



STPS40150CG/CT/CW

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAJOR PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 20 A
V_{RRM}	150 V
$T_j(\text{max})$	175°C
$V_F(\text{max})$	0.75 V

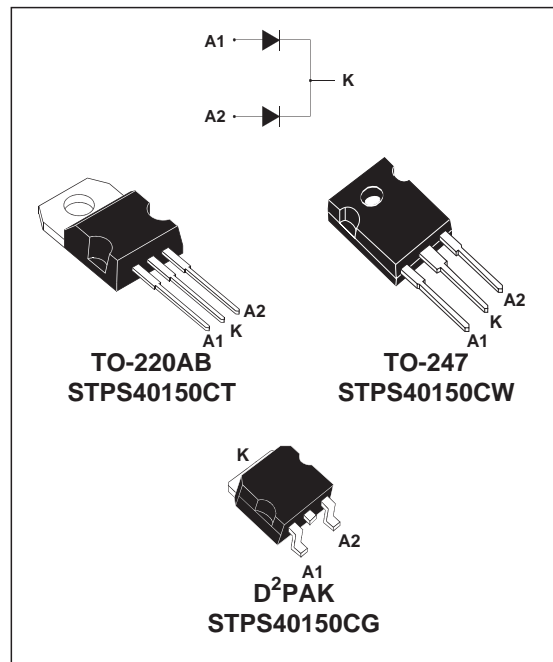
FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- HIGH FREQUENCY OPERATION

DESCRIPTION

Dual center tap Schottky rectifiers suited for high frequency switch mode power supply.

Packaged in TO-247, TO-220AB and D²PAK, this devices is intended for use to enhance the reliability of the application.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	150	V
$I_{F(RMS)}$	RMS forward current	60	A
$I_{F(AV)}$	Average forward current	$T_c = 150^\circ\text{C}$ $\delta = 0.5$ Per diode: 20 Per device: 40	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	250 A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	14100 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

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
$R_{th(j-c)}$	Junction to case	TO-220AB / D ² PAK	Per diode Total	1.2 0.85	°C/W
		TO-247	Per diode Total	1.2 0.85	
$R_{th(c)}$		Coupling	0.5	°C/W	

When the diodes 1 and 2 are used simultaneously :
 $\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		2	8	μA
		$T_j = 125^\circ\text{C}$			2	11	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$			0.92	V
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$		0.69	0.75	
		$T_j = 25^\circ\text{C}$	$I_F = 40\text{ A}$			1.00	
		$T_j = 125^\circ\text{C}$	$I_F = 40\text{ A}$		0.79	0.86	

Pulse test : * $t_p = 380\ \mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation :

$$P = 0.64 \times I_F(\text{AV}) + 0.0055 I_F^2(\text{RMS})$$

Fig. 1: Conduction losses versus average current (per diode).

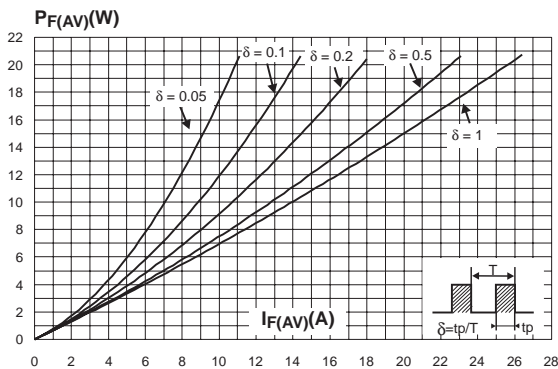


Fig. 2: Normalized avalanche power derating versus pulse duration.

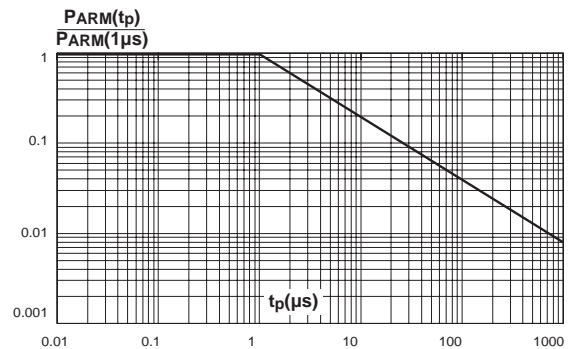


Fig. 3: Normalized avalanche power derating versus junction temperature.

