

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_F(AV)$	2 x 8 A
V_{RRM}	45 V
$T_j(max)$	150 °C
$V_F(max)$	0.45 V

FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP MEANING VERY SMALL CONDUCTION LOSSES
- LOW SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- INSULATED PACKAGE: TO-220FPAB
Insulated voltage: 2000V DC
Capacitance: 12 pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

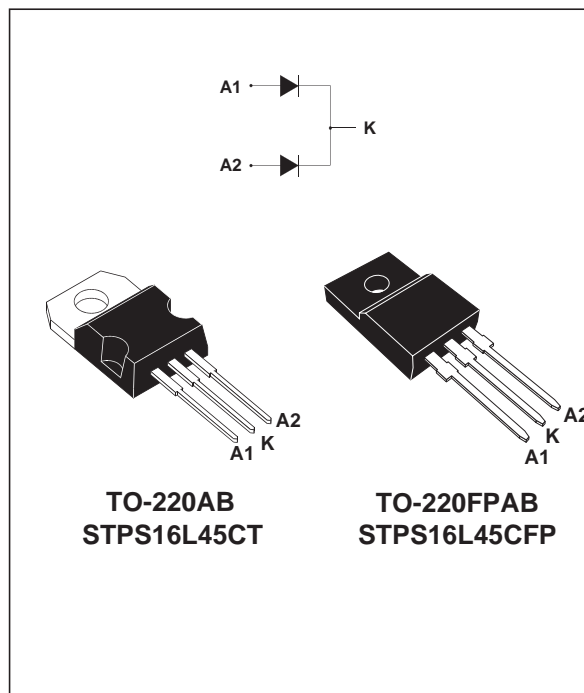
Dual center tap Schottky barrier rectifier designed for high frequency Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-220AB and TO-220FPAB, these devices are intended for use in low voltage, high frequency converters, free-wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter				Value	Unit
V _{RRM}	Repetitive peak reverse voltage				45	V
I _{F(RMS)}	RMS forward current				30	A
I _{F(AV)}	Average forward current	TO-220AB	T _c = 140°C δ = 0.5	Per diode	8	A
				Per device	16	
		TO-220FPAB	T _c = 125°C δ = 0.5	Per diode	8	A
				Per device	16	
I _{FSM}	Surge non repetitive forward current		tp = 10 ms sinusoidal		180	A
I _{RRM}	Repetitive peak reverse current		tp=2 μs square F=1kHz		1	A
I _{RSM}	Non repetitive peak reverse current		tp = 100 μs square		2	A
P _{ARM}	Repetitive peak avalanche power		tp = 1μs Tj = 25°C		4000	W
T _{stg}	Storage temperature range				- 65 to + 150	°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-220AB	Per diode	2.2	$^{\circ}\text{C/W}$
			Total	1.3	
			Coupling	0.3	
		TO-220FPAB	Per diode	4.5	
			Total	3.5	
			Coupling	2.5	

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	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			0.2	mA
		$T_j = 125^{\circ}\text{C}$			65	130	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 8\text{ A}$			0.5	V
		$T_j = 125^{\circ}\text{C}$	$I_F = 8\text{ A}$		0.39	0.45	
		$T_j = 25^{\circ}\text{C}$	$I_F = 16\text{ A}$			0.63	
		$T_j = 125^{\circ}\text{C}$	$I_F = 16\text{ A}$		0.55	0.64	

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

To evaluate the conduction losses use the following equation :

$$P = 0.26 \times I_{F(AV)} + 0.024 I_{F(RMS)}^2$$

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

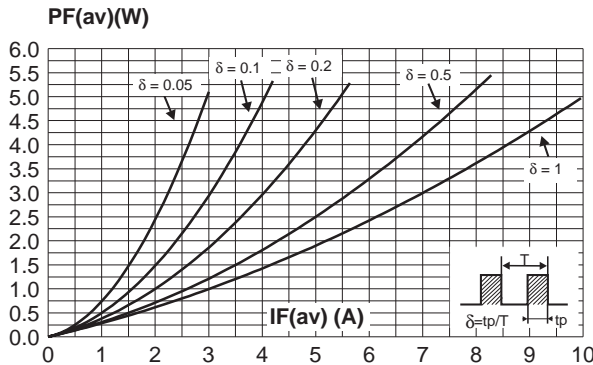


Fig. 3: Normalized avalanche power derating versus pulse duration.

