



STPS20L60CT/CG/CR

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 10 A
V_{RRM}	60 V
$T_j(max)$	150 °C
$V_F(max)$	0.56 V

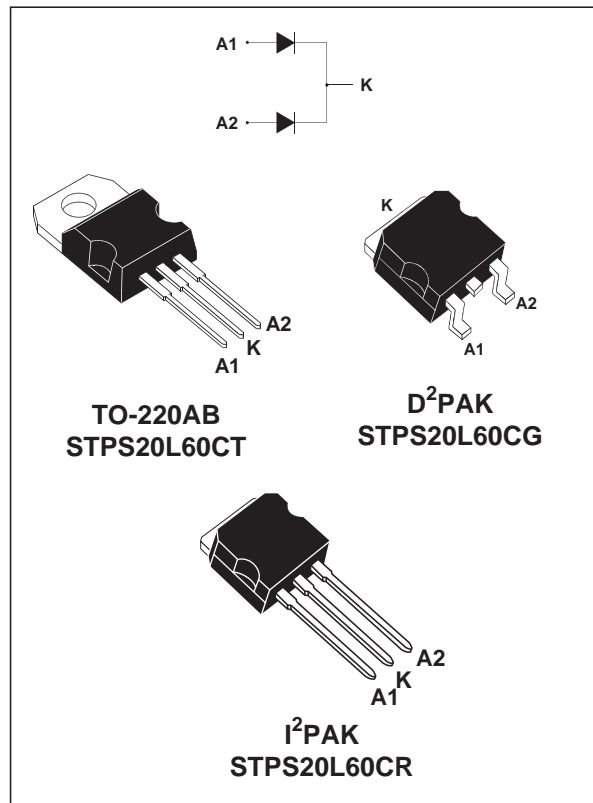
FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP
- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

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

Packaged in TO-220AB, I²PAK and D²PAK, this device is intended for use in high frequency inverters.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		60	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	$T_c = 140^\circ\text{C}$ $\delta = 0.5$	Per diode 10 Per device 20	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	220	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F = 1 \text{ kHz}$	1	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	5800	W
T_{stg}	Storage temperature range		- 65 to + 175	°C
T_j	Maximum operating junction temperature *		150	°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 RESISTANCE

Symbol	Parameter		Value	Unit	
$R_{th(j-c)}$	Junction to case	TO-220AB / I ² PAK / D ² PAK	Per diode Total	1.6 0.85	°C/W
$R_{th(c)}$		TO-220AB / I ² PAK / D ² PAK	Coupling	0.1	°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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			350	μA
		$T_j = 125^\circ\text{C}$			65	95	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$			0.6	V
		$T_j = 125^\circ\text{C}$	$I_F = 10\text{ A}$		0.48	0.56	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$			0.74	
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$		0.62	0.7	

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

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.014 \times I_{F(RMS)}^2$$

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

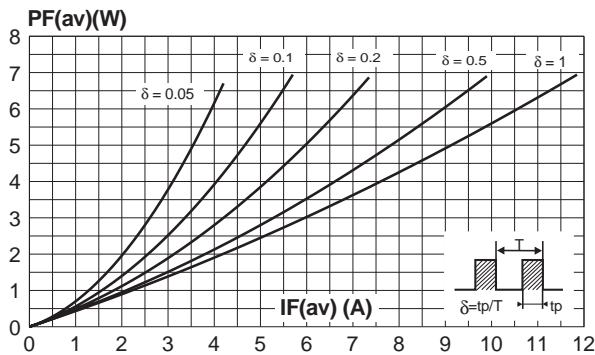


Fig. 2: Average current versus ambient temperature ($\delta=0.5$) (per diode).

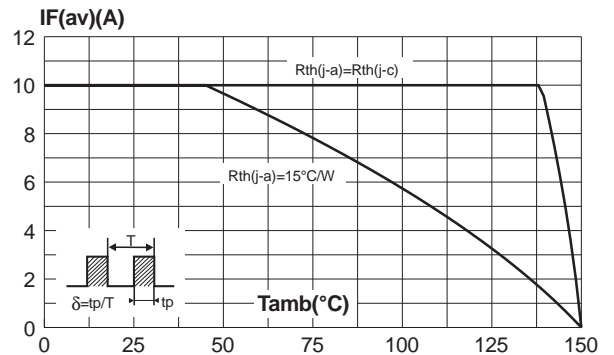


Fig. 3: Normalized avalanche power derating versus pulse duration.

