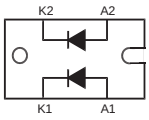
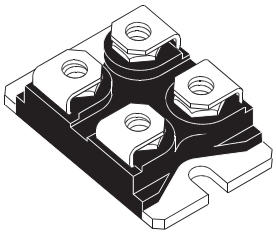
STPS24045TV

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 120 A
V_{RRM}	45 V
V_F (max)	0.67 V





ISOTOPTM

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FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW THERMAL RESISTANCE
- INSULATED PACKAGE:
  Insulating voltage = 2500 $V_{(RMS)}$
  Capacitance = 45pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual power Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in ISOTOP, this device is especially intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			45	V
$I_{F(RMS)}$	RMS forward current			170	A
$I_{F(AV)}$	Average forward current	Tc = 80°C δ = 0.5	Per diode Per device	120 240	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		1500	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs F = 1kHz square		2	A
I_{RSM}	Non repetitive peak reverse current	tp = 100 µs square		10	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		43000	W
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 diode	0.65	°C/W
		Total	0.28	
$R_{th\ (c)}$		Coupling	0.10	

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode) 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	$V_R = V_{RRM}$			2	mA
		Tj = 125°C				300	
V_F *	Forward voltage drop	Tj = 25°C	I_F = 240 A			0.91	V
		Tj = 125°C	I_F = 240 A		0.72	0.87	
		Tj = 125°C	I_F = 120 A		0.52	0.67	

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

To evaluate the conduction losses use the following equation :
$P = 0.47 \times I_{F(AV)} + 0.00167 \times I_F{}^2{}_{(RMS)}$

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

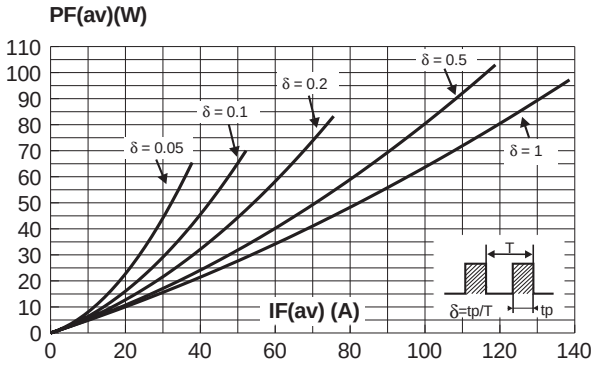


Fig. 2: Average forward current versus ambient temperature (δ= 0.5, per diode).

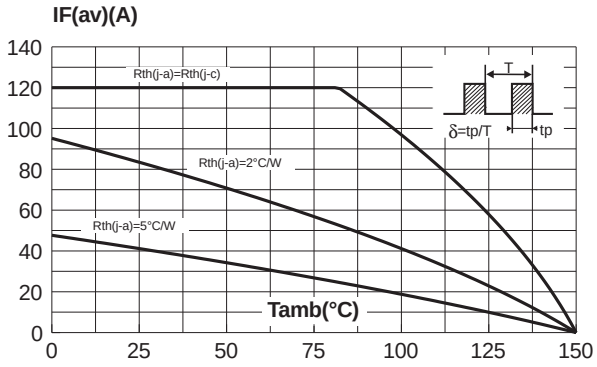


Fig. 3: Normalized avalanche power derating versus pulse duration.

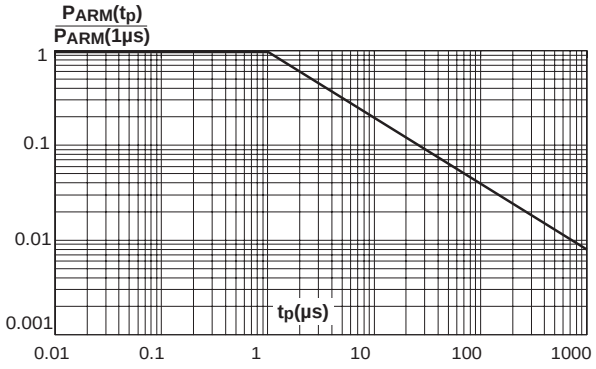


Fig. 4: Normalized avalanche power derating versus junction temperature.