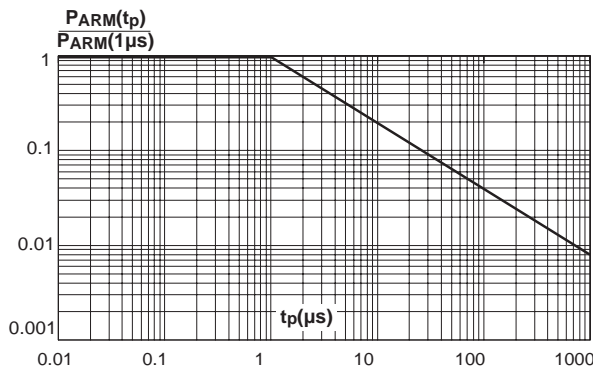


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$) (per diode).

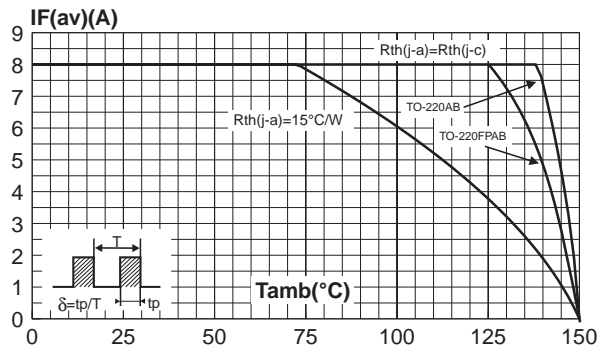


Fig. 4: Normalized avalanche power derating versus junction temperature.

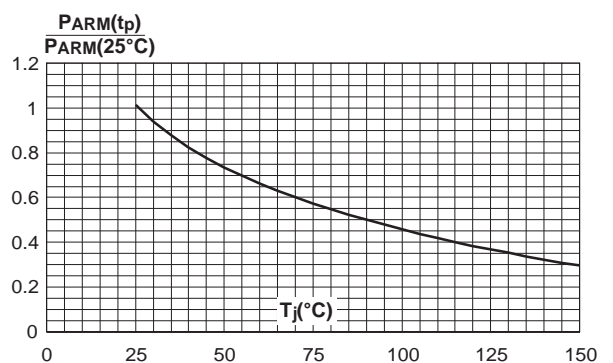


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values per diode, TO-220AB).

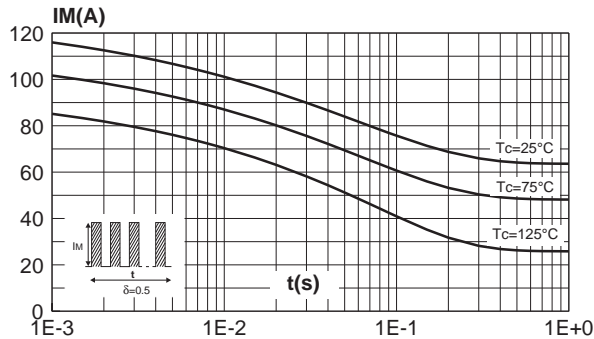


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values per diode, TO-220FPAB).

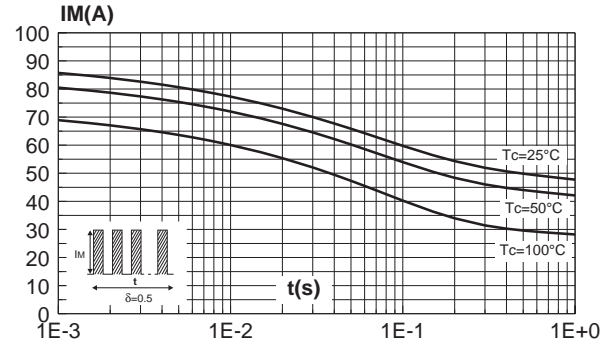


Fig. 6-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AB).

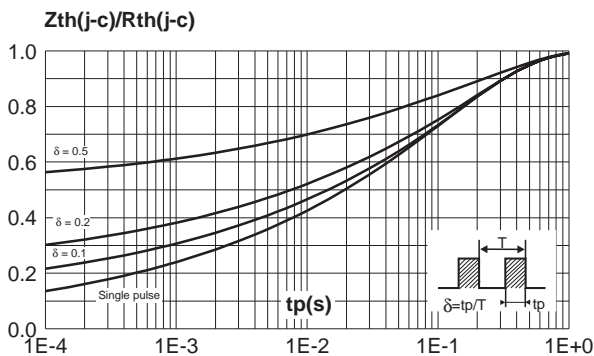


Fig. 6-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAB).