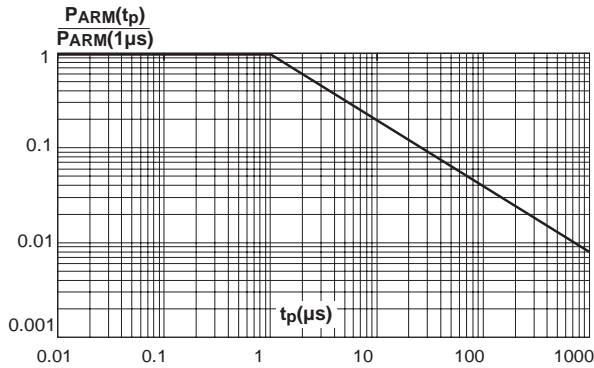


Fig. 4: Normalized avalanche power derating versus junction temperature.

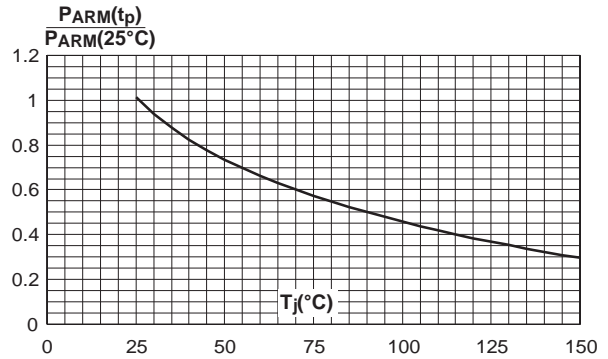


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

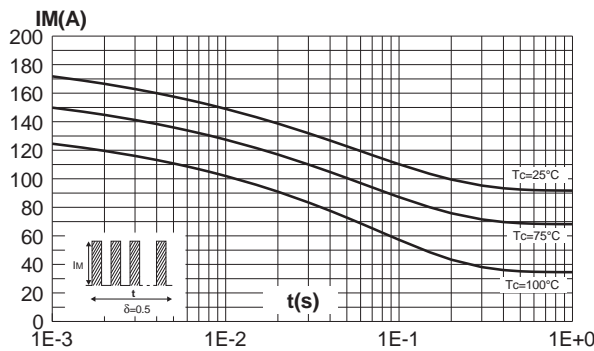


Fig. 6: Relative variation of thermal transient impedance junction to case versus pulse duration.

