STPS16150CT/CG/CR

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

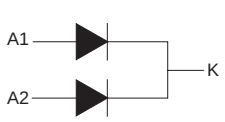
$I_{F(AV)}$	2 x 8 A
V_{RRM}	150 V
Tj	175°C
V_F (max)	0.75 V

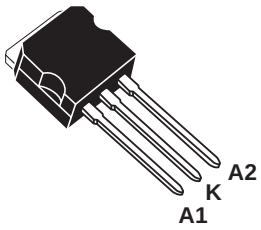
FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- AVALANCHE CAPABILITY SPECIFIED

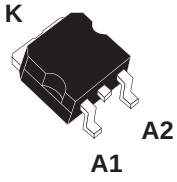
DESCRIPTION

Dual center tap schottky rectifier designed for high frequency Switched Mode Power Supplies.

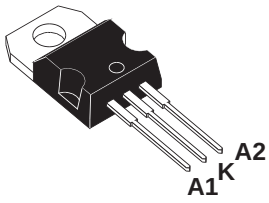




I²PAK
STPS16150CR



D²PAK
STPS16150CG



TO-220AB
STPS16150CT

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter				Value	Unit
V_{RRM}	Repetitive peak reverse voltage				150	V
$I_{F(RMS)}$	RMS forward current				20	A
$I_{F(AV)}$	Average forward current δ = 0.5	TO-220AB D²PAK / I²PAK	Tc = 150°C	per diode per device	8 16	A
I_{FSM}	Surge non repetitive forward current		tp = 10 ms sinusoidal		150	A
P_{ARM}	Repetitive peak avalanche power		tp = 1µs Tj = 25°C		4700	W
T_{stg}	Storage temperature range				- 65 to + 175	°C
Tj	Maximum operating junction temperature				175	°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	TO-220AB / D^2PAK / I^2PAK	Per diode	3	°C/W
			Total	1.8	
$R_{th\ (c)}$		TO-220AB / D^2PAK / I^2PAK	Coupling	0.6	

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	$V_R = V_{RRM}$			3.0	µA
		Tj = 125°C				4.0	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 8 A			0.92	V
		Tj = 125°C	I_F = 8 A		0.70	0.75	
		Tj = 25°C	I_F = 16 A			1	
		Tj = 125°C	I_F = 16 A		0.8	0.86	

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

To evaluate the conduction losses use the following equation:
P = 0.64 x $I_{F(AV)}$ + 0.014 $I_F^2{}_{(RMS)}$

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

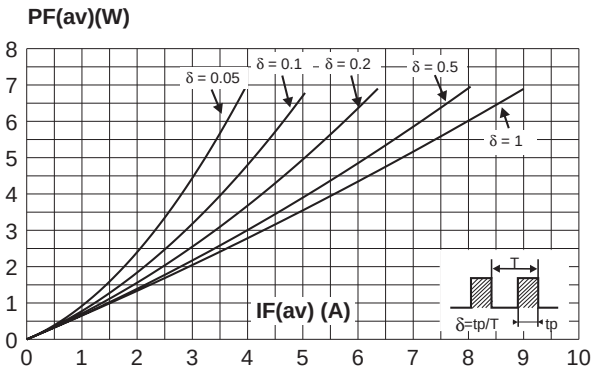


Fig. 2: Average forward current versus ambient temperature (δ = 0.5, per diode).

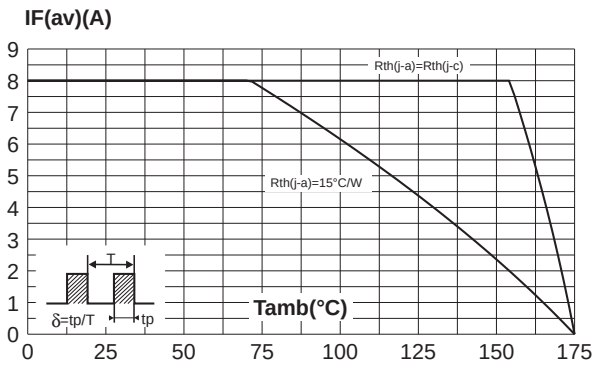


Fig. 3: Normalized avalanche power derating versus pulse duration.

