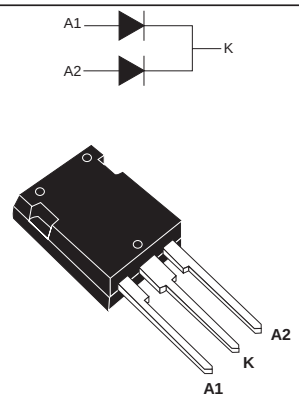
STPS80L15CY

LOW DROP OR-ing POWER SCHOTTKY RECTIFIER

PRELIMINARY DATASHEET

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 40 A
V_{RRM}	15 V
Tj (max)	125 °C
V_F (max)	0.33 V



Max247

FEATURES AND BENEFITS

- Max247 PACKAGE, DUAL DIODE CONSTRUCTION, 2 x 40A
- 15V BLOCKING VOLTAGE SUITABLE FOR 5V AND 12V OR-ing
- EXTREMELY LOW VOLTAGE VOLTAGE DROP: 0.33V @ 100°C
- OPERATING JUNCTION TEMPERATURE: 125°C
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

The STPS80L15CY uses proprietary barrier technology to optimize forward voltage drop for OR-ing functions in n-1 fault tolerant Switch Mode Power Supplies.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			15	V
$I_{F(RMS)}$	RMS forward current			50	A
$I_{F(AV)}$	Average forward current	Tc = 110°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 F = 1kHz square		2	A
P_{ARM}	Repetitive peak avalanche power	tp = 1µs Tj = 25°C		36045	W
T_{stg}	Storage temperature range			- 65 to + 150	°C
Tj	Maximum operating junction temperature			125	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/µs

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 = 5V			4	mA
		Tj = 100°C			280	400	
		Tj = 25°C	V_R = 12V			11	
		Tj = 100°C			0.44	1.1	A
		Tj = 25°C	V_R = 15V			16	mA
		Tj = 100°C			0.53	1.3	A
V_F *	Forward voltage drop	Tj = 25°C	I_F = 40 A			0.42	V
		Tj = 100°C	I_F = 40 A		0.30	0.33	
		Tj = 25°C	I_F = 80 A			0.55	
		Tj = 100°C	I_F = 80 A		0.40	0.46	

Pulse test :* tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.20 \times I_{F(AV)} + 0.0032 \times I_F{}^2{}_{(RMS)}$

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

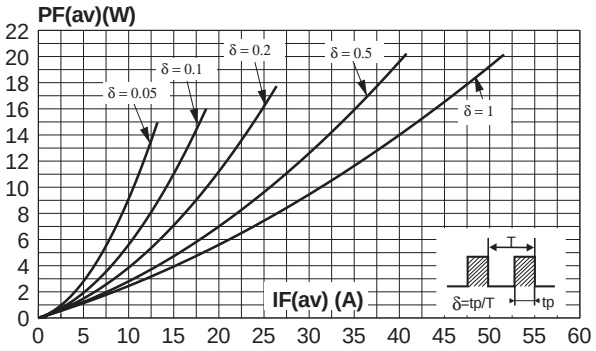


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

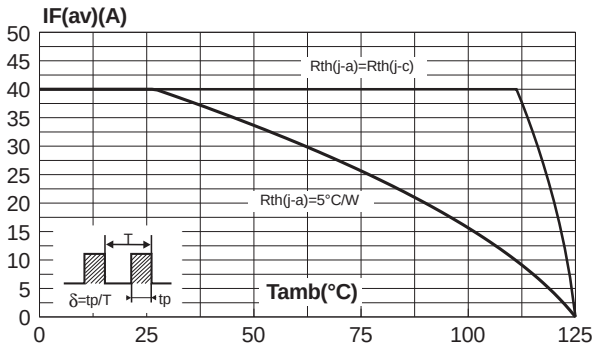


Fig. 3: Normalized avalanche power derating versus pulse duration.

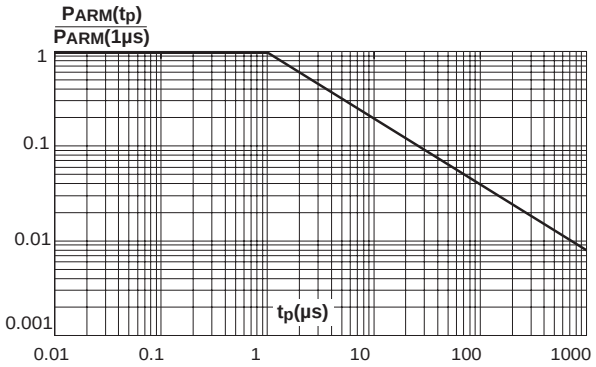


Fig. 4: Normalized avalanche power derating versus junction temperature.

