STPS60150C

POWER SCHOTTKY RECTIFIER

Table 1: Main Product Characteristics

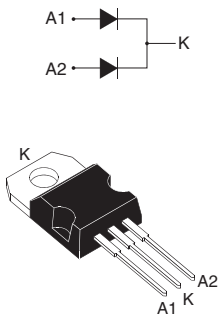
$I_{F(AV)}$	2 x 30 A
V_{RRM}	150 V
T_j	175°C
V_F(max)	0.76 V

FEATURES AND BENEFITS

- High junction temperature capabiliy
- Low leakage current
- Low thermal resistance
- High frequency operation
- Avalanche specification

DESCRIPTION

Dual center tab Schottky rectifier suited for High Frequency server and telecom base station SMPS. Packaged in TO-220AB, this device combines high current rating and low volume to enhance both reliability and power density of the application.



TO-220AB
STPS60150CT

Table 2: Order Codes

Part Number	Marking
STPS60150CT	STPS60150CT

Table 3: Absolute Ratings (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			150	V
$I_{F(RMS)}$	RMS forward voltage			60	A
$I_{F(AV)}$	Average forward current	Tc = 150°C δ = 0.5	Per diode Per device	30 60	A
I_{FSM}	Surge non repetitive forward current		tp = 10ms sinusoidal	270	A
P_{ARM}	Repetitive peak avalanche power		tp = 1µs Tj = 25°C	17300	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

Table 4: Thermal Parameters

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	1.0 0.7	°C/W
$R_{th(c)}$	Coupling		0.4	

When the diodes 1 and 2 are used simultaneously:

Δ Tj(diode 1) = P(diode 1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

Table 5: Static Electrical Characteristics (per diode)

Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit
I_R *	Reverse leakage current	T_j = 25°C	$V_R = V_{RRM}$		3	15	µA
		T_j = 125°C			3	10	mA
V_F **	Forward voltage drop	T_j = 25°C	I_F = 30A			0.94	V
		T_j = 125°C	I_F = 30A		0.72	0.76	
		T_j = 25°C	I_F = 60A		0.97	1.05	
		T_j = 125°C	I_F = 60A		0.86	0.92	

Pulse test: * tp = 5 ms, δ < 2%

** tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation: P = 0.6 x $I_{F(AV)}$ + 0.0053 $I_F{}^2{}_{(RMS)}$

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

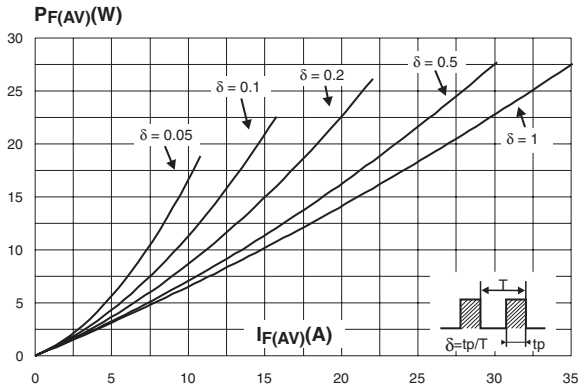


Figure 2: Average forward current versus ambient temperature (δ = 0.5, per diode)

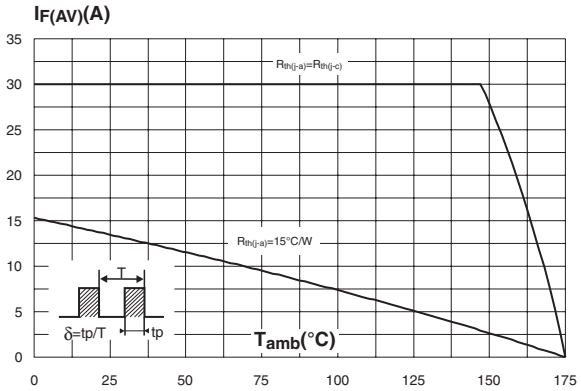


Figure 3: Normalized avalanche power derating versus pulse duration

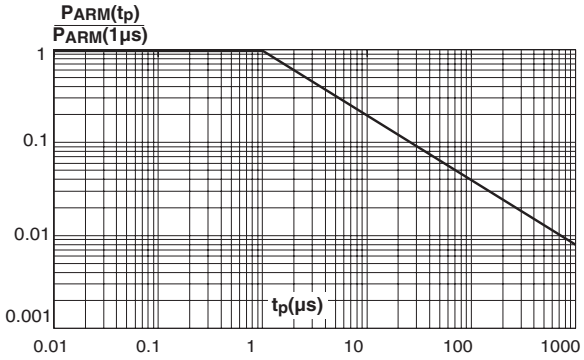


Figure 4: Normalized avalanche power derating versus junction temperature

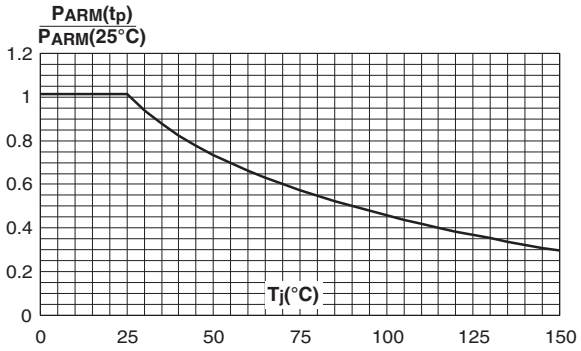


Figure 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

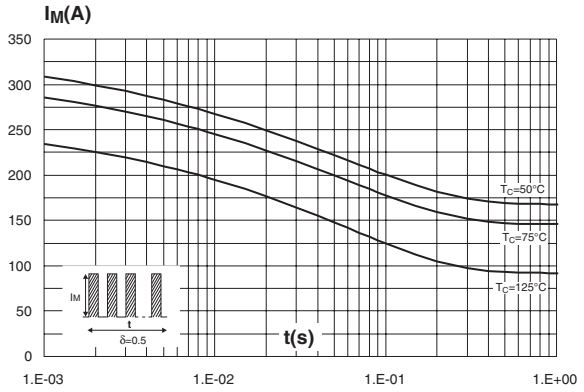


Figure 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode)

