

# STUN06I - STUN5D0

# SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

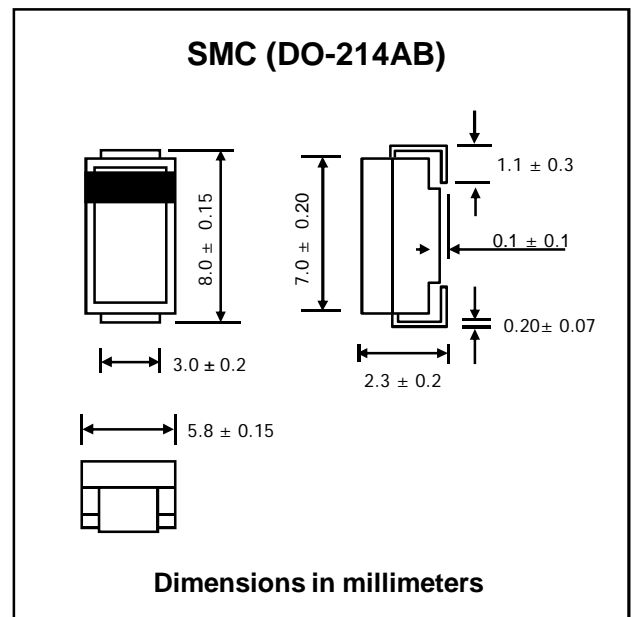
**V<sub>BR</sub> : 6.8 - 200 Volts**  
**P<sub>PK</sub> : 1500 Watts**

## FEATURES :

- \* 1500W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Typical I<sub>R</sub> less than 1μA above 10V
- \* Pb / RoHS Free

## MECHANICAL DATA

- \* Case : SMC Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Polarity : Color band denotes cathode end except Bipolar.
- \* Mounting position : Any
- \* Weight : 0.21 grams



## DEVICES FOR BIPOLAR APPLICATIONS

For bi-directional altered the third letter of type from "U" to be "B".  
Electrical characteristics apply in both directions

## MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified

Rating	Symbol	Value	Unit
Peak Power Dissipation at T <sub>a</sub> = 25 °C, T <sub>p</sub> =1ms (Note1)	P <sub>PK</sub>	Minimum 1500	W
Steady State Power Dissipation at T <sub>L</sub> = 75 °C (Note 2)	P <sub>D</sub>	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I <sub>FSM</sub>	200	A
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150	°C

### Note :

- (1) Non-repetitive Current pulse per Fig. 5 and derated above T<sub>a</sub>= 25 °C per Fig. 1
- (2) Mounted on copper Lead area a5.0 mm<sup>2</sup> ( 0.013 mm thick ).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

