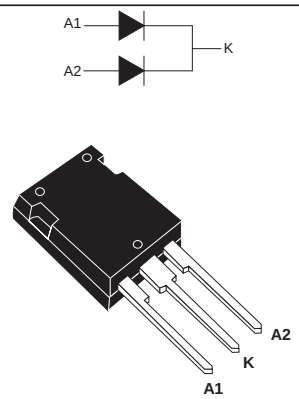
STPS80H100CY

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

PRELIMINARY DATASHEET

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 40 A
V_{RRM}	100 V
Tj (max)	175 °C
V_F (max)	0.70 V



Max247

FEATURES AND BENEFITS

- HIGH REVERSE VOLTAGE
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- HIGH TEMPERATURE
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

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

Packaged in Max247, this device is intended for use in high frequency computer and telecom converters.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current			50	A
$I_{F(AV)}$	Average forward current	Tc = 155°C δ = 0.5	Per diode Per device	40 80	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		400	A
I_{RRM}	Repetitive peak reverse current	tp = 2 µs square F = 1kHz		2	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		39200	W
T_{stg}	Storage temperature range			- 65 to + 175	°C
T_j	Maximum operating junction temperature *			175	°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	0.7	°C/W
		Total	0.5	
$R_{th\ (c)}$		Coupling	0.3	

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	$V_R = V_{RRM}$			20	µA
		Tj = 125°C			7	20	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 40 A			0.8	V
		Tj = 125°C	I_F = 40 A		0.65	0.7	
		Tj = 25°C	I_F = 80 A			0.94	
		Tj = 125°C	I_F = 80 A		0.79	0.84	

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

To evaluate the maximum conduction losses use the following equation :
$P = 0.56 \times I_{F(AV)} + 0.0035 \times I_F{}^2{}_{(RMS)}$

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

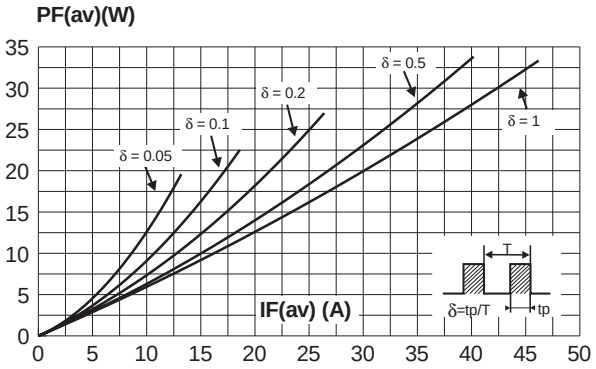


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

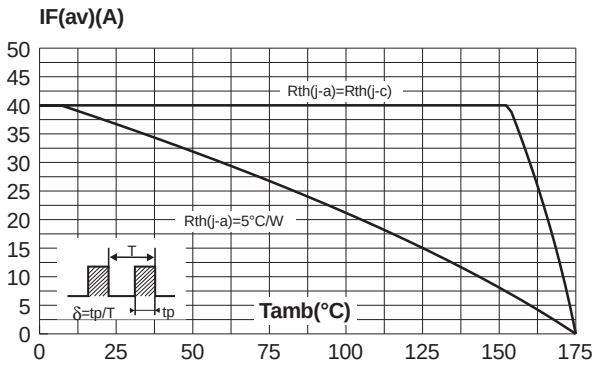


Fig. 3: Normalized avalanche power derating versus pulse duration.

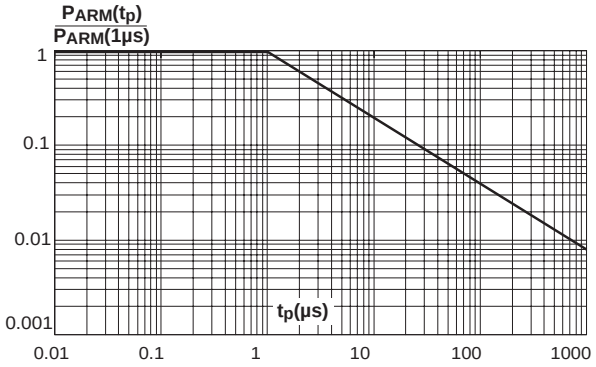


Fig. 4: Normalized avalanche power derating versus junction temperature.

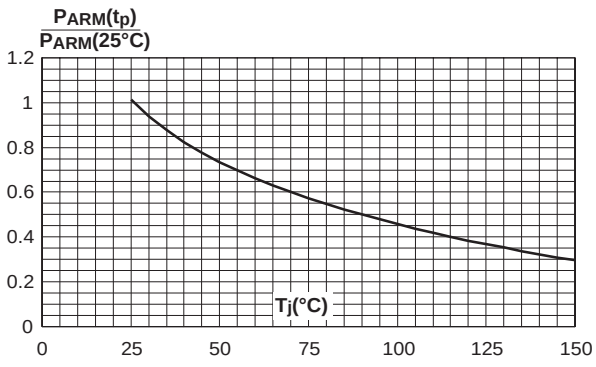


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

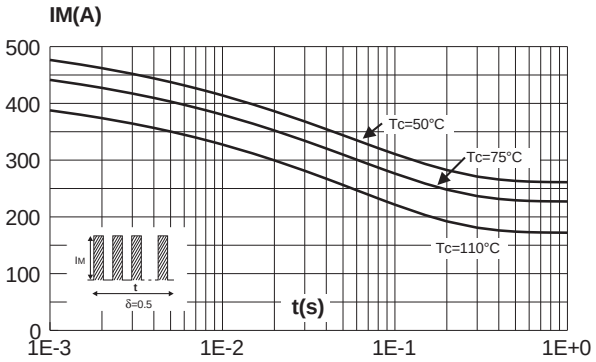


Fig. 6: Relative variation of thermal impedance junction to case versus pulse (per diode).