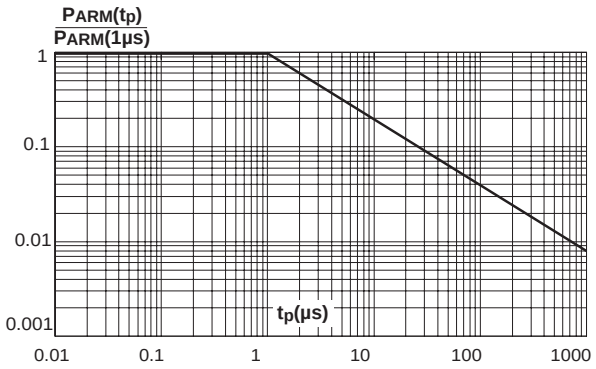


Fig. 4: Normalized avalanche power derating versus junction temperature.

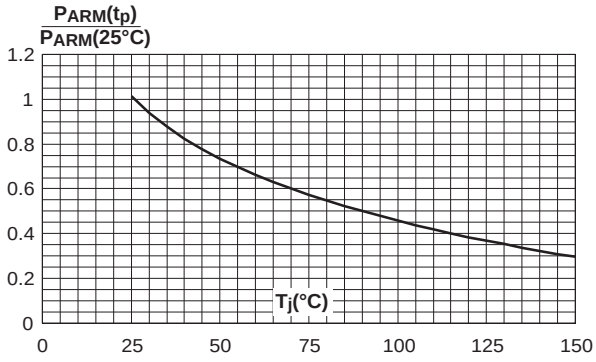


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

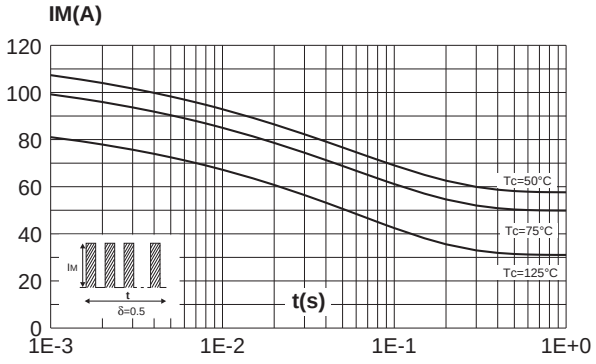


Fig. 46 Relative variation of thermal impedance junction to case versus pulse duration (per diode).

