

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

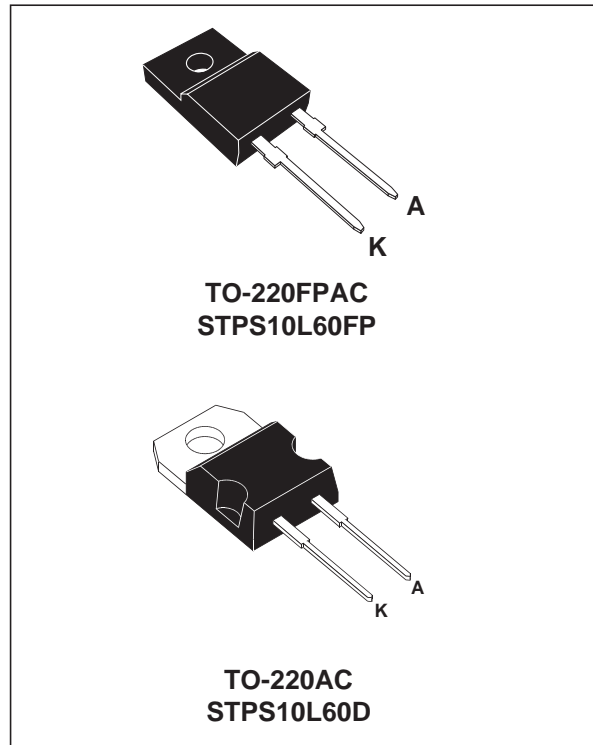
$I_{F(AV)}$	10 A
V_{RRM}	60 V
$T_j(\text{max})$	150°C
$V_F(\text{max})$	0.56 V

FEATURES AND BENEFITS

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

DESCRIPTION

Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters. Packaged in TO-220AC, TO-220FPAC this device is intended for use in DC/DC chargers.



ABSOLUTE RATINGS (limiting values)

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	TO-220AC	$T_c = 140^\circ\text{C}$ $\delta = 0.5$	10	A
		TO-220FPAC	$T_c = 120^\circ\text{C}$ $\delta = 0.5$		
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 RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AC	1.6
		TO-220FPAC	4

STATIC ELECTRICAL CHARACTERISTICS

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 :

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

Fig. 1: Average forward power dissipation versus average forward current.

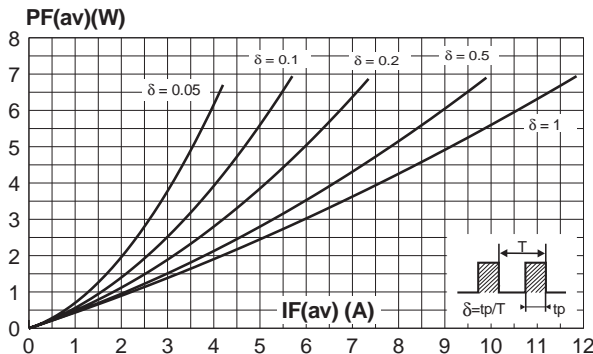


Fig. 3: Normalized avalanche power derating versus pulse duration.

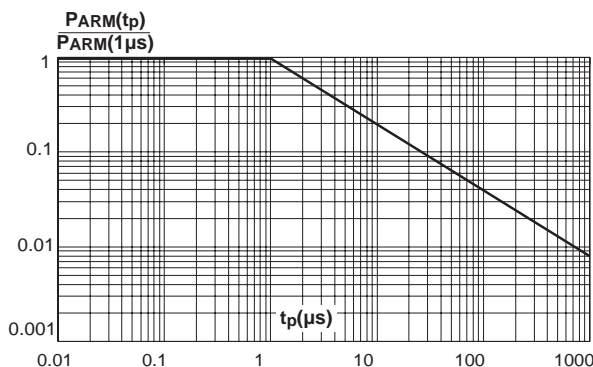


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

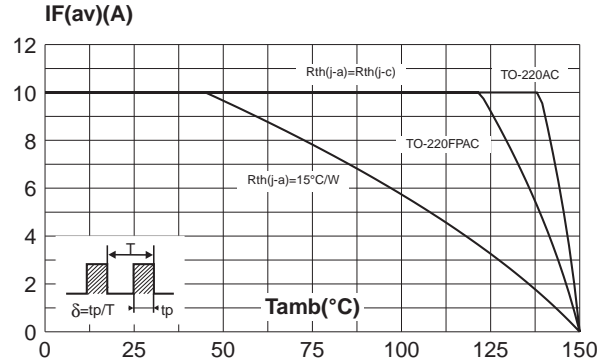


Fig. 4: Normalized avalanche power derating versus junction temperature.