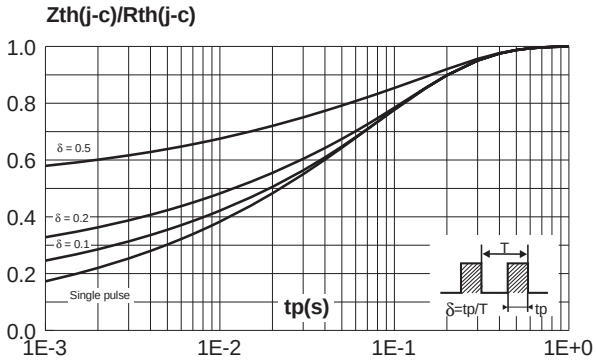


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

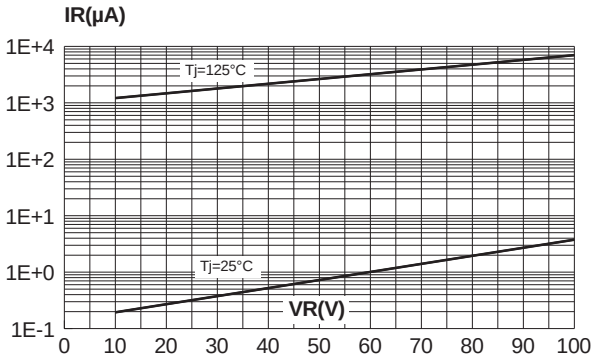


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

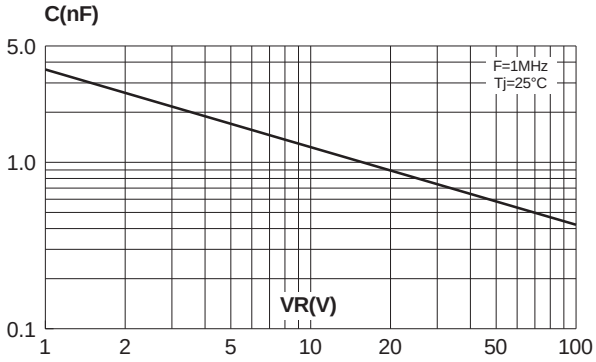
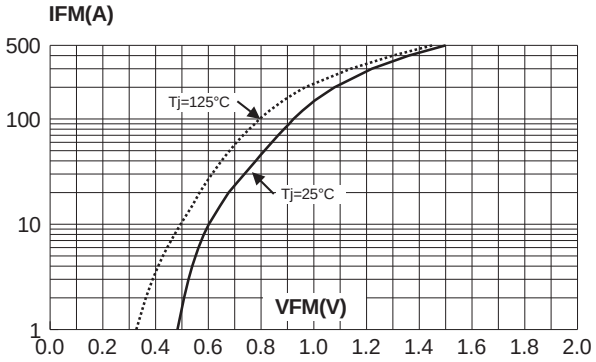
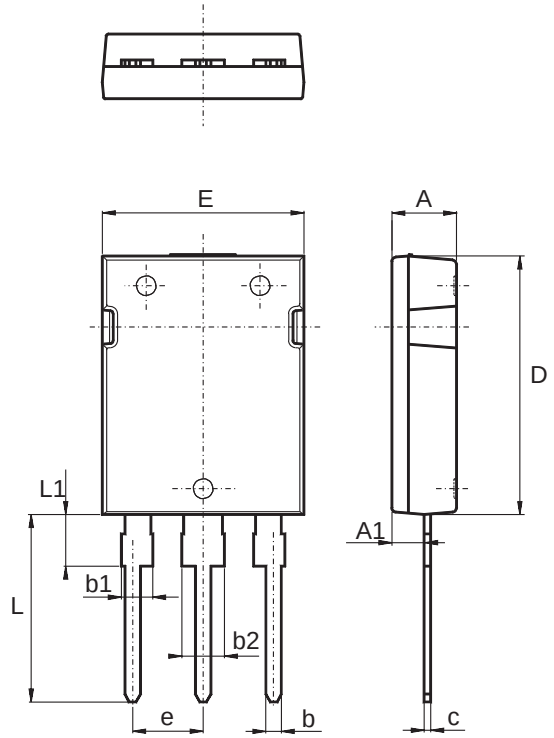


Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).



PACKAGE MECHANICAL DATA

Max247



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
A1	2.20	2.60	0.087	0.102
b	1.00	1.40	0.038	0.055
b1	2.00	2.40	0.079	0.094
b2	3.00	3.40	0.118	0.133
c	0.40	0.80	0.016	0.031
D	19.70	10.30	0.776	0.799
e	5.35	5.55	0.211	0.219
E	15.30	15.90	0.602	0.626
L	14.20	15.20	0.559	0.598
L1	3.70	4.30	0.146	0.169

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS80H100CY	STPS80H100CY	Max247	4.4g	30	Tube

- EPOXY MEETS UL94,V0

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