

STTA212S

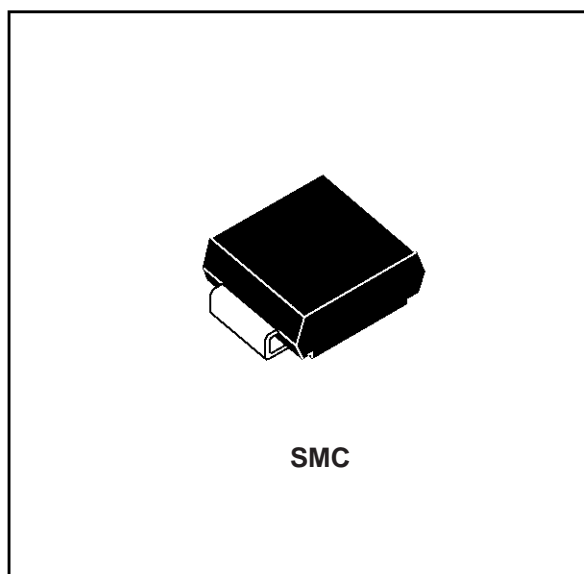
TURBOSWITCH™ ULTRA-FAST HIGH VOLTAGE DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2A
V_{RRM}	1200V
t_{rr} (typ)	65ns
V_F (max)	1.5V

FEATURES AND BENEFITS

- SPECIFIC TO THE FOLLOWING OPERATIONS: SNUBBING OR CLAMPING, DEMAGNETIZATION AND RECTIFICATION
- ULTRA-FAST AND SOFT RECOVERY
- VERY LOW OVERALL POWER LOSSES IN BOTH THE DIODE AND THE COMPANION TRANSISTOR
- HIGH FREQUENCY OPERATION
- HIGH REVERSE VOLTAGE CAPABILITY



DESCRIPTION

TURBOSWITCH 1200V drastically cuts losses in all high voltage operations which require extremely fast, soft and noise-free power diodes.

Due to their optimized switching performances they also highly decrease power losses in any associated switching IGBT or MOSFET in all "freewheel mode" operations and is particularly

suitable and efficient in motor control circuitries, or in primary of SMPS as snubber, clamping or demagnetizing diodes secondary of SMPS as high voltage rectifier diodes. They are also suitable for the secondary of SMPS as high voltage rectifier diodes.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		1200	V
V_{RSM}	Non repetitive peak reverse voltage		1200	V
$I_{F(RMS)}$	RMS forward current		10	A
I_{FRM}	Repetitive peak forward current	$t_p = 5\mu s$ F=5kHz square	20	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10ms$ sinusoidal	25	A
T_{stg}	Storage temperature range		- 65 to + 150	°C
T_j	Maximum operating junction temperature		125	°C

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THERMAL AND POWER DATA

Symbol	Parameter	Test conditions	Value	Unit
$R_{th(j-l)}$	Junction to lead thermal resistance		21	°C/W
P_1	Conduction power dissipation	$I_{F(AV)} = 1.5A$ $\delta = 0.5$ $T_{lead} = 72^\circ C$	2.5	W
P_{max}	Total power dissipation $P_{max} = P_1 + P_3$ ($P_3 = 10\% P_1$)	$T_{lead} = 67^\circ C$	2.8	W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min	Typ	Max	Unit
V_F^*	Forward voltage drop	$I_F = 2A$	$T_j = 25^\circ C$ $T_j = 125^\circ C$		1.1	1.65 1.5	V
I_R^{**}	Reverse leakage current	$V_R = 0.8$ $\times V_{RRM}$	$T_j = 25^\circ C$ $T_j = 125^\circ C$		150	20 400	μA
V_{to}	Threshold voltage	$I_p < 3 \cdot I_{AV}$	$T_j = 125^\circ C$			1.15	V
r_d	Dynamic resistance					175	m Ω