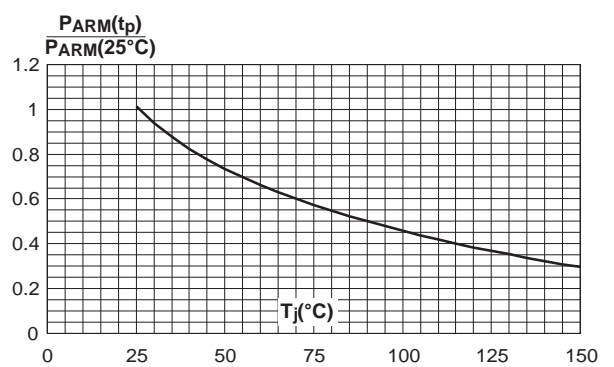


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

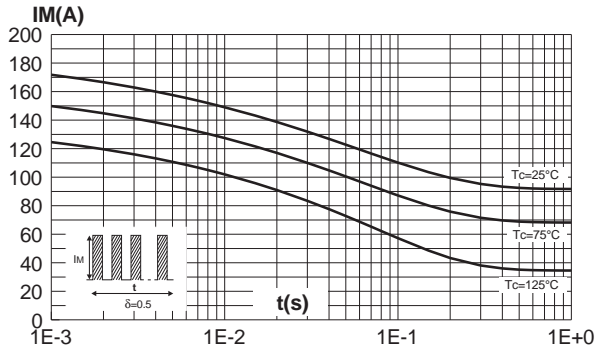


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220FPAC).

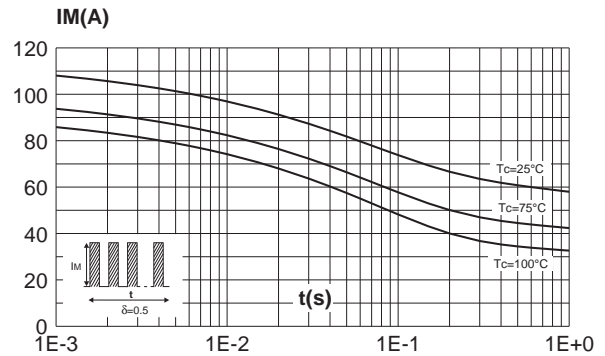


Fig. 6-1: Relative variation of thermal impedance junction to lead versus pulse duration (TO-220AC).

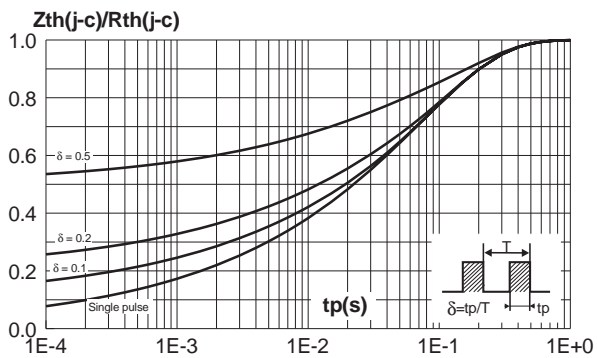


Fig. 6-2: Relative variation of thermal impedance junction to lead versus pulse duration (TO-220FPAC).

