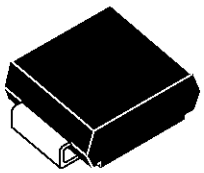
STTA112U

TURBOSWITCH ™ ULTRA-FAST HIGH VOLTAGE DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1A
V_{RRM}	1200V
t_{rr} (typ)	65ns
V_F (max)	1.5V



SMB

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.

They are particularly suitable in motor control circuitries, or in primary of SMPS as snubber, clamping or demagnetizing 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
$I_{F(RMS)}$	RMS forward current		6	A
I_{FRM}	Repetitive peak forward current	tp = 5 µs F = 5kHz square	10	A
I_{FSM}	Surge non repetitive forward current	tp = 10ms sinusoidal	20	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		23	°C/W
P_1	Conduction power dissipation	$I_{F(AV)}$ = 0.8A δ = 0.5 Tlead= 93°C	1.4	W
P_{max}	Total power dissipation Pmax = P1 + P3 (P3 = 10% P1)	Tlead= 90°C	1.5	W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test conditions		Min	Typ	Max	Unit
V_F *	Forward voltage drop	I_F = 1A	Tj = 25°C Tj = 125°C		1.1	1.65 1.5	V
I_R **	Reverse leakage current	V_R = 0.8 x V_{RRM}	Tj = 25°C Tj = 125°C		90	10 300	µA
V_{to}	Threshold voltage	Ip < 3.$I_{F(AV)}$	Tj = 125°C			1.15	V
Rd	Dynamic resistance					350	mΩ

Test pulses : * tp = 380 µs, δ < 2%
** tp = 5 ms , δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = V_{to} \times I_{F(AV)} + Rd \times I_F^2{}_{(RMS)}$

DYNAMIC ELECTRICAL CHARACTERISTICS

TURN-OFF SWITCHING

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
t_{rr}	Reverse recovery time	Tj = 25°C I_F = 0.5 A I_R = 1A Irr = 0.25A I_F = 1 A dI_F/dt =-50A/µs V_R = 30V		65	115	ns
I_{RM}	Maximum recovery current	Tj = 125°C V_R = 600V I_F = 1A dI_F/dt = -8 A/µs dI_F/dt = -50 A/µs		5	1.8	A
S factor	Softness factor	Tj = 125°C V_R = 600V I_F =1A dI_F/dt = -50 A/µs		0.7		-

TURN-ON SWITCHING

Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
t_{fr}	Forward recovery time	Tj = 25°C I_F = 1 A, dI_F/dt = 8 A/µs measured at 1.1 × V_F max			900	ns
V_{Fp}	Peak forward voltage				35	V

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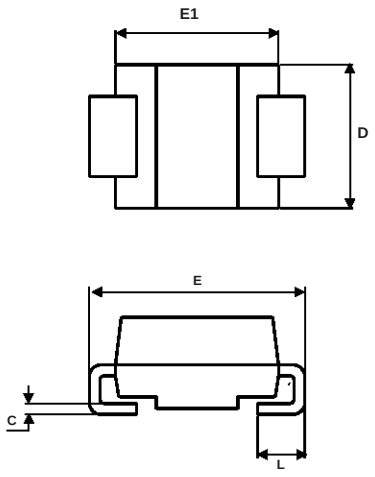
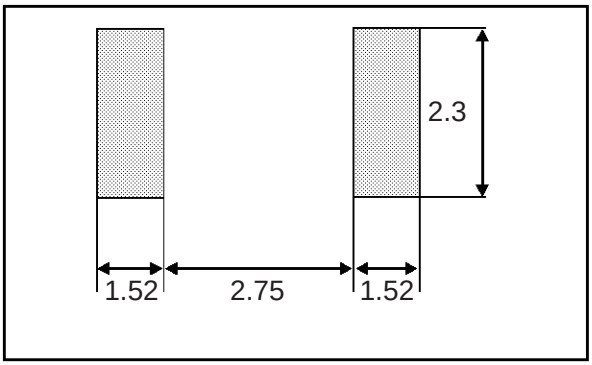
PACKAGE MECHANICAL DATA

SMB



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

FOOTPRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STTA112U	T03	SMB	0.107g	2500	Tape & reel

- Epoxy meets UL94,V0
- Band indicates cathode