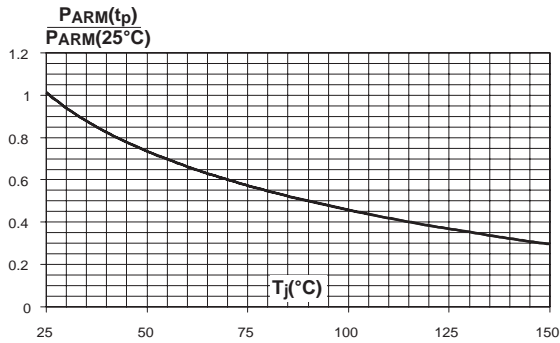


Fig. 4: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

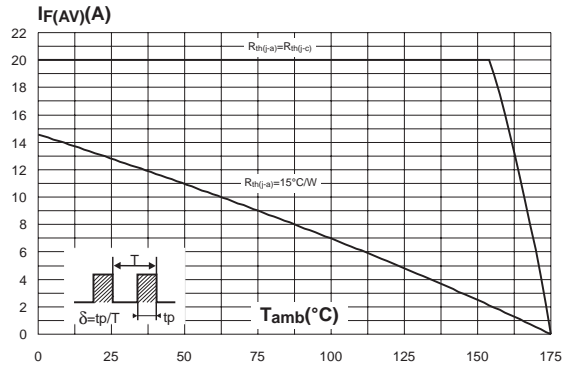


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

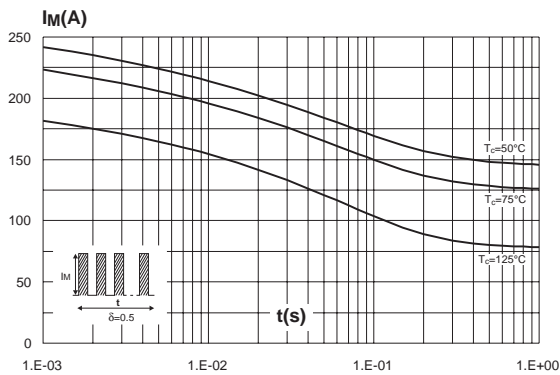


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

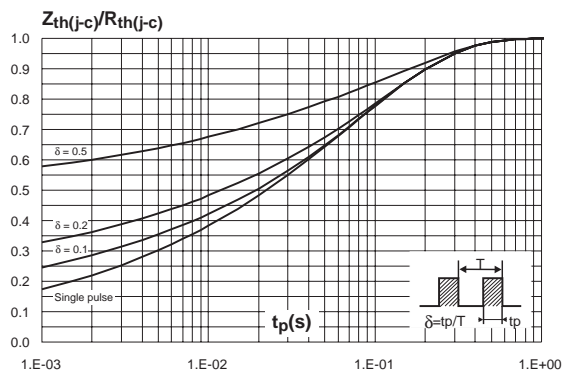


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

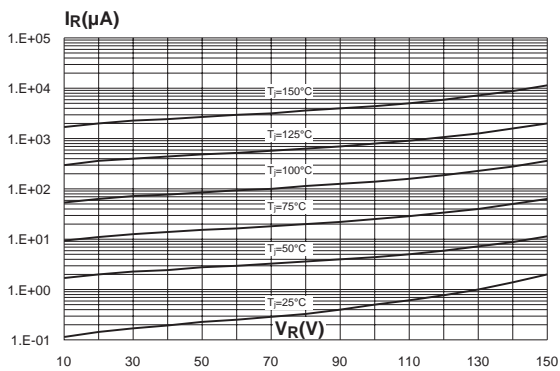


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

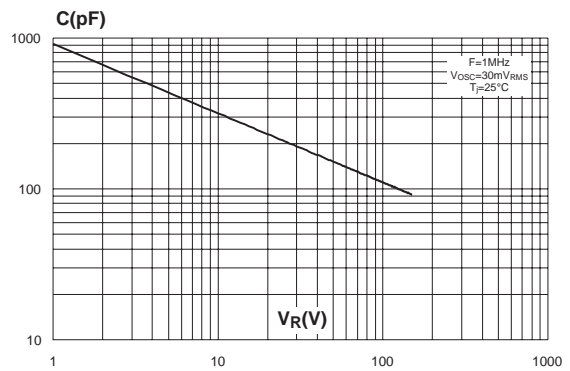


Fig. 9: Forward voltage drop versus forward current (per diode).

