7.37	10	10.3	38.83	800
TCD6.5AH	TCD6.5CAH	6.5	7.2	7.98	10	11.2	35.71	500
TCD7.0AH	TCD7.0CAH	7.0	7.8	8.60	10	12.0	33.33	200
TCD7.5AH	TCD7.5CAH	7.5	8.3	9.21	1	12.9	31.01	100
TCD8.0AH	TCD8.0CAH	8.0	8.9	9.83	1	13.6	29.41	50
TCD8.5AH	TCD8.5CAH	8.5	9.4	10.4	1	14.4	27.78	10
TCD9.0AH	TCD9.0CAH	9.0	10.0	11.1	1	15.4	25.97	5
TCD10AH	TCD10CAH	10	11.1	12.3	1	17.0	23.53	5
TCD11AH	TCD11CAH	11	12.2	13.5	1	18.2	21.98	5
TCD12AH	TCD12CAH	12	13.3	14.7	1	19.9	20.10	5
TCD13AH	TCD13CAH	13	14.4	15.9	1	21.5	18.60	5
TCD14AH	TCD14CAH	14	15.6	17.2	1	23.2	17.24	5
TCD15AH	TCD15CAH	15	16.7	18.5	1	24.4	16.39	5
TCD16AH	TCD16CAH	16	17.8	19.7	1	26.0	15.38	5
TCD17AH	TCD17CAH	17	18.9	20.9	1	27.6	14.49	5
TCD18AH	TCD18CAH	18	20.0	22.1	1	29.2	13.70	5
TCD19AH	TCD19CAH	19	21.1	23.3	1	30.8	13.00	5
TCD20AH	TCD20CAH	20	22.2	24.5	1	32.4	12.35	5
TCD22AH	TCD22CAH	22	24.4	26.9	1	35.5	11.27	5
TCD24AH	TCD24CAH	24	26.7	29.5	1	38.9	10.28	5
TCD26AH	TCD26CAH	26	28.9	31.9	1	42.1	9.50	5
TCD28AH	TCD28CAH	28	31.1	34.4	1	45.4	8.81	5
TCD30AH	TCD30CAH	30	33.3	36.8	1	48.4	8.26	5
TCD33AH	TCD33CAH	33	36.7	40.6	1	53.3	7.50	5
TCD36AH	TCD36CAH	36	40.0	44.2	1	58.1	6.88	5
TCD40AH	TCD40CAH	40	44.4	49.1	1	64.5	6.20	5
TCD43AH	TCD43CAH	43	47.8	52.8	1	69.4	5.76	5
TCD45AH	TCD45CAH	45	50.0	55.3	1	72.7	5.50	5
TCD48AH	TCD48CAH	48	53.3	58.9	1	77.4	5.17	5
TCD51AH	TCD51CAH	51	56.7	62.7	1	82.4	4.85	5
TCD54AH	TCD54CAH	54	60.0	66.3	1	87.1	4.59	5
TCD58AH	TCD58CAH	58	64.4	71.2	1	93.6	4.27	5
TCD60AH	TCD60CAH	60	66.7	73.7	1	96.8	4.13	5
TCD64AH	TCD64CAH	64	71.1	78.6	1	103	3.88	5
TCD70AH	TCD70CAH	70	77.8	86.0	1	113	3.54	5
TCD75AH	TCD75CAH	75	83.3	92.1	1	121	3.31	5
TCD78AH	TCD78CAH	78	86.7	95.8	1	126	3.17	5
TCD80AH	TCD80CAH	80	88.8	97.6	1	130	3.09	5
TCD85AH	TCD85CAH	85	94.4	104	1	137	2.92	5
TCD90AH	TCD90CAH	90	100	111	1	146	2.74	5
TCD100AH	TCD100CAH	100	111	123	1	162	2.47	5
TCD110AH	TCD110CAH	110	122	135	1	177	2.26	5
TCD120AH	TCD120CAH	120	133	147	1	193	2.07	5
TCD130AH	TCD130CAH	130	144	159	1	209	1.91	5
TCD140AH	TCD140CAH	140	155	171	1	227	1.76	5
TCD150AH	TCD150CAH	150	167	185	1	243	1.65	5
TCD160AH	TCD160CAH	160	178	197	1	259	1.54	5
TCD170AH	TCD170CAH	170	189	209	1	275	1.45	5
TCD180AH	TCD180CAH	180	200	220	1	292	1.37	5
TCD190AH	TCD190CAH	190	211	232	1	308	1.30	5

NOTE : 1. Suffix " A " denotes 5% tolerance device.  
 2. Add suffix " CA " after part number to specify Bi-directional devices.  
 3. For Bi-Directional devices having V<sub>r</sub> of 10 volts and under, the I<sub>R</sub> limit is double .