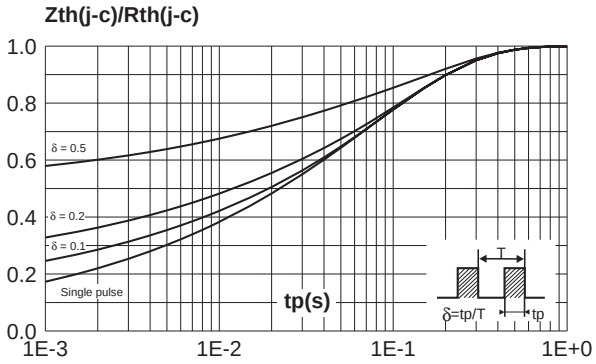


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

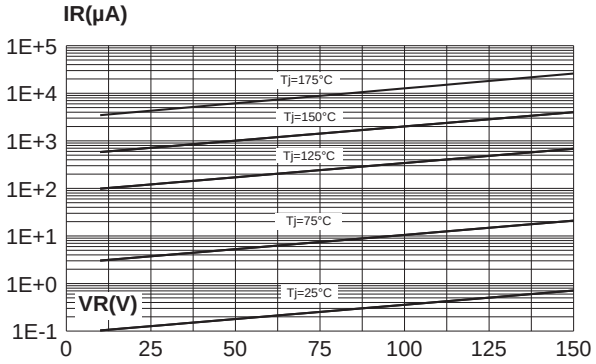


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

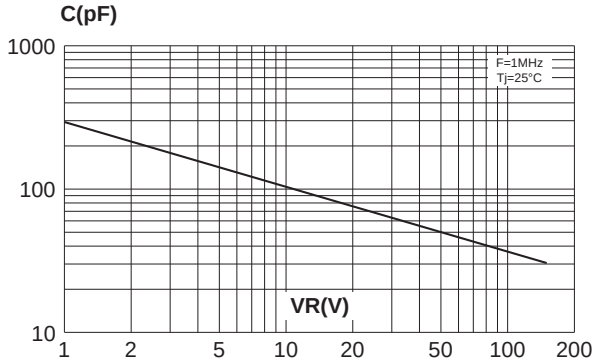


Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).

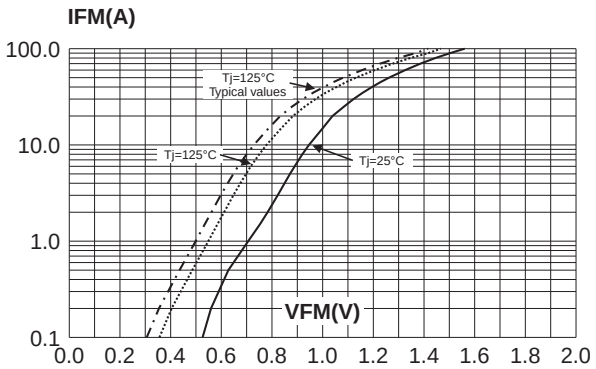
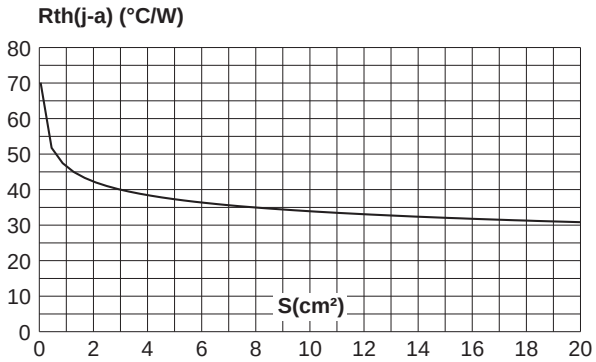
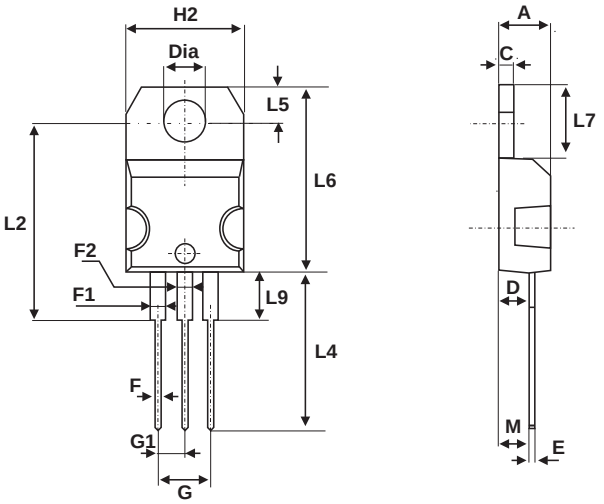


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, copper thckness: 35µm) (STPS16150CG only).