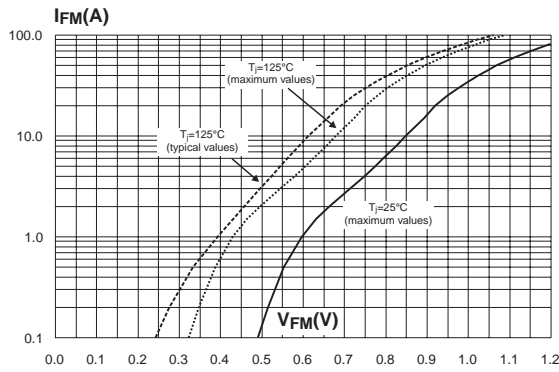
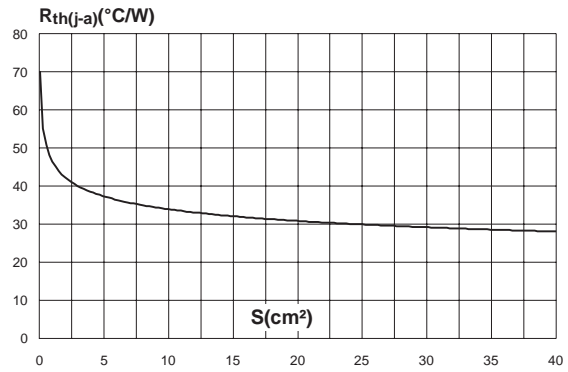
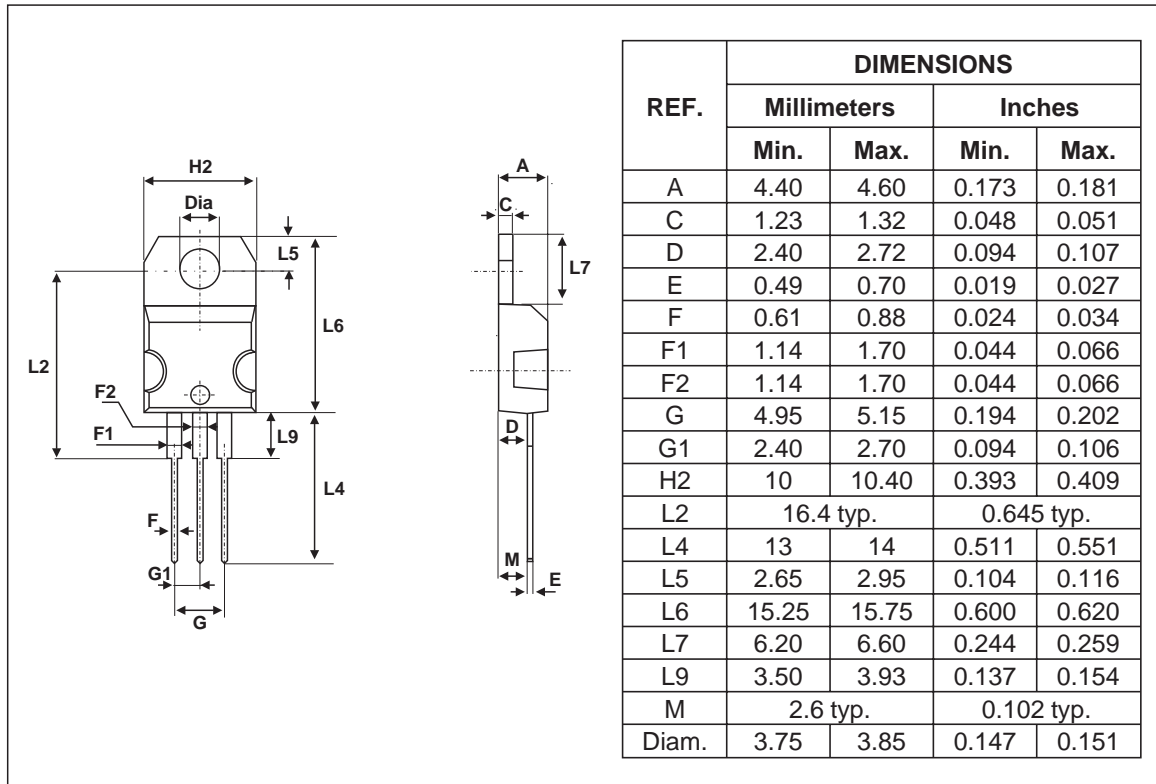


Fig. 10: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu=35µm) (D²PAK).