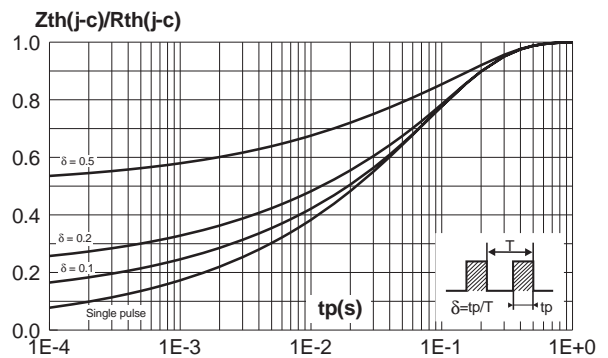


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

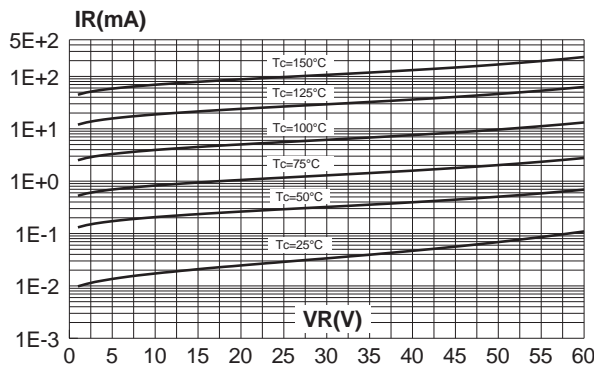
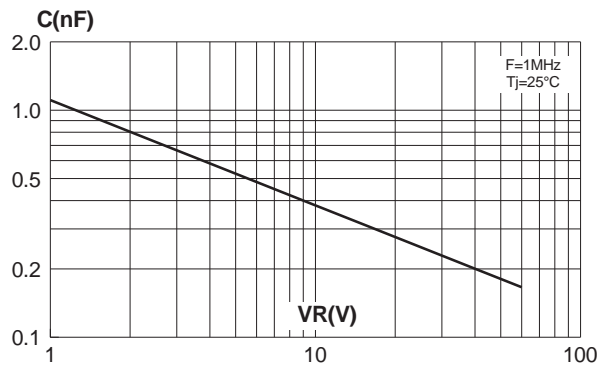
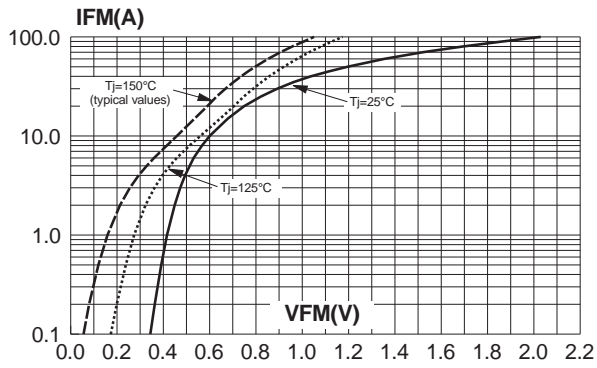


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).



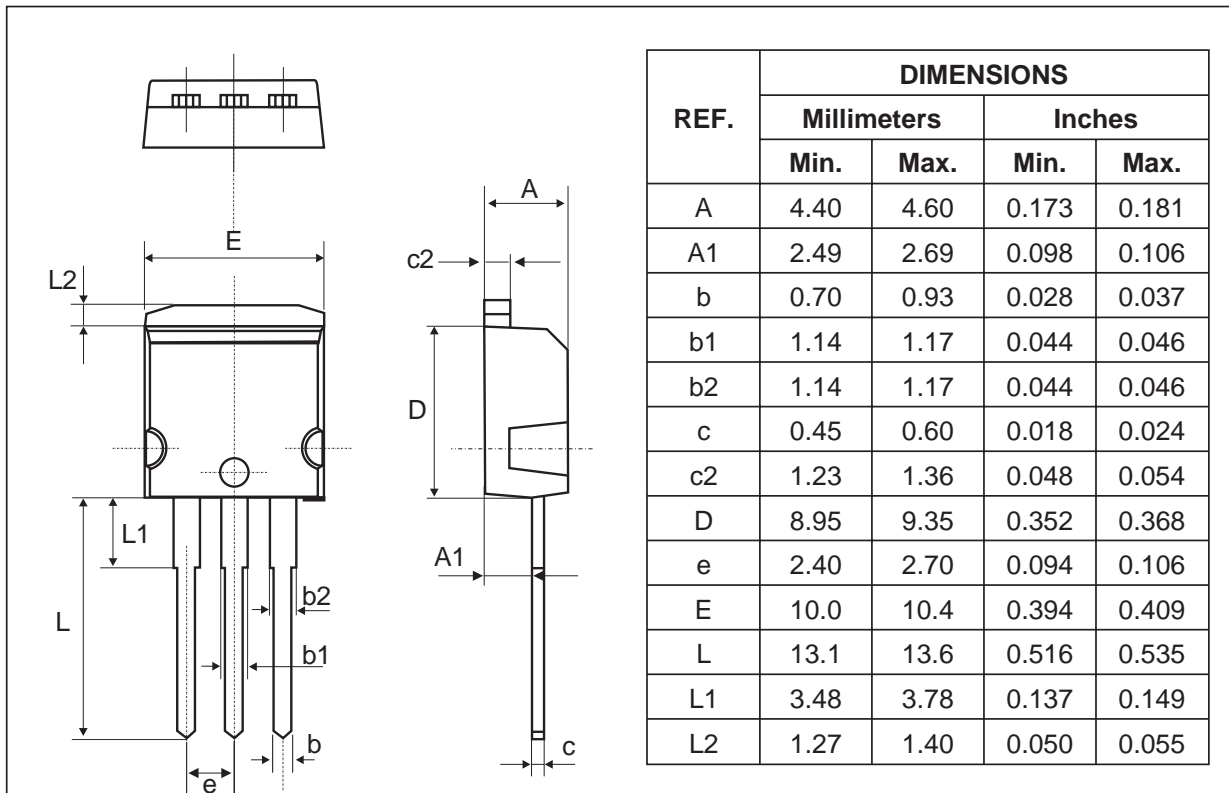
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Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).