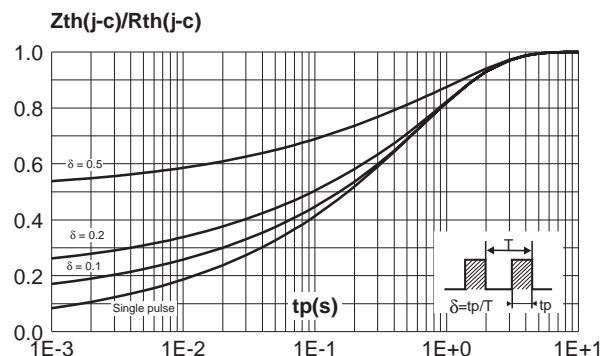


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).

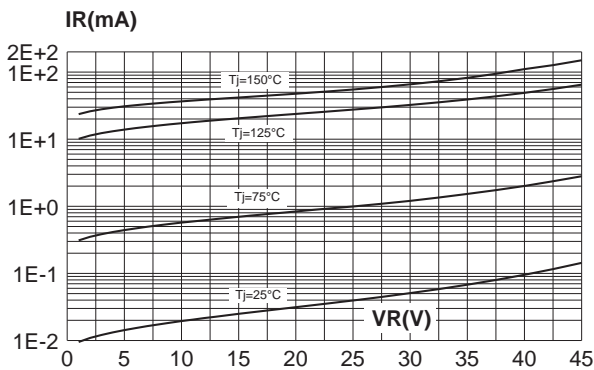
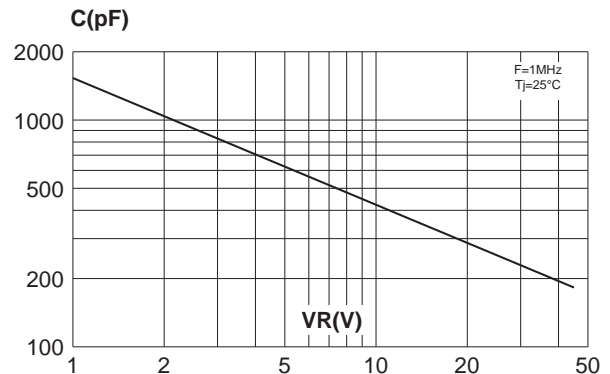
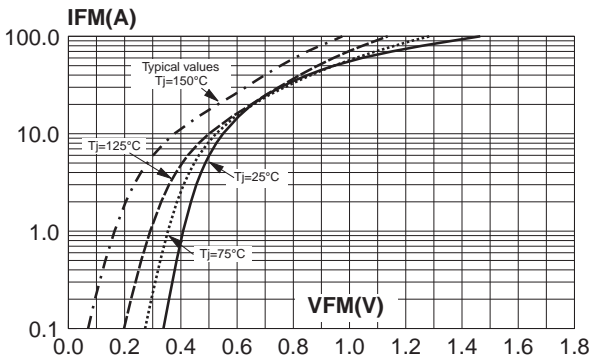


Fig. 8: Junction capacitance versus reverse voltage applied (typical values) (per diode).



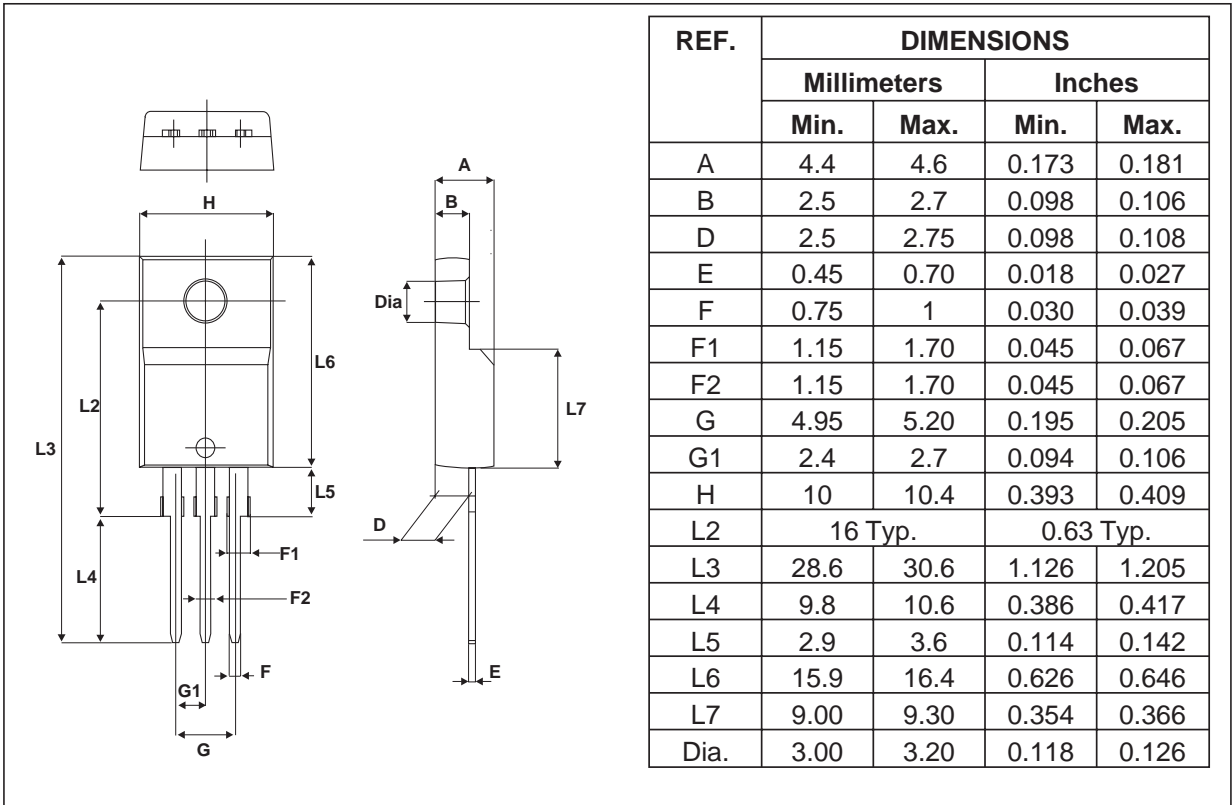
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Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).