# RATINGS AND CHARACTERISTIC CURVES OF TCDH SERIES

FIG. 1- PULSE DERATING CURVE

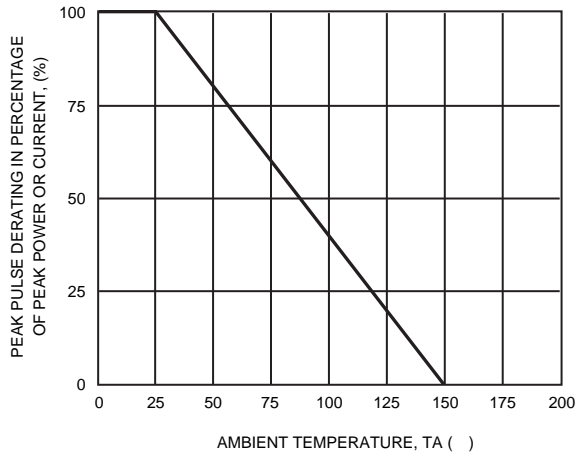


FIG. 2 - MAXIMUM NON-REPETITIVE

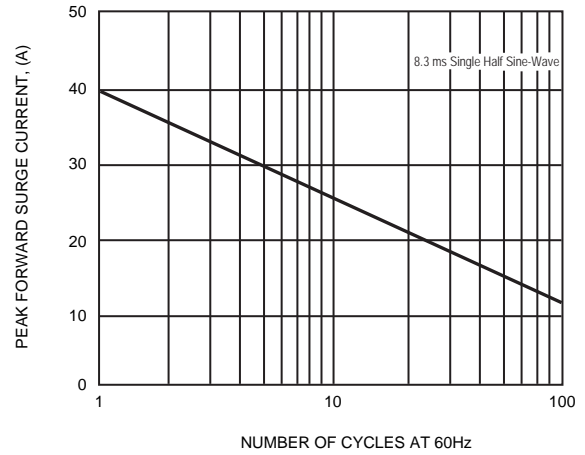


FIG. 3 - STEADY STATE POWER DERATING CURVE

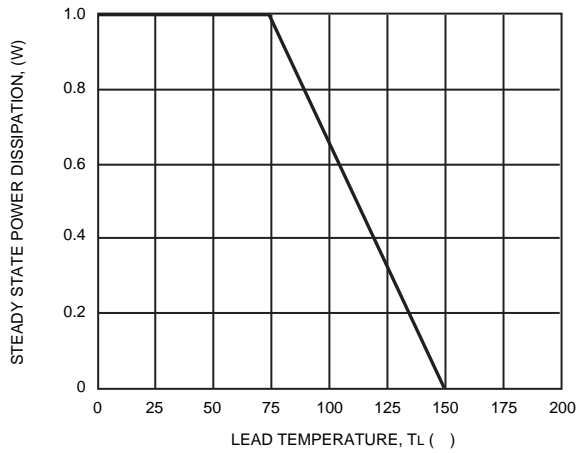


FIG. 4 - PEAK PULSE POWER RATING CURVE

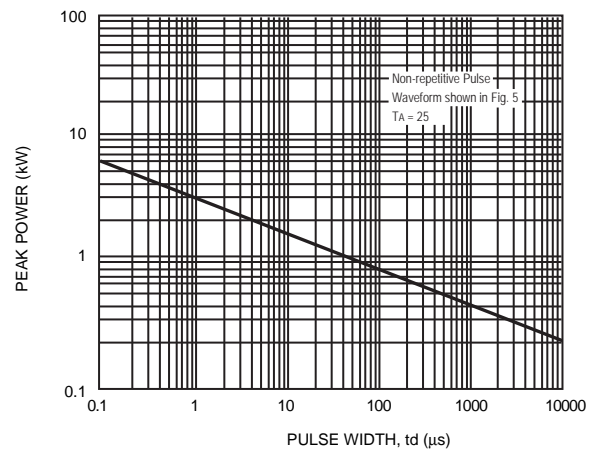


FIG. 5 - PULSE WAVEFORM