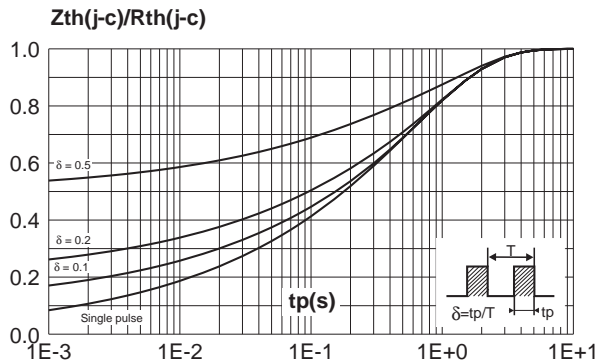


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

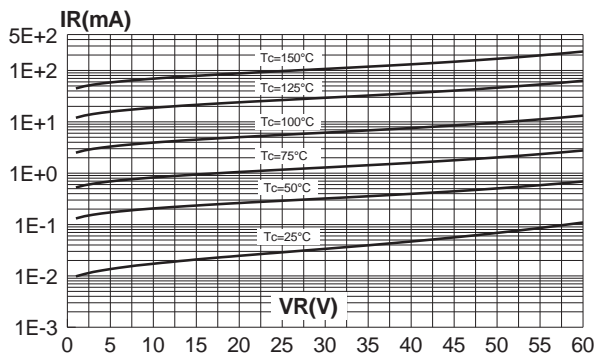
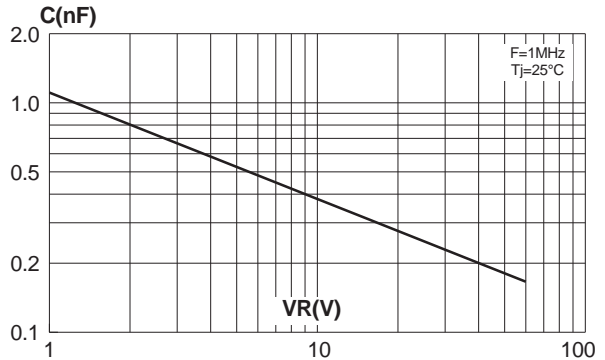
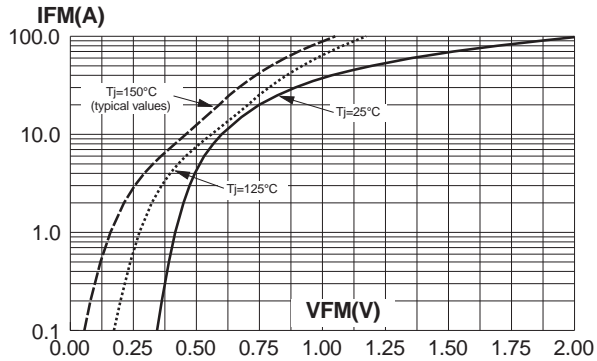


