

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

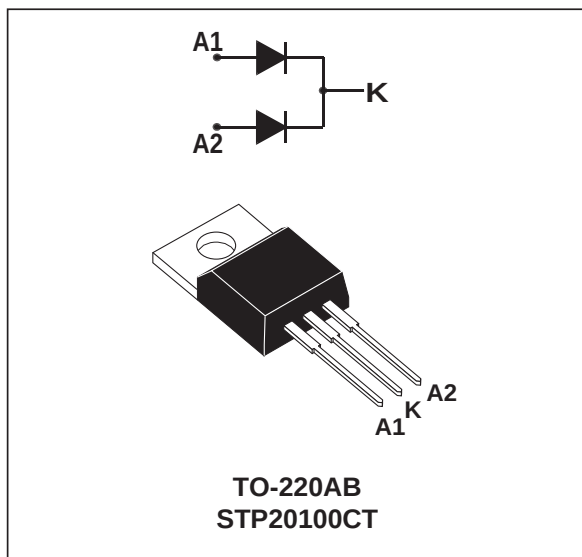
$I_{F(AV)}$	2 x 10A
V_{RRM}	100V
$V_F (max)$	0.7V
$T_j (max)$	175°C

FEATURES

- Negligible switching losses
- Low forward voltage drop
- Low capacitance
- High reverse avalanche surge capability

DESCRIPTION

High voltage dual Schottky rectifier suited for switchmode power supplies and other power converters. Packaged in TO-220AB, this device is intended for use in medium voltage operation, and particularly, in high frequency circuitries where low switching losses and low noise are required.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	RMS forward current	Per diode		30	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_c = 110^\circ\text{C}$ $V_R = 60\text{V}$	Per diode Per device	10 20	A A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ms}$ sinusoidal	Per diode	200	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2\mu\text{s}$ $F = 1\text{KHz}$	Per diode	1	A
I_{RSM}	Non repetitive peak reverse current	$t_p = 100\mu\text{s}$	Per diode	1	A
T_{stg}	Storage temperature range			- 65 to + 175	°C
T_j	Maximum junction temperature (*)			175	°C
dV/dt	Critical rate of rise of reverse voltage			1000	V/ μs

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

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.6	°C/W
		Total	0.9	
Rth (c)	Coupling		0.15	°C/W

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c(\text{diode 1}) = P(\text{diode 1}) \times R_{th}(j-c) (\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode)

STATIC CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$V_R = V_{RRM}$	$T_j = 25^\circ\text{C}$			150	μA
			$T_j = 125^\circ\text{C}$			100	mA
V_F^{**}	Forward voltage drop	$I_F = 20\text{A}$	$T_j = 125^\circ\text{C}$			0.85	V
		$I_F = 10\text{A}$	$T_j = 125^\circ\text{C}$		0.60	0.70	
		$I_F = 20\text{A}$	$T_j = 25^\circ\text{C}$			0.95	

Pulse test : * $t_p = 5\text{ ms}$, duty cycle $< 2\%$

** $t_p = 380\text{ }\mu\text{s}$, duty cycle $< 2\%$

To evaluate the conduction losses use the following equation :

$$P = 0.55 \times I_{F(AV)} + 0.015 \times I_{F(RMS)}^2$$

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

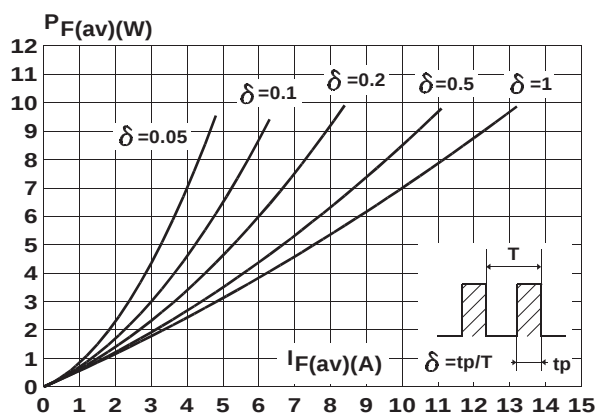


Fig. 2 : Average current versus ambient temperature. (duty cycle : 0.5) (Per diode)