PACKAGE MECHANICAL DATA

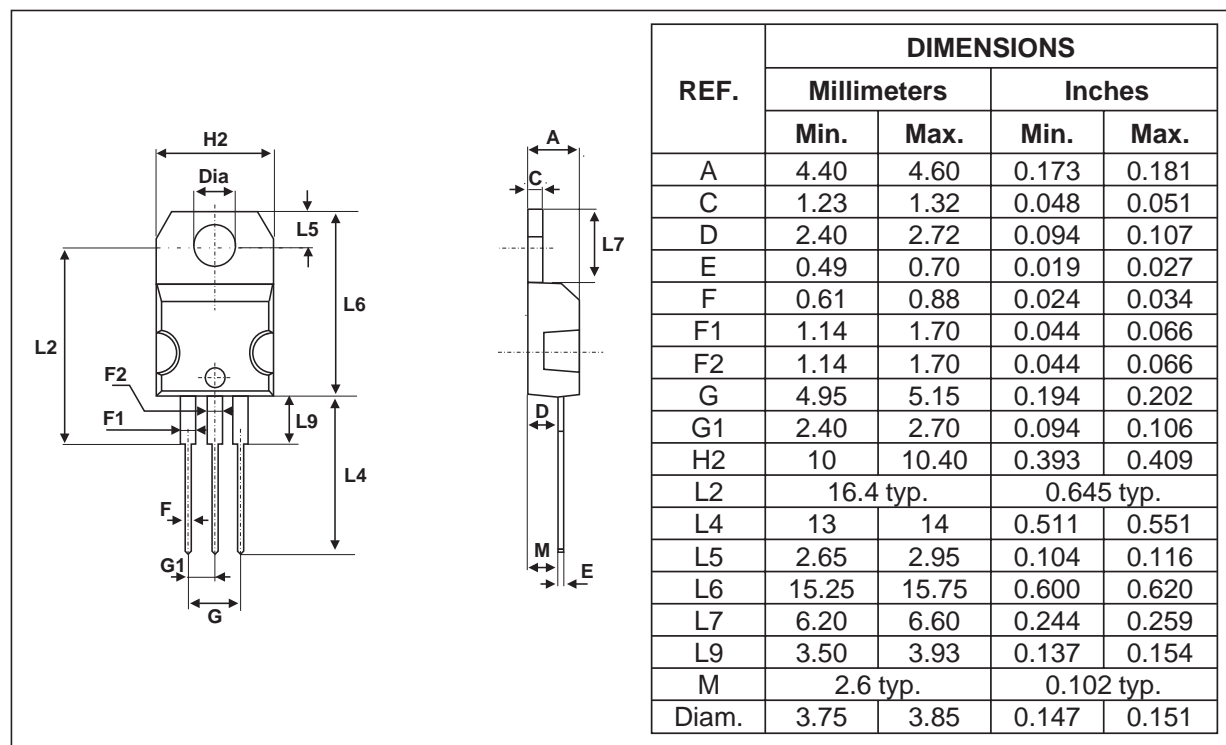
TO-220FPAB



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PACKAGE MECHANICAL DATA

TO-220AB



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS16L45CT	STPS16L45CT	TO-220AB	2g	50	Tube
STPS16L45CFP	STPS16L45CFP	TO-220FPAB	2g	50	Tube

- Epoxy meets UL94,V0
- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

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