SGS-THOMSON MICROELECTRONICS

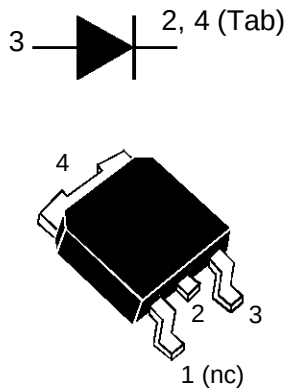
STTA506B(-TR)

TURBOSWITCH™ "A" . ULTRA-FAST HIGH VOLTAGE DIODE

MAIN PRODUCT CHARACTERISTICS

PRELIMINARY DATASHEET

$I_{F(AV)}$	**5 A**
V_{RRM}	**600 V**
V_F (max)	**1.5 V**
t_{rr} (typ)	**20 ns**



DPAK
(Plastic)

FEATURES AND BENEFITS

- SPECIFIC TO THE FOLLOWING OPERATIONS : SNUBBING OR CLAMPING, DEMAGNETIZATION AND RECTIFICATION, FREEWHEEL OR BOOSTER DIODE
- ULTRA-FAST RECOVERY
- VERY LOW OVERALL POWER LOSSES IN BOTH THE DIODE AND THE COMPANION TRANSISTOR
- DESIGNED FOR HIGH PULSED CURRENT OPERATIONS
- SURFACE MOUNT DEVICE
- TAPE AND REEL OPTION : -TR

DESCRIPTION

The TURBOSWITCH is a very high performance series of ultra-fast voltage power diodes from 600V to 1200V.

TURBOSWITCH "A" family drastically cuts losses in both the diode and the associated switching IGBT or MOSFET in all "Freewheel Mode" operations and is particulary suitable and efficient in Motor Control Freewhell applications and in Booster diode applications in Power Factor Control circuitries.

Packaged in DPAK Surface Mount enveloppe, these 600V devices are particulary intended for use on 240V domestic mains.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage		600	V
V_{RSM}	Non Repetitive Surge Reverse Voltage		600	V
$I_{F(RMS)}$	RMS Forward Current		8	A
I_{FRM}	Repetitive Peak Forward Current	tp = 5 µs F = 5 KHz	65	A
T_{stg}	Storage Temperature Range		- 65 to + 150	°C
Tj	Max. Junction Temperature		150	°C

TM : TURBOSWITCH is a trademark from SGS-THOMSON Microelectronics.

THERMAL AND POWER DATA

Symbol	Parameter	Conditions	Value	Unit
$R_{th\ (j-c)}$	Junction to Case Thermal Resistance		TBD	°C/W
P_1	Conduction Power Dissipation	$I_{F(AV)}$ = 1.5A, δ = 0.5 T_L = °C	TBD	W
P_{max}	Total Power Dissipation $P_{max} = P_1 + P_3$ (P_3 = 10% P_1)	T_L = 76°C	TBD	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage Current	Tj = 25°C	V_R = 0.8 x V_{RRM}			100	µA
		Tj = 125°C				2	mA
V_F **	Forward Voltage drop	Tj = 25°C	I_F = 5 A			1.75	V
		Tj = 125°C	I_F = 5 A			1.5	

Pulse test : * tp = 5 ms, duty cycle < 2 %
** tp = 380 µs, duty cycle < 2%

DYNAMIC ELECTRICAL CHARACTERISTICS

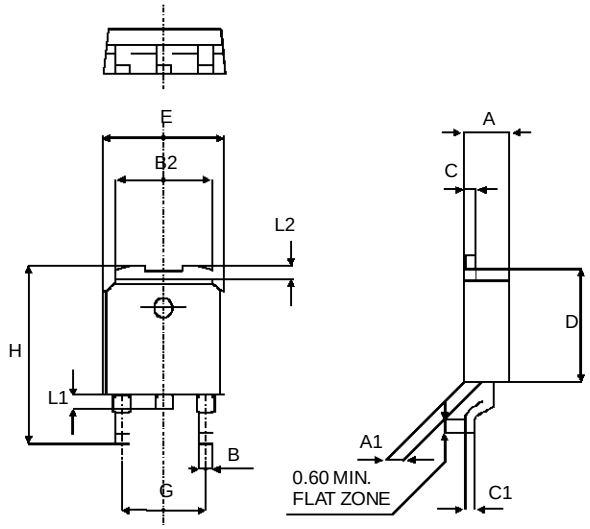
TURN-OFF SWITCHING

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}		Tj = 25°C	I_F=0.5A I_R=1A I_{rr}=0.25A I_F=1A dI_F/dt=A/µs V_R=30V		20	50	ns
t_{fr}	Maximum Reverse Recovery Current	Tj = 125°C	I_F=2A V_R=400V dI_F/dt = -16A/µs dI_F/dt = -500A/µs		11	3.0	A
S factor	Softness Factor	Tj = 125°C	V_R=400V I_F=2A dI_F/dt = -50A/µs		0.6		/

TURN-ON SWITCHING

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Forward Recovery Time	Tj = 25°C	I_F=2A dI_F/dt = 16A/µs Measured at 1.1 x V_{Fmax}			500	ns
V_{PF}	Peak Forward Voltage	Tj = 25°C	I_F=5A dI_F/dt = 40A/µs			10	V

PACKAGE MECHANICAL DATA
DPAK



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.094
A1	0.90		1.10	0.035		0.043
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.212
C	0.45		0.60	0.017		0.023
C1	0.48		0.60	0.018		0.023
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.251		0.259
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.397
L1	0.60		1.00	0.023		0.039
L2		0.80			0.031	