PACKAGE MECHANICAL DATA

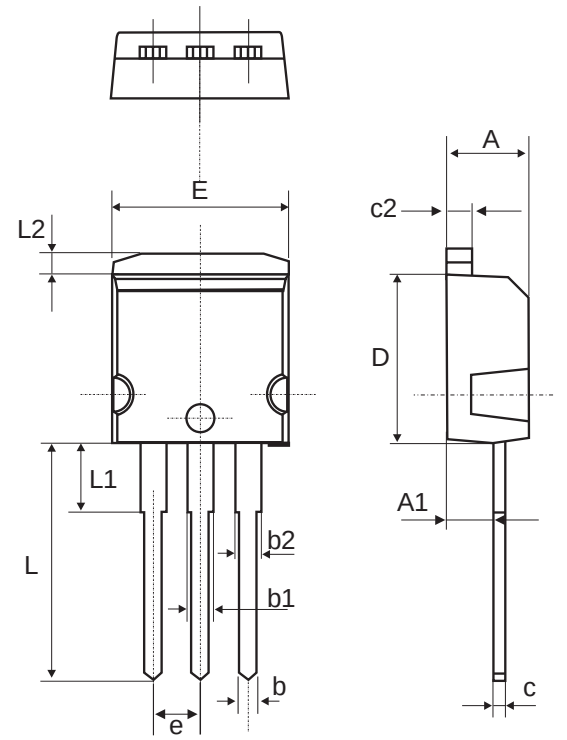
TO-220AB



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

PACKAGE MECHANICAL DATA

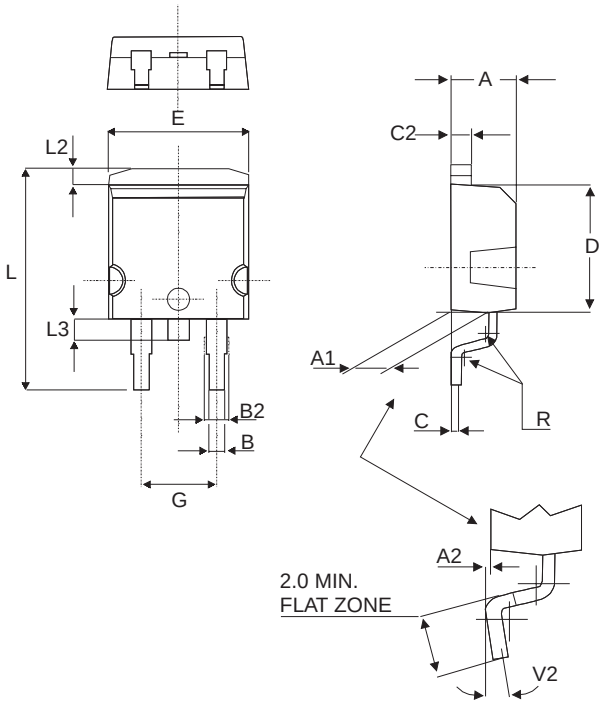
I^2PAK



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
b	0.70	0.93	0.028	0.037
b1	1.14	1.17	0.044	0.046
b2	1.14	1.17	0.044	0.046
c	0.45	0.60	0.018	0.024
c2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
e	2.40	2.70	0.094	0.106
E	10.0	10.4	0.394	0.409
L	13.1	13.6	0.516	0.535
L1	3.48	3.78	0.137	0.149
L2	1.27	1.40	0.050	0.055

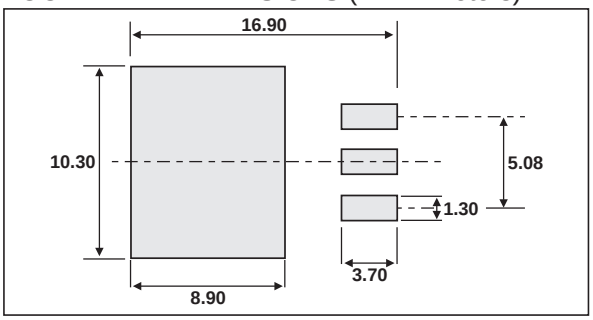
PACKAGE MECHANICAL DATA

D^2PAK



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.049	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

FOOT PRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS16150CT	STPS16150CT	TO-220AB	2.2 g	50	Tube
STPS16150CG	STPS16150CG	D^2PAK	1.48 g	50	Tube
STPS16150CG-TR	STPS16150CG	D^2PAK	1.48 g	1000	Tape & reel
STPS16150CR	STPS16150CR	I^2PAK	1.49 g	50	Tube

- Epoxy meets UL94, V0