Test pulses : * $t_p = 380 \mu s$, $\delta < 2\%$
 ** $t_p = 5 ms$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :

$$P = V_{to} \times I_{F(AV)} + r_d \times I_F^2(RMS)$$

DYNAMIC ELECTRICAL CHARACTERISTICS
TURN-OFF SWITCHING

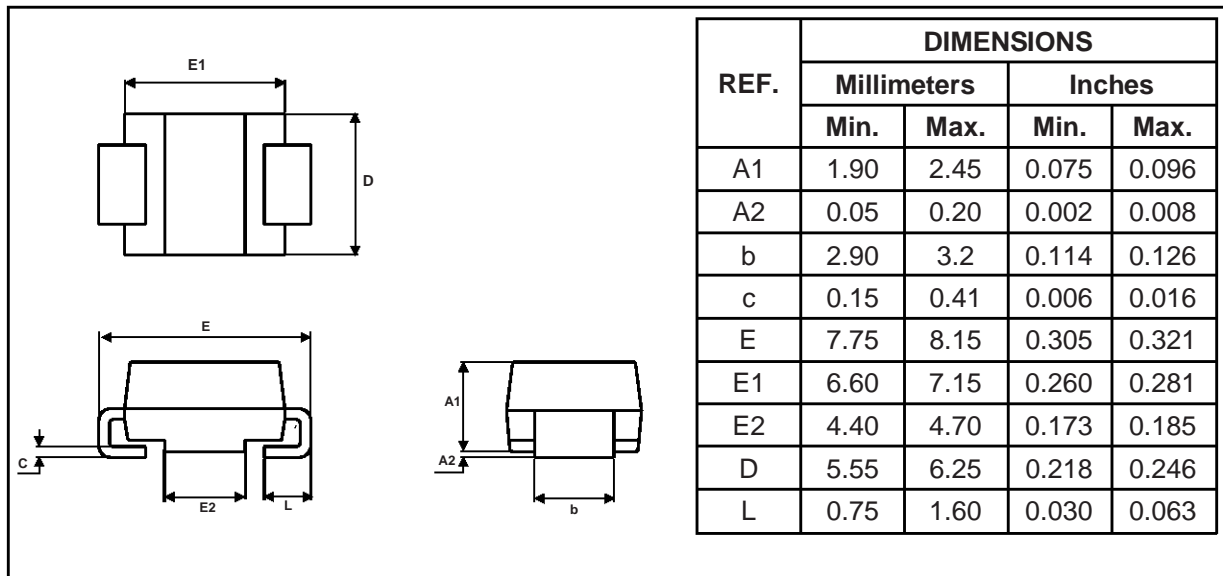
Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
t_{rr}	Reverse recovery time	$T_j = 25^\circ C$ $I_F = 0.5 A$ $I_R = 1A$ $I_{rr} = 0.25A$ $I_F = 1 A$ $di_F/dt = -50A/\mu s$ $V_R = 30V$		65	115	ns
I_{RM}	Maximum recovery current	$T_j = 125^\circ C$ $V_R = 600V$ $I_F = 2A$ $di_F/dt = -16 A/\mu s$ $di_F/dt = -50 A/\mu s$		6.0	3.6	A
S factor	Softness factor	$T_j = 125^\circ C$ $V_R = 600V$ $I_F = 2A$ $di_F/dt = -50 A/\mu s$		0.9		/

TURN-ON SWITCHING

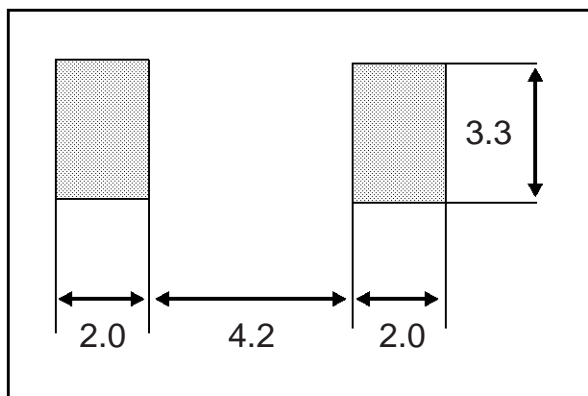
Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
t_{fr}	Forward recovery time	$T_j = 25^\circ C$ $I_F = 2 A$ $di_F/dt = 16 A/\mu s$ measured at $1.1 \times V_{Fmax}$			900	ns
V_{Fp}	Peak forward voltage				35	V

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PACKAGE MECHANICAL DATA
SMC



FOOTPRINT DIMENSIONS (in millimeters)
SMC Plastic



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STTA212S	T53	SMC	0.243g	2500	Tape & reel

- Epoxy meets UL94,V0
- Band indicates cathode