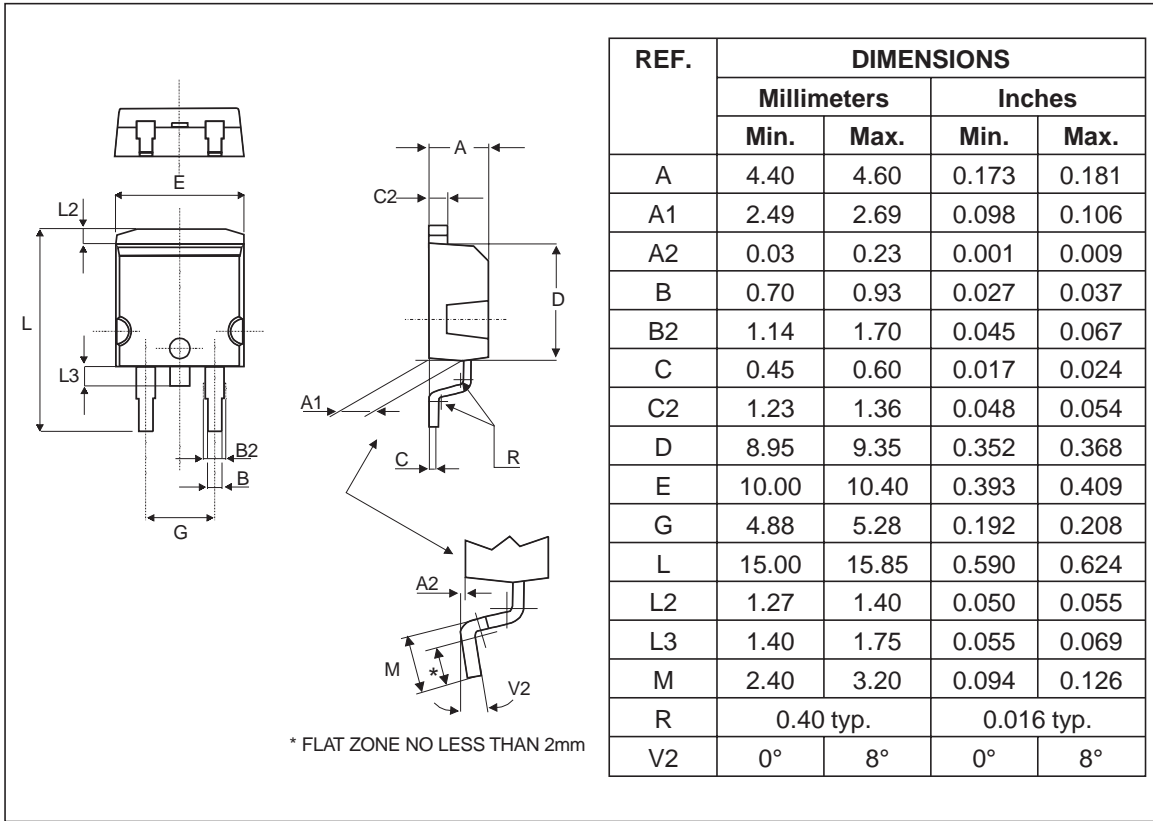


PACKAGE MECHANICAL DATA
TO-220AB

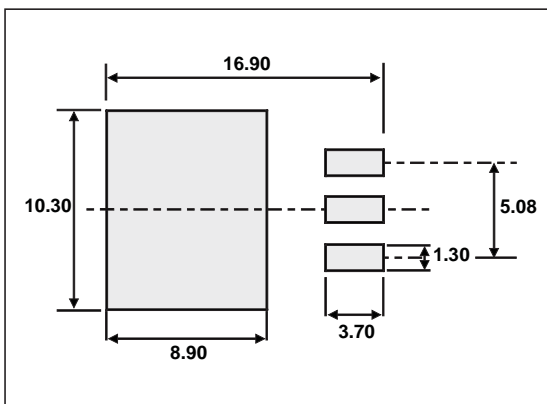


- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

PACKAGE MECHANICAL DATA
D²PAK

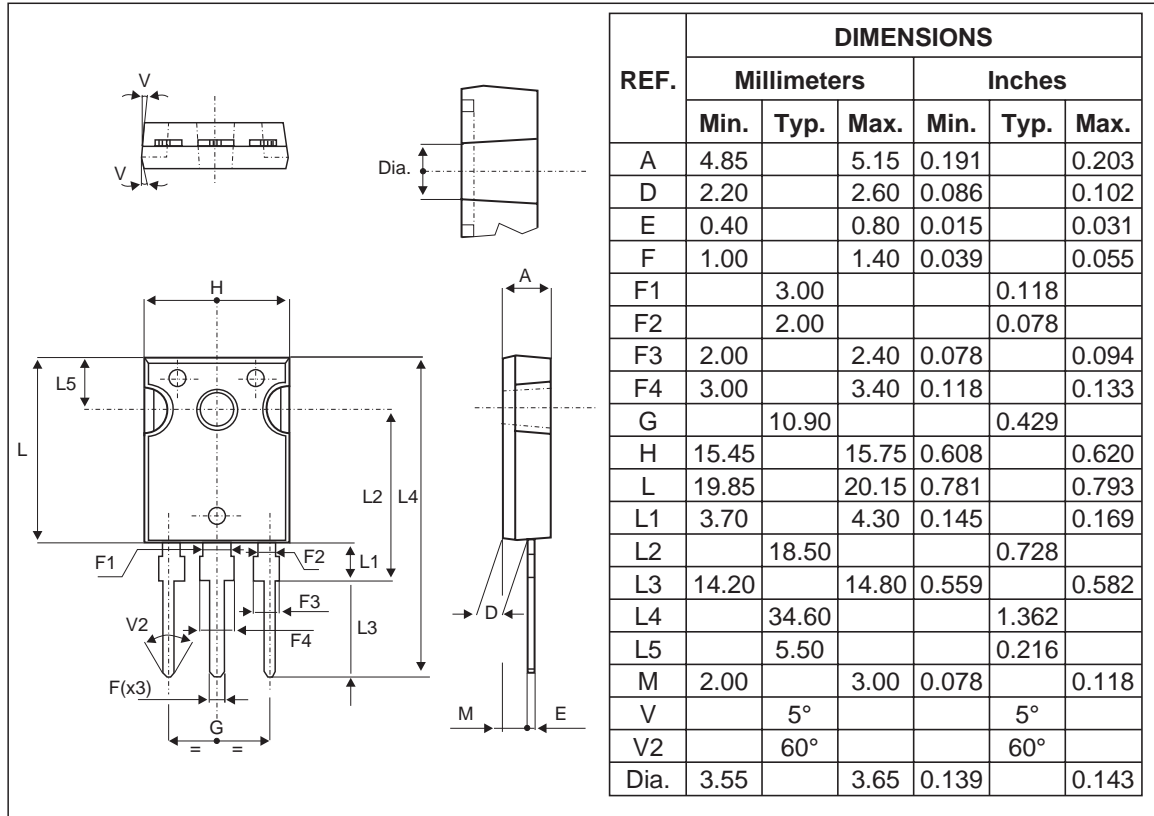


FOOT PRINT DIMENSIONS (in millimeters)



STPS40150CT/CW/CG

PACKAGE MECHANICAL DATA TO-247



- Cooling method : C
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS40150CT	STPS40150CT	TO-220AB	2g	50	Tube
STPS40150CW	STPS40150CW	TO-247	4.4g	30	Tube
STPS40150CG	STPS40150CG	D ² PAK	1.48g	50	Tube
STPS40150CG-TR	STPS40150CG-TR	D ² PAK	1.48g	1000	Tape & reel

- Epoxy meets UL94,V0

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