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

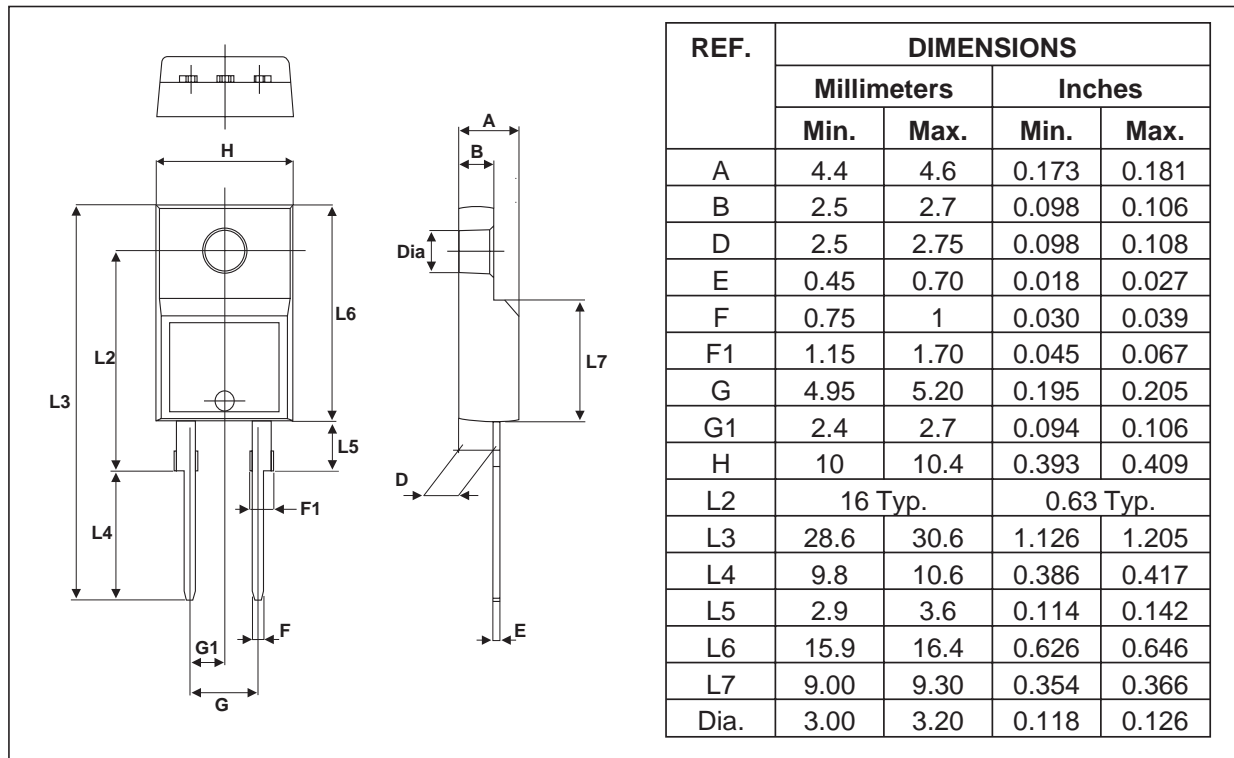


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Fig. 9: Forward voltage drop versus forward current (low level, maximum values).

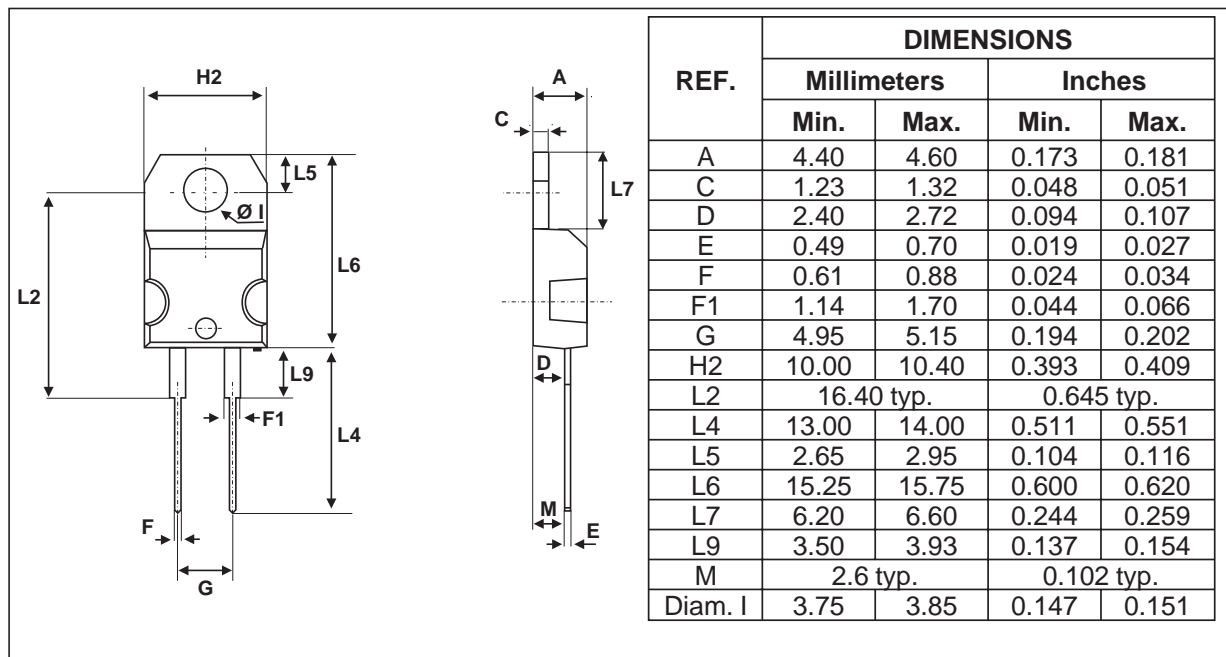


PACKAGE MECHANICAL DATA TO-220FPAC



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PACKAGE MECHANICAL DATA TO-220AC



- COOLING METHOD : C
- RECOMMENDED TORQUE VALUE : 0.8M.N
- MAXIMUM TORQUE VALUE : 1.0M.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10L60D	STPS10L60D	TO-220AC	1.86g	50	Tube
STPS10L60FP	STPS10L60FP	TO-220FPAC	1.9g	50	Tube

- EPOXY MEETS UL94,V0

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