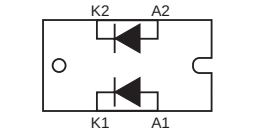
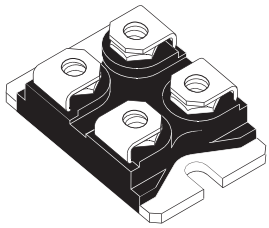
STPS160H100TV

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 80 A
V_{RRM}	100 V
Tj (max)	150 °C
V_F (max)	0.68 V





ISOTOPTM

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- AVALANCHE RATED
- LOW INDUCTION PACKAGE
- INSULATED PACKAGE:
  Insulating Voltage = 2500 $V_{(RMS)}$
  Capacitance = 45 pF

DESCRIPTION

High voltage dual Schottky rectifier designed for high frequency telecom and computer Switched Mode Power Supplies and other power converters.

Packaged in ISOTOP, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current			180	A
$I_{F(AV)}$	Average forward current	Tc = 110°C δ = 0.5	Per diode Per device	80 160	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		1000	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs square F = 1kHz		2	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs square		10	A
T_{stg}	Storage temperature range			- 55 to + 150	°C
Tj	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	Junction to case	Per leg	0.9	°C/W
		Total	0.5	°C/W
$R_{th\ (c)}$		Coupling	0.14	°C/W

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage Current	Tj = 25°C	$V_R = V_{RRM}$			40	µA
		Tj = 125°C			13	50	mA
V_F**	Forward Voltage drop	Tj = 25°C	I_F = 60 A			0.75	V
		Tj = 125°C	I_F = 60 A		0.59	0.63	
		Tj = 25°C	I_F = 80 A			0.80	
		Tj = 125°C	I_F = 80 A		0.63	0.68	
		Tj = 25°C	I_F = 120 A			0.87	
		Tj = 125°C	I_F = 120 A		0.69	0.74	
		Tj = 25°C	I_F = 160 A			0.92	
		Tj = 125°C	I_F = 160 A		0.75	0.80	

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

To evaluate the conduction losses use the following equation :
$P = 0.56 \times I_{F(AV)} + 0.0015 \times I_{F}^{2}{}_{(RMS)}$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