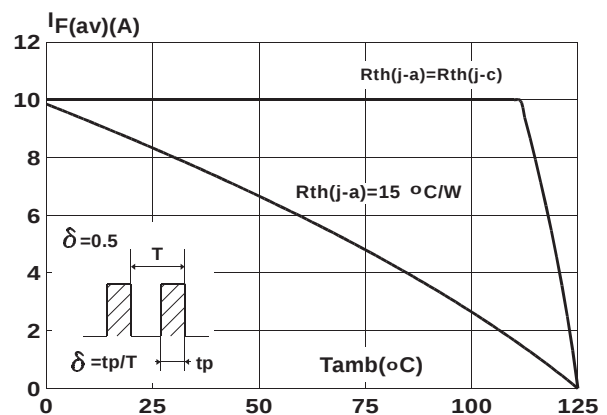


Fig. 3 : Non repetitive surge peak forward current versus overload duration. (Maximum values) (Per diode)

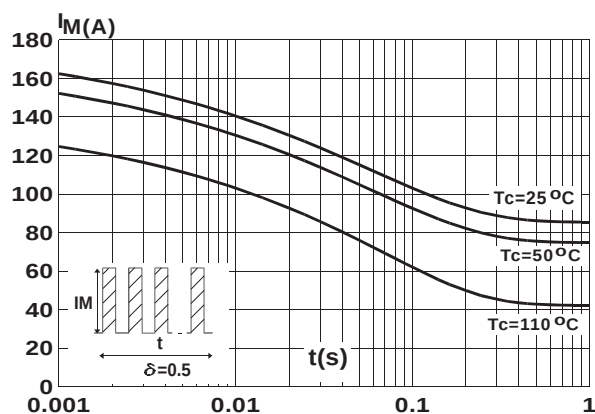


Fig. 4 : Relative variation of thermal transient impedance junction to case versus pulse duration.

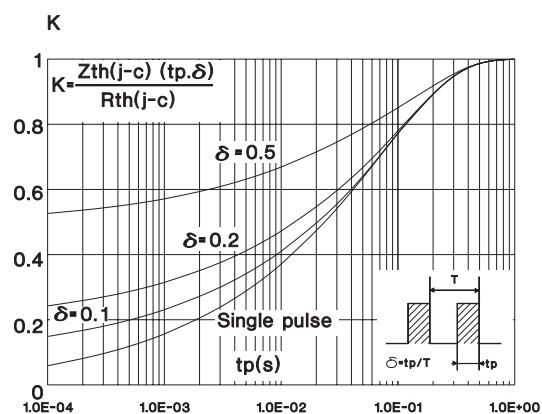


Fig. 5 : Reverse leakage current versus reverse voltage applied. (Typical values) (Per diode)

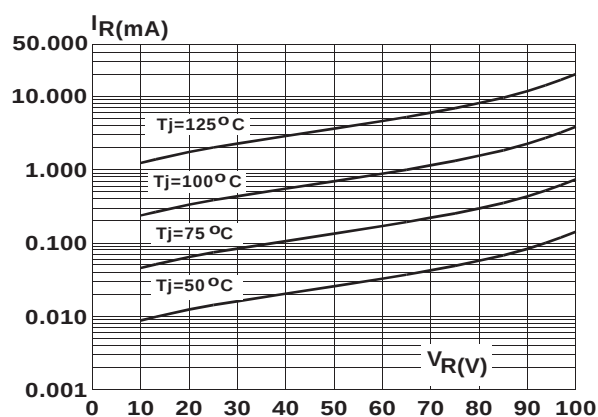


Fig. 6 : Junction capacitance versus reverse voltage applied. (Typical values) (Per diode)

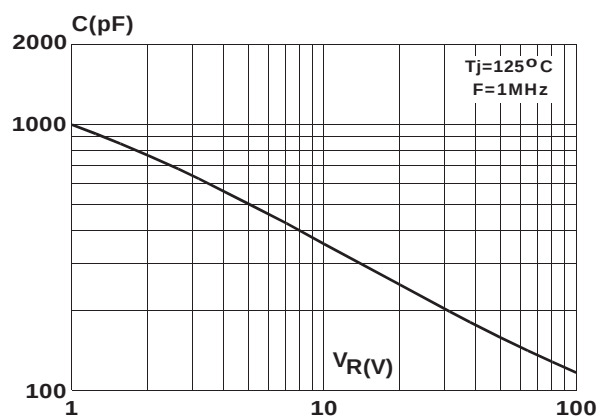