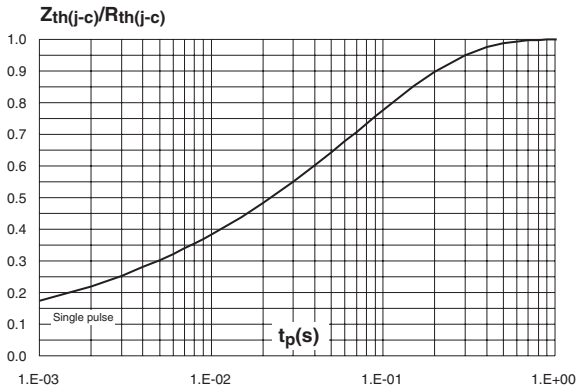


Figure 7: Reverse leakage current versus reverse voltage applied (typical values, per diode)

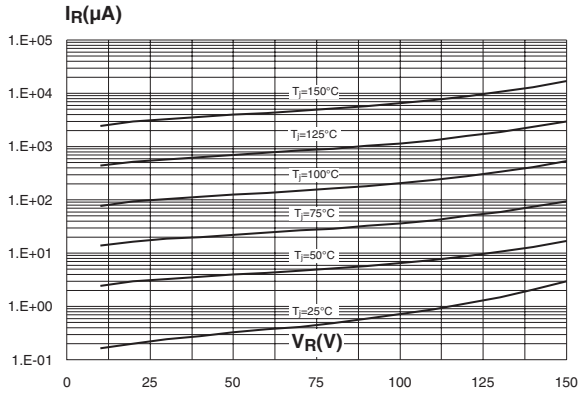


Figure 8: Junction capacitance versus reverse voltage applied (typical values, per diode)

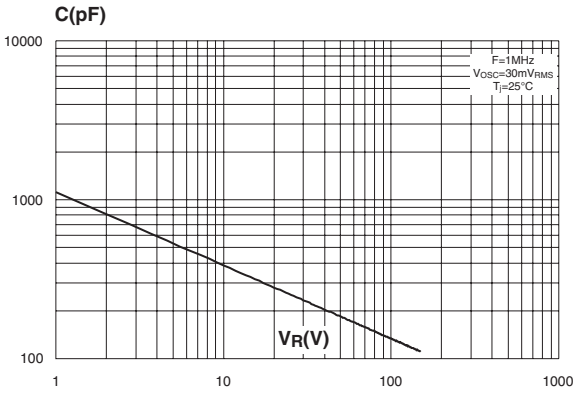


Figure 9: Forward voltage drop versus forward current (per diode)

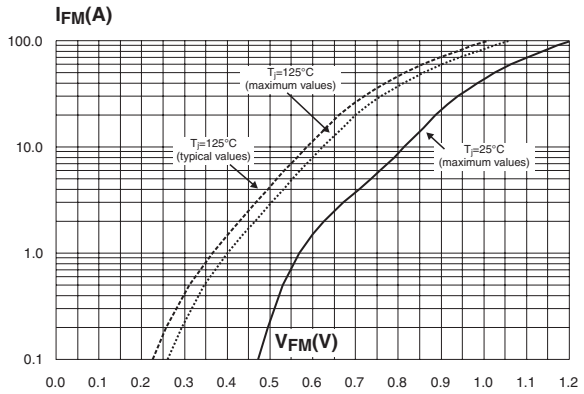
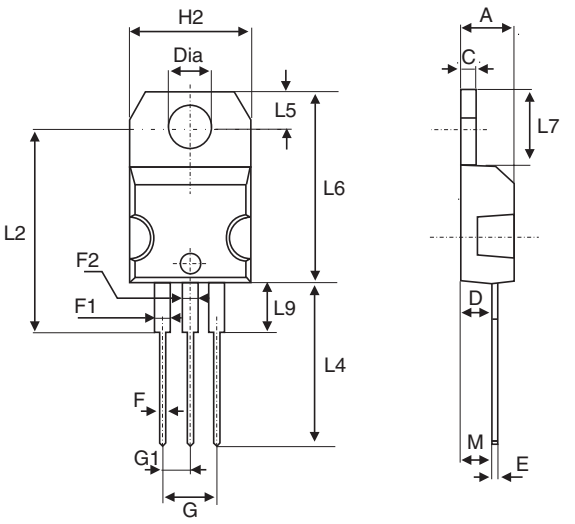


Figure 10: TO-220AB Package Mechanical Data



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam.	3.75	3.85	0.147	0.151

Table 6: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS60150CT	STPS60150CT	TO-220AB	2.20 g	50	Tube

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque value: 0.8 m.N.
- Maximum torque value: 1.0 m.N.

Table 7: Revision History

Date	Revision	Description of Changes
19-Oct-2004	1	First issue.

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