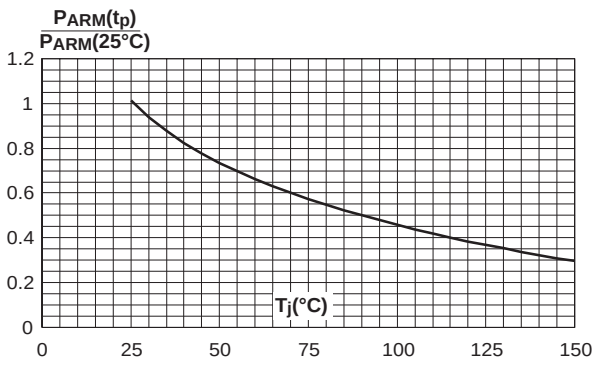


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

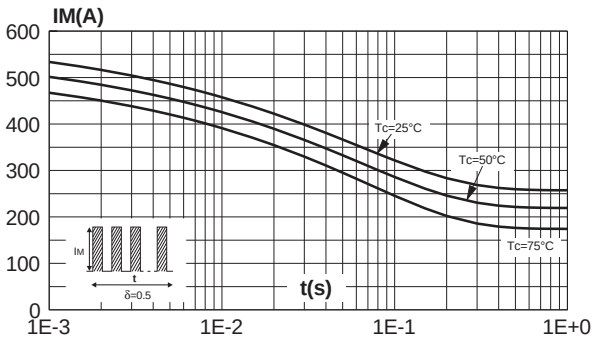


Fig. 6: Relative variation of thermal impedance junction to case versus pulse (per diode).

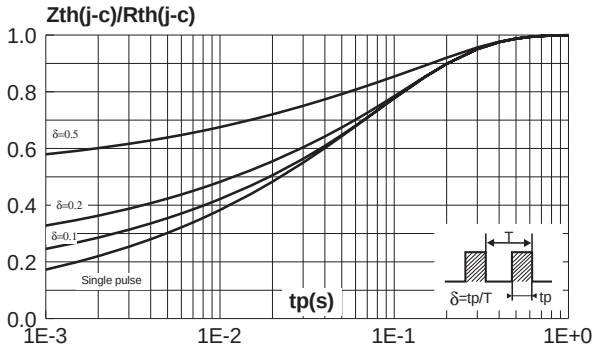


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

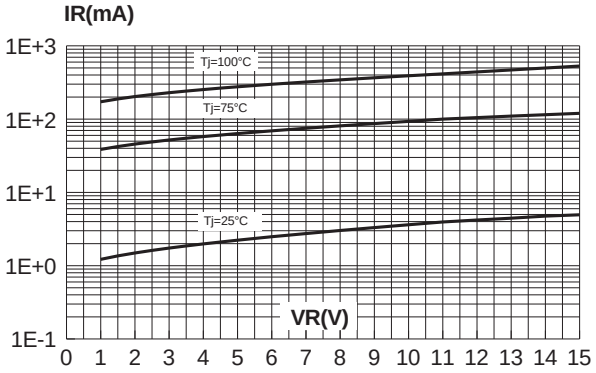


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

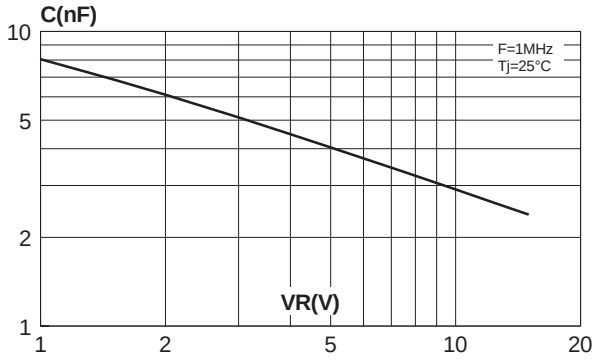
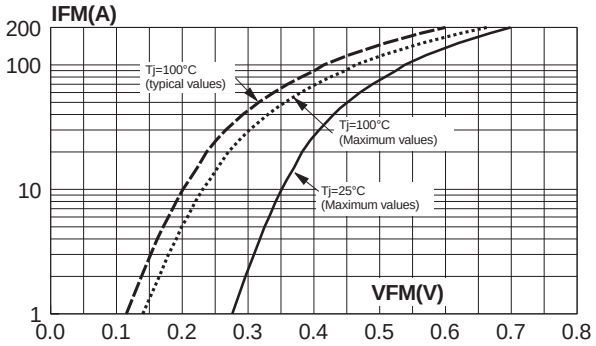
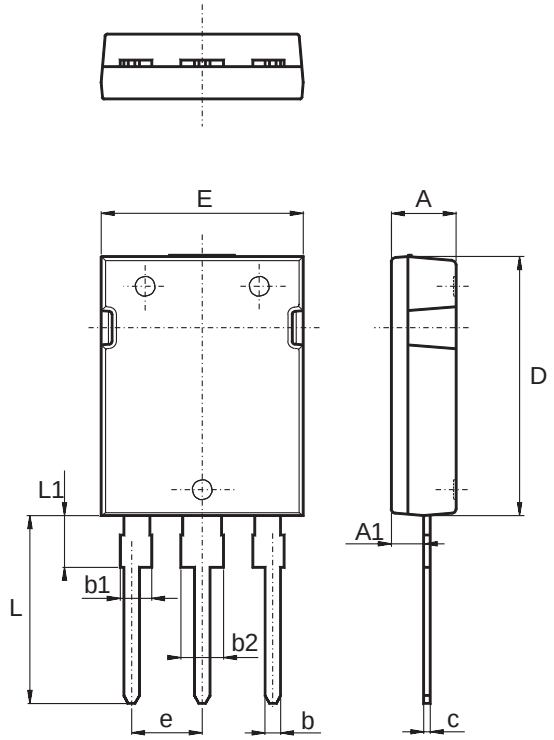


Fig. 9: Forward voltage drop versus forward current (per diode).



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
STPS80L15CY	STPS80L15CY	Max247	4.4g	30	Tube

- Cooling method: by conduction (C)
- Epoxy meets UL94,V0