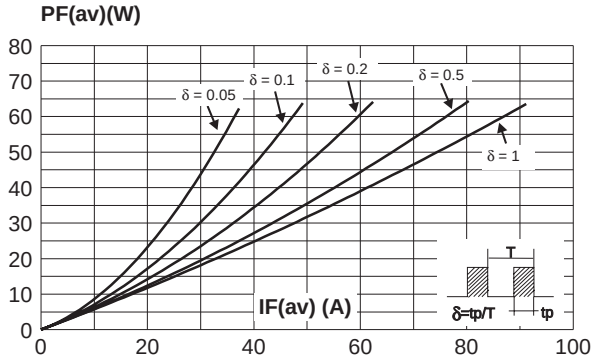


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

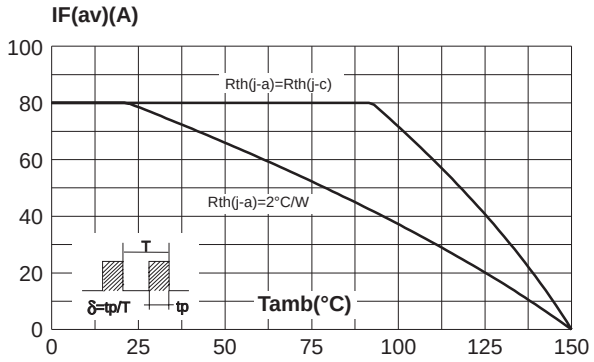


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

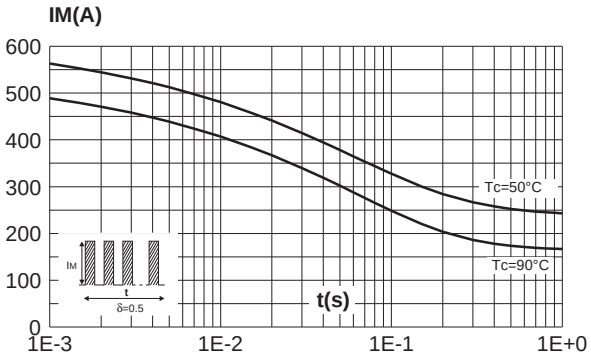


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

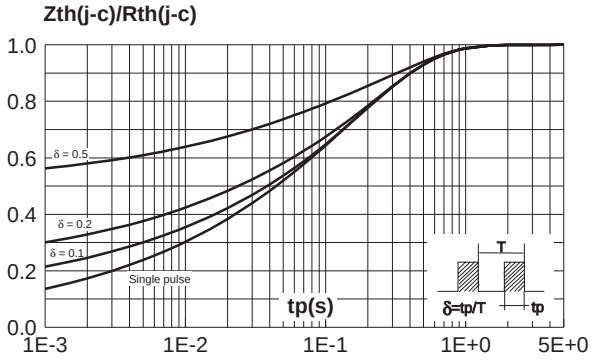


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values, per diode).

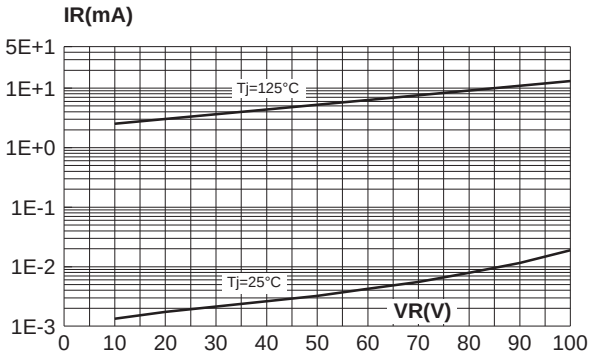


Fig. 6: Junction capacitance versus reverse voltage applied (typical values, per diode) .

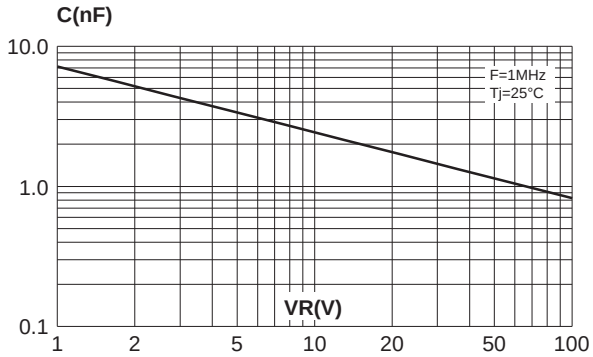
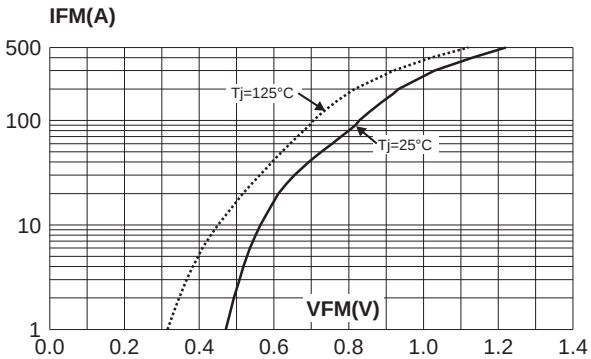
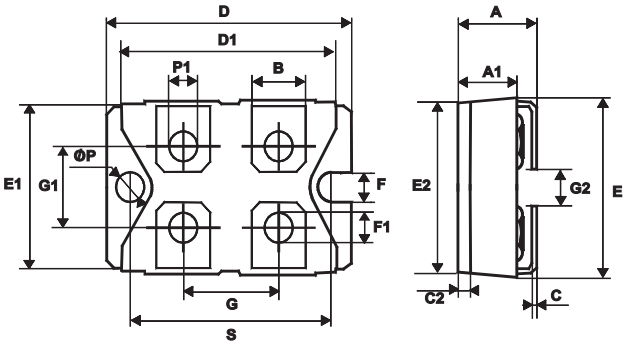


Fig. 7: Forward voltage drop versus forward current (maximum values, per diode).



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
P1	4.00	4.40	0.157	0.173
S	30.10	30.30	1.185	1.193

- Cooling method: C
- Recommended torque value: 1.3 N.m.
- Maximum torque value: 1.5 N.m.

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS160H100TV	STPS160H100TV	ISOTOP	27g without screws	10	Tube

- Epoxy meets UL94,V0