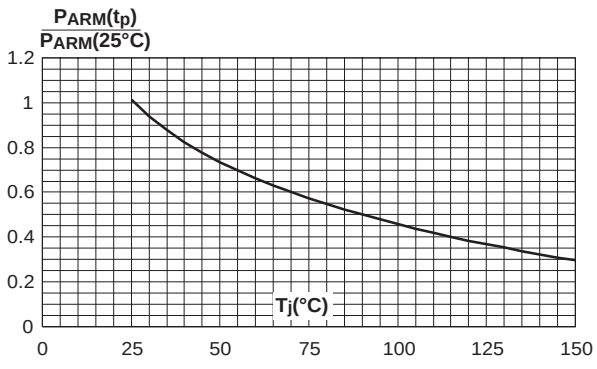


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

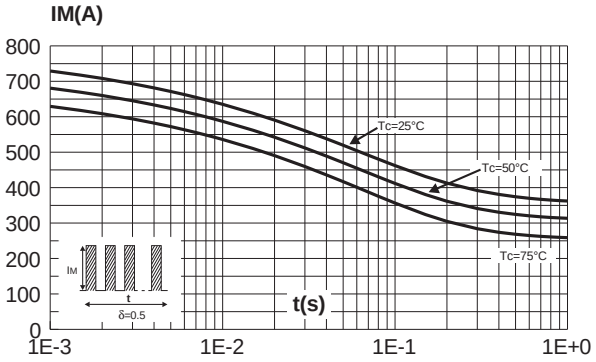


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

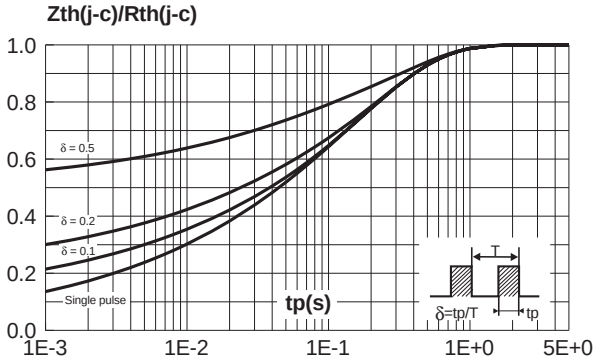


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

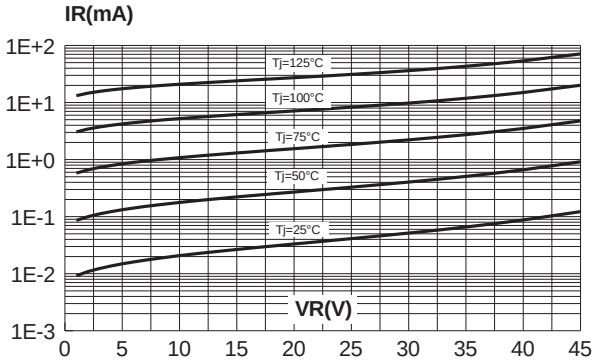


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

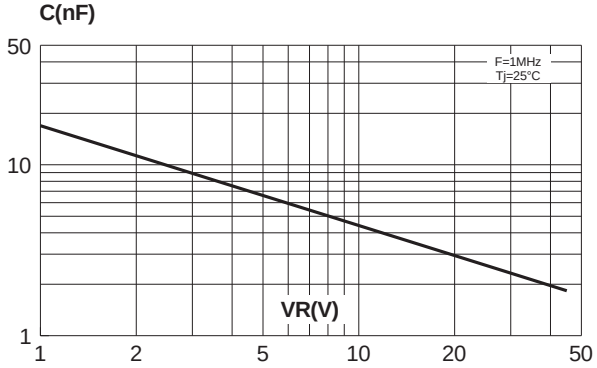
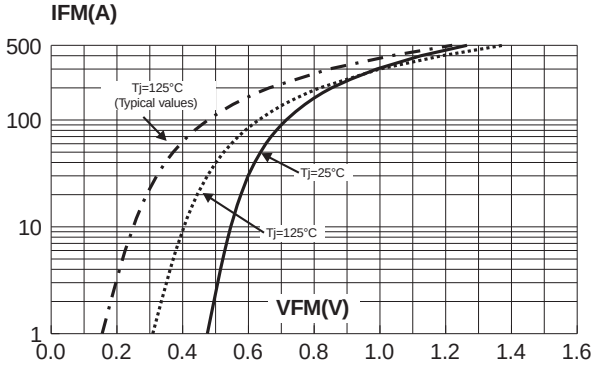
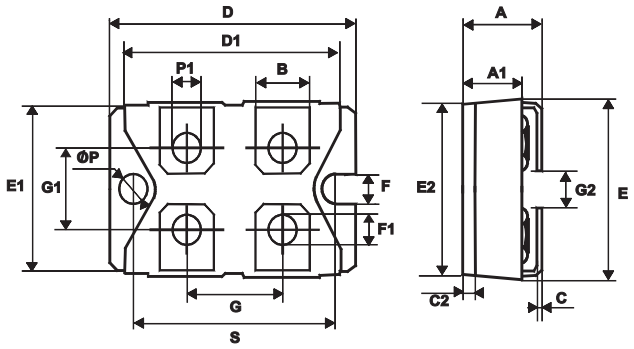


Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).



PACKAGE MECHANICAL DATA

ISOTOP



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	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			0.976	
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

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS24045TV	STPS24045TV	ISOTOP	28 g. (without screws)	10	Tube

- Cooling method: by conduction (C)
- Recommended torque value: 1.3 N.m
- Maximum torque value: 1.5 N.m