

HIGH EFFICIENCY ULTRAFAST DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
V_{RRM}	200 V
T_j (max)	150 °C
V_F (typ)	0.70 V
t_{rr} (typ)	25 ns

FEATURES AND BENEFITS

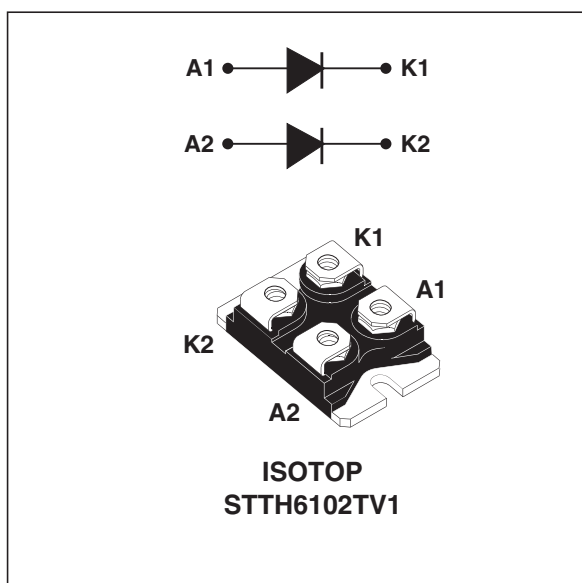
- Suited for welding and high power equipment
- Very low forward losses
- Low recovery times
- High surge current capability
- Insulated:
Insulating voltage = 2500 V_{RMS}
Capacitance < 45 pF
- Low leakage current

DESCRIPTION

Dual center tap rectifier suited for welding equipment and high power industrial application. Packaged in ISOTOP, this device is intended for use in the secondary rectification of power converters.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		200	V
$I_{F(RMS)}$	RMS forward current		80	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_c = 115^\circ\text{C}$	30	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms Sinusoidal per diode	400	A
T_{stg}	Storage temperature range		- 55 + 150	°C
T_j	Maximum operating junction temperature		150	°C



STTH6102TV

THERMAL PARAMETERS

Symbol	Parameter	Maximum	Unit
R _{th(j-c)}	Junction to case	Per diode	1.2
		Per device	0.65
R _{th(j-c)}	Coupling	0.1	°C/W

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j (\text{diode1}) = P(\text{diode1}) \times R_{th(j-c)} (\text{per diode}) + P(\text{diode2}) \times R_{th(c)}$$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}		50	μA
		T _j = 125°C		25	250	
V _F **	Forward voltage drop	T _j = 25°C	I _F = 30 A		1.05	V
		T _j = 25°C	I _F = 60 A		1.15	
		T _j = 150°C	I _F = 30 A	0.70	0.81	
		T _j = 150°C	I _F = 60 A		0.96	

Pulse test: * tp = 5ms, δ < 2%

** tp = 380μs, δ < 2%

To evaluate the maximum conduction losses use the following equation :

$$P = 0.66 \times I_{F(AV)} + 0.005 I_{F(RMS)}^2$$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit
t _{rr}	Reverse recovery time	T _j = 25°C I _F = 1 A V _R = 30V dI _F /dt = 200 A/μs		25	30	ns
I _{RM}	Reverse recovery current	T _j = 125°C I _F = 30 A V _R = 160V dI _F /dt = 200 A/μs		6.8	8.8	A
t _{fr}	Forward recovery time	T _j = 25°C I _F = 30 A dI _F /dt = 200 A/μs V _{FR} = 1.1 x V _{Fmax}			220	ns
V _{FP}	Forward recovery voltage	T _j = 25°C I _F = 30 A dI _F /dt = 200 A/μs		2.5		V

Fig. 1: Peak current versus duty cycle (per diode).

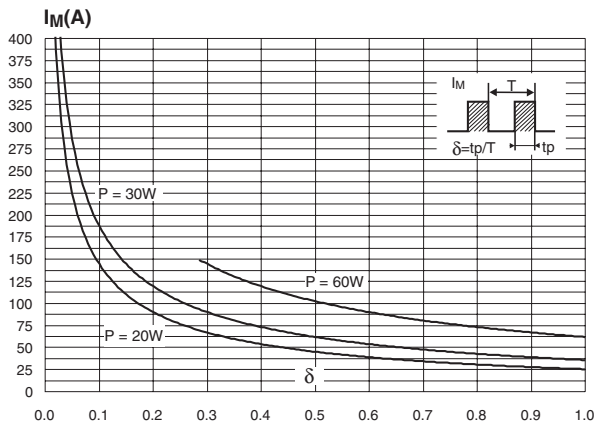


Fig. 2-1: Forward voltage drop versus forward current (typical values, per diode).

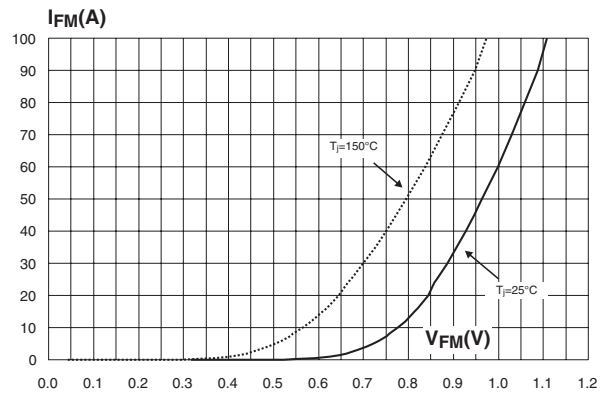


Fig. 2-2: Forward voltage drop versus forward current (maximum values, per diode).

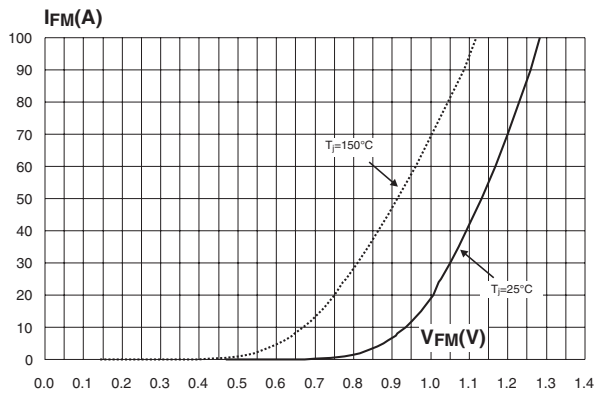


Fig. 3: Relative variation of thermal impedance junction to case versus pulse duration.

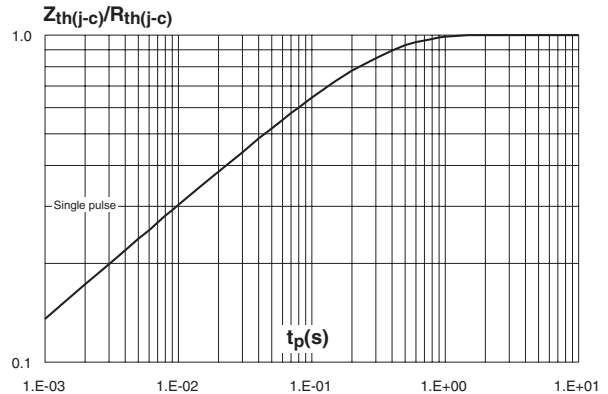


Fig. 4: Junction capacitance versus reverse voltage applied (typical values, per diode).

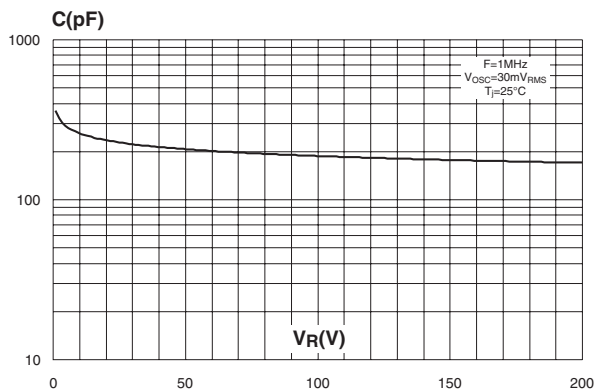


Fig. 5: Reverse recovery charges versus di_F/dt (typical values, per diode).

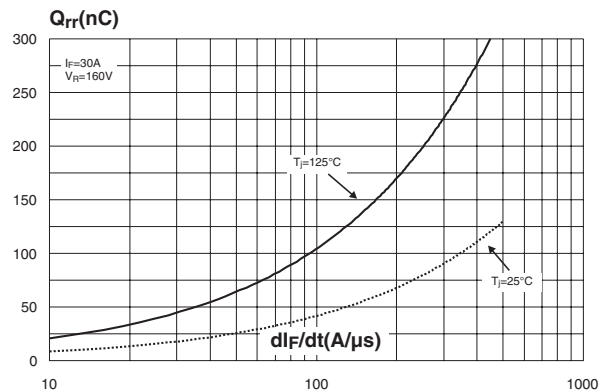


Fig. 6: Reverse recovery time versus di_F/dt (typical values, per diode).

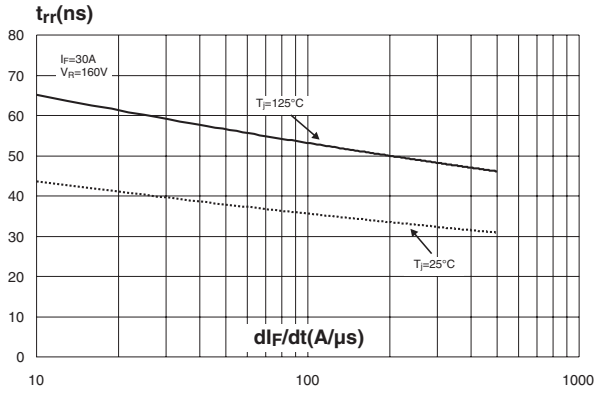


Fig. 7: Peak reverse recovery current versus di_F/dt (typical values, per diode).

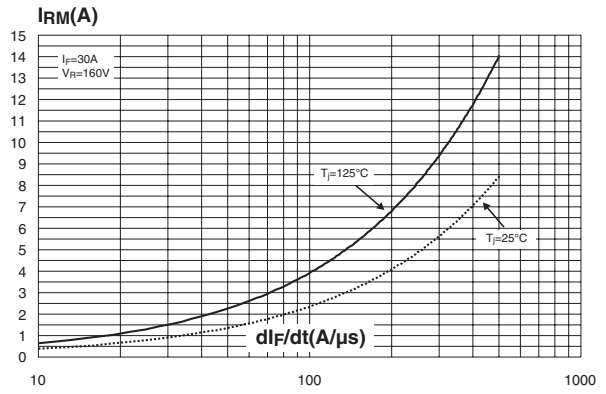
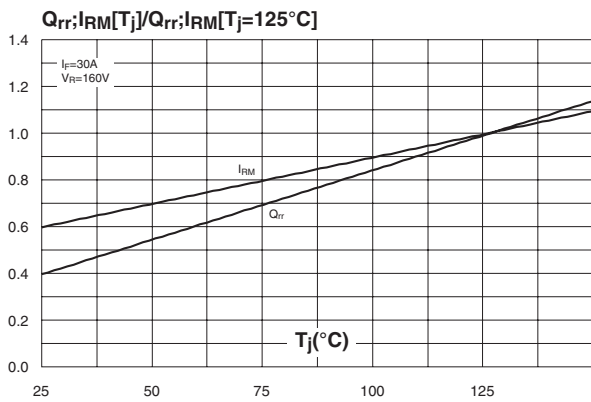
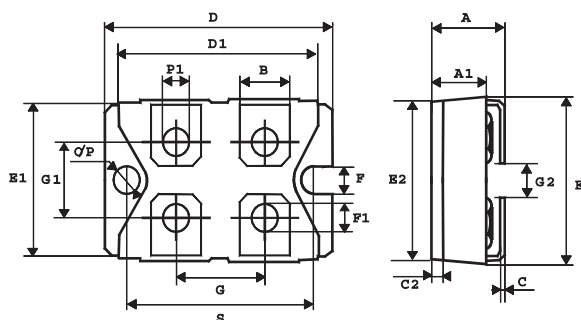


Fig. 8: Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
ISOTOP

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
A1	8.90	9.10	0.350	0.358
B	7.8	8.20	0.307	0.323
C	0.75	0.85	0.030	0.033
C2	1.95	2.05	0.077	0.081
D	37.80	38.20	1.488	1.504
D1	31.50	31.70	1.240	1.248
E	25.15	25.50	0.990	1.004
E1	23.85	24.15	0.939	0.951
E2	24.80 typ.		0.976 typ.	
G	14.90	15.10	0.587	0.594
G1	12.60	12.80	0.496	0.504
G2	3.50	4.30	0.138	0.169
F	4.10	4.30	0.161	0.169
F1	4.60	5.00	0.181	0.197
P	4.00	4.30	0.157	0.69



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH6102TV1	STTH6102TV1	ISOTOP	27 g (without screws)	10 (with screws)	Tube

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.

All other names are the property of their respective owners.

© 2004 STMicroelectronics - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany -
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain -
 Sweden - Switzerland - United Kingdom - United States

www.st.com