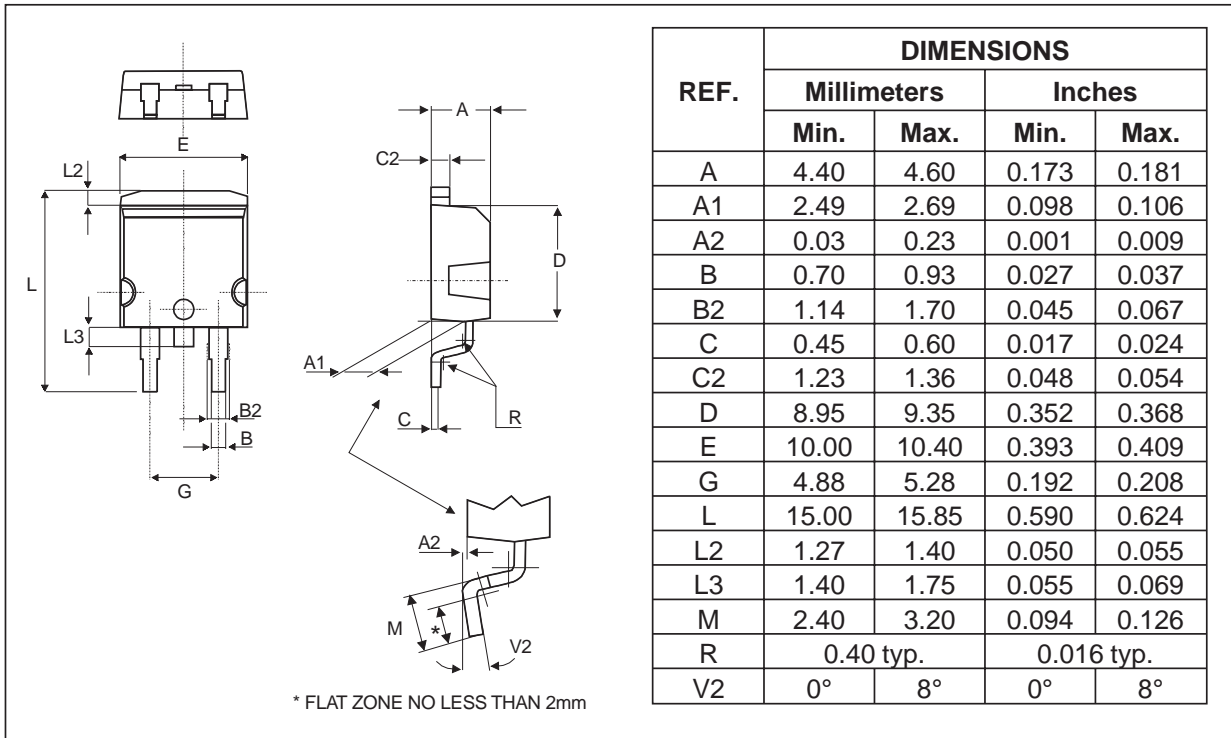


PACKAGE MECHANICAL DATA

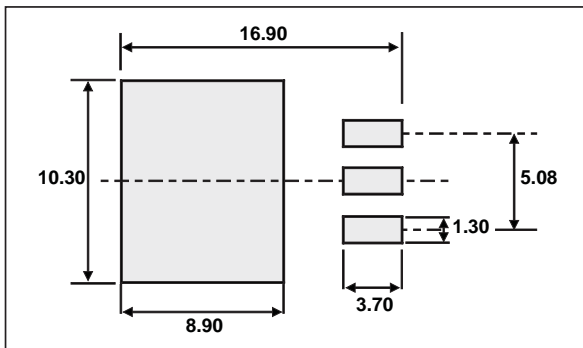
I²PAK



PACKAGE MECHANICAL DATA
D²PAK

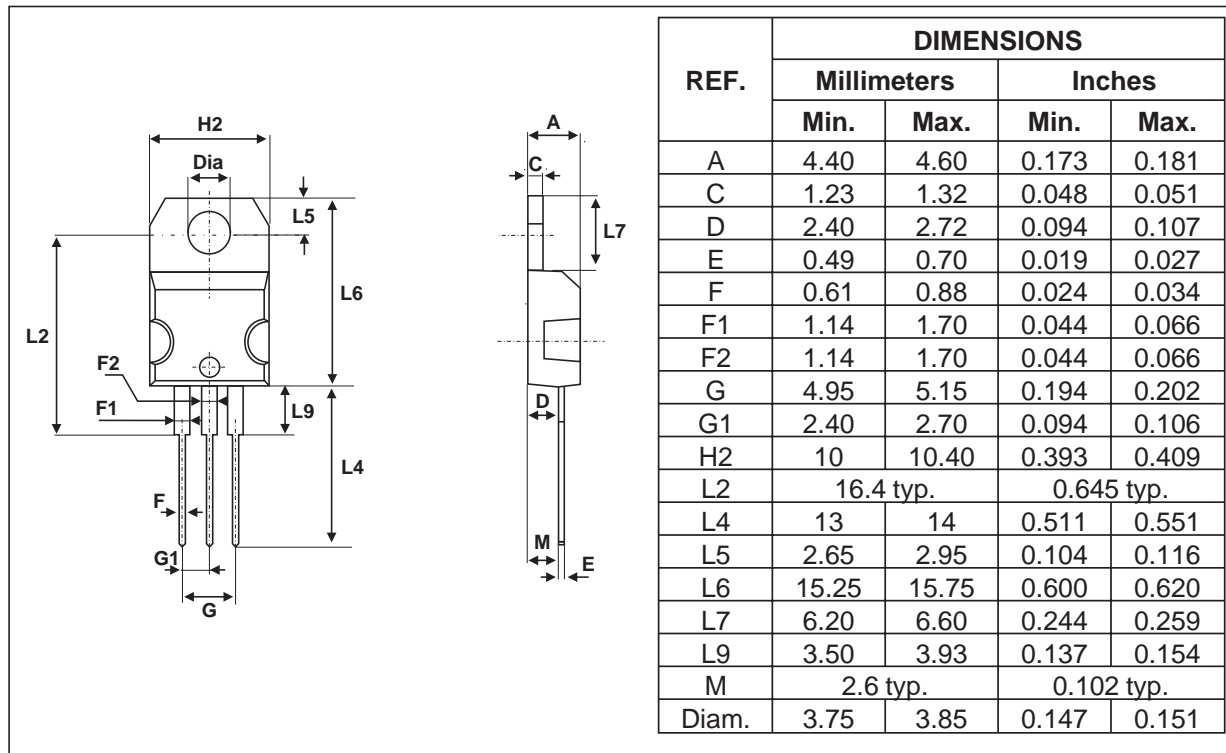


FOOTPRINT



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PACKAGE MECHANICAL DATA TO-220AB



- COOLING METHOD: C
- RECOMMENDED TORQUE VALUE: 0.55 M.N
- MAXIMUM TORQUE VALUE: 0.70 M.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20L60CT	STPS20L60CT	TO-220AB	2.2g	50	Tube
STPS20L60CT	STPS20L60CT	TO-220AB	2.2g	1000	Bulk
STPS20L60CG	STPS20L60CG	D ² PAK	1.48 g	50	Tube
STPS20L60CG-TR	STPS20L60CG	D ² PAK	1.48 g	1000	Tape & reel
STPS20L60CR	STPS20L60CR	I2PAK	1.49 g	50	Tube

- EPOXY MEETS UL94,V0

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