TYPE	Breakdown Voltage @ It ( Note 1 )		Working Peak Reverse Voltage VRWM	Maximum Reverse Leakage @ VRWM IR ( $\mu$ A)	Maximum Reverse Current IRSM (A)	Maximum Clamping Voltage @ IRSM VRSM (V)	Maximum Temperature Co-efficient of VBR (% / °C)	
	VBR (V)							It (mA)
	Min.	Max.	(V)					
STUN06I	6.12	7.48	10	5.50	1000	139	10.8	0.057
STUN56I	6.45	7.14	10	5.80	1000	143	10.5	0.057
STUN07F	6.75	8.25	10	6.05	500	128	11.7	0.061
STUN57F	7.13	7.88	10	6.40	500	132	11.3	0.061
STUN08C	7.38	9.02	10	6.63	200	120	12.5	0.065
STUN58C	7.79	8.61	10	7.02	200	124	12.1	0.065
STUN09B	8.19	10.0	1.0	7.37	50	109	13.8	0.068
STUN59B	8.65	9.55	1.0	7.78	50	112	13.4	0.068
STUN010	9.00	11.0	1.0	8.10	10	100	15.0	0.073
STUN510	9.50	10.5	1.0	8.55	10	103	14.5	0.073
STUN011	9.90	12.1	1.0	8.92	5.0	93.0	16.2	0.075
STUN511	10.5	11.6	1.0	9.40	5.0	96.0	15.6	0.075
STUN012	10.8	13.2	1.0	9.72	5.0	87.0	17.3	0.078
STUN512	11.4	12.6	1.0	10.2	5.0	90.0	16.7	0.078
STUN013	11.7	14.3	1.0	10.5	5.0	79.0	19.0	0.081
STUN513	12.4	13.7	1.0	11.1	5.0	82.0	18.2	0.081
STUN015	13.5	16.5	1.0	12.1	5.0	68.0	22.0	0.084
STUN515	14.3	15.8	1.0	12.8	5.0	71.0	21.2	0.084
STUN016	14.4	17.6	1.0	12.9	5.0	64.0	23.5	0.086
STUN516	15.2	16.8	1.0	13.6	5.0	67.0	22.5	0.086
STUN018	16.2	19.8	1.0	14.5	5.0	56.5	26.5	0.088
STUN518	17.1	18.9	1.0	15.3	5.0	59.5	25.2	0.088
STUN020	18.0	22.0	1.0	16.2	5.0	51.5	29.1	0.090
STUN520	19.0	21.0	1.0	17.1	5.0	54.0	27.7	0.090
STUN022	19.8	24.2	1.0	17.8	5.0	47.0	31.9	0.092
STUN522	20.9	23.1	1.0	18.8	5.0	49.0	30.6	0.092
STUN024	21.6	26.4	1.0	19.4	5.0	43.0	34.7	0.094
STUN524	22.8	25.2	1.0	20.5	5.0	45.0	33.2	0.094
STUN027	24.3	29.7	1.0	21.8	5.0	38.5	39.1	0.096
STUN527	25.7	28.4	1.0	23.1	5.0	40.0	37.5	0.096
STUN030	27.0	33.0	1.0	24.3	5.0	34.5	43.5	0.097
STUN530	28.5	31.5	1.0	25.6	5.0	36.0	41.4	0.097
STUN033	29.7	36.3	1.0	26.8	5.0	31.5	47.7	0.098
STUN533	31.4	34.7	1.0	28.2	5.0	33.0	45.7	0.098
STUN036	32.4	39.6	1.0	29.1	5.0	29.0	52.0	0.099
STUN536	34.2	37.8	1.0	30.8	5.0	30.0	49.9	0.099
STUN039	35.1	42.9	1.0	31.6	5.0	26.5	56.4	0.100
STUN539	37.1	41.0	1.0	33.3	5.0	28.0	53.9	0.100
STUN043	38.7	47.3	1.0	34.8	5.0	24.0	61.9	0.101
STUN543	40.9	45.2	1.0	36.8	5.0	25.3	59.3	0.101
STUN047	42.3	51.7	1.0	38.1	5.0	22.2	67.8	0.101
STUN547	44.7	49.4	1.0	40.2	5.0	23.2	64.8	0.101
STUN051	45.9	56.1	1.0	41.3	5.0	20.4	73.5	0.102
STUN551	48.5	53.6	1.0	43.6	5.0	21.4	70.1	0.102
STUN056	50.4	61.6	1.0	45.4	5.0	18.6	80.5	0.103
STUN556	53.2	58.8	1.0	47.8	5.0	19.5	77.0	0.103

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

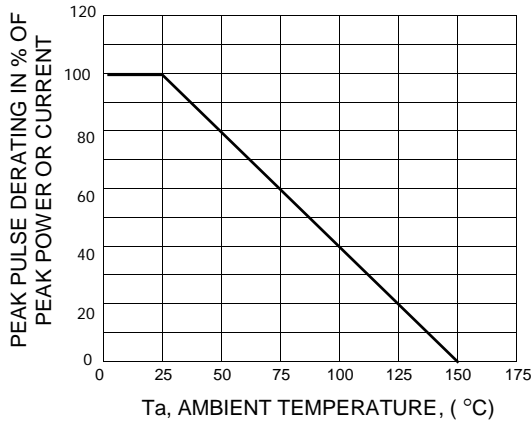
TYPE	Breakdown Voltage @ It ( Note 1 )		Working Peak Reverse Voltage VRWM	Maximum Reverse Leakage @ VRWM IR	Maximum Reverse Current IRSM	Maximum Clamping Voltage @ IRSM VRSM	Maximum Temperature Co-efficient of VBR (% / °C)	
	VBR (V)							It
	Min.	Max.	(mA)	(V)	(μA)	(A)	(V)	(% / °C)
STUN062	55.8	68.2	1.0	50.2	5.0	16.9	89.0	0.104
STUN562	58.9	65.1	1.0	53.0	5.0	17.7	85.0	0.104
STUN068	61.2	74.8	1.0	55.1	5.0	15.3	98.0	0.104
STUN568	64.6	71.4	1.0	58.1	5.0	16.3	92.0	0.104
STUN075	67.5	82.5	1.0	60.7	5.0	13.9	108	0.105
STUN575	71.3	78.8	1.0	64.1	5.0	14.6	103	0.105
STUN082	73.8	90.2	1.0	66.4	5.0	12.7	118	0.105
STUN582	77.9	86.1	1.0	70.1	5.0	13.3	113	0.105
STUN091	81.9	100	1.0	73.7	5.0	11.4	131	0.106
STUN591	86.5	95.5	1.0	77.8	5.0	12.0	125	0.106
STUN0B0	90.0	110	1.0	81.0	5.0	10.4	144	0.106
STUN5B0	95.0	105	1.0	85.5	5.0	11.0	137	0.106
STUN0B1	99.0	121	1.0	89.2	5.0	9.5	158	0.107
STUN5B1	105	116	1.0	94.0	5.0	9.9	152	0.107
STUN0B2	108	132	1.0	97.2	5.0	8.7	173	0.107
STUN5B2	114	126	1.0	102	5.0	9.1	165	0.107
STUN0B3	117	143	1.0	105	5.0	8.0	187	0.107
STUN5B3	124	137	1.0	111	5.0	8.4	179	0.107
STUN0B5	135	165	1.0	121	5.0	7.0	215	0.108
STUN5B5	143	158	1.0	128	5.0	7.2	207	0.108
STUN0B6	144	176	1.0	130	5.0	6.5	230	0.108
STUN5B6	152	168	1.0	136	5.0	6.8	219	0.108
STUN0B7	153	187	1.0	138	5.0	6.2	244	0.108
STUN5B7	162	179	1.0	145	5.0	6.4	234	0.108
STUN0B8	162	198	1.0	146	5.0	5.8	258	0.108
STUN5B8	171	189	1.0	154	5.0	6.1	246	0.108
STUN0D0	180	220	1.0	162	5.0	5.2	287	0.108
STUN5D0	190	210	1.0	171	5.0	5.5	274	0.108

**Note:**

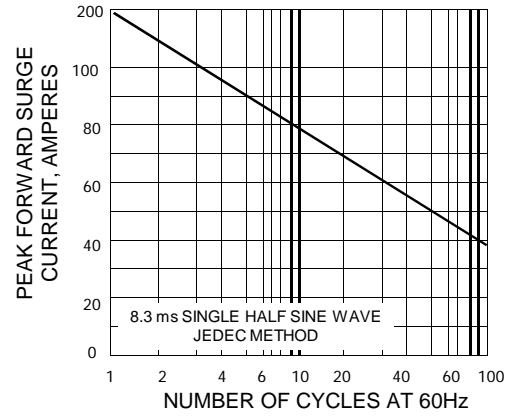
- ( 1 ) VBR measured after It applied for 300 μs., It = square wave pulse or equivalent.
- ( 2 ) VF = 3.5 Vmax., IF = 100 Amps. ( 6.8 Volts thru 91 Volts )  
VF = 5.0 Vmax., IF = 100 Amps. ( 100 Volts thru 200 Volts ) per 1/2 square or equivalent sine wave.  
PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
- ( 3 ) "STU" or "STB" will be omitted in marking on the diode.

## RATING AND CHARACTERISTIC CURVES ( STUN06I - STUN5D0 )

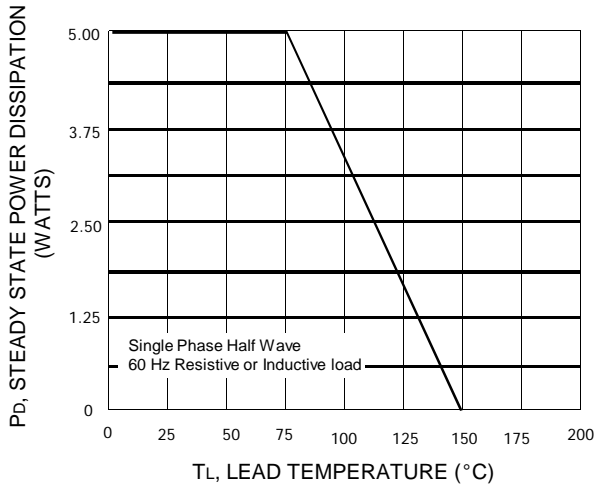
**FIG.1 - PULSE DERATING CURVE**



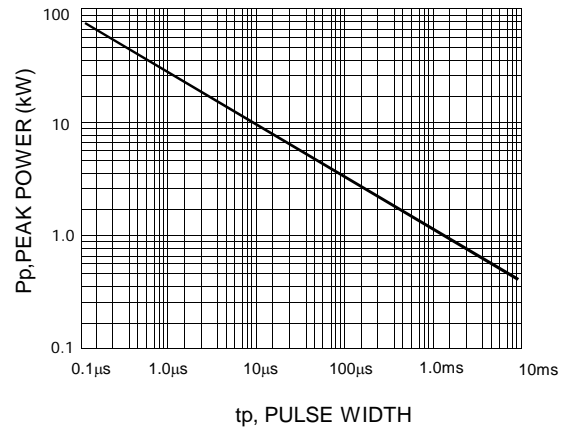
**FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT**



**FIG.3 - STEADY STATE POWER DERATING**



**FIG.4 - PULSE RATING CURVE**



**FIG.5 - PULSE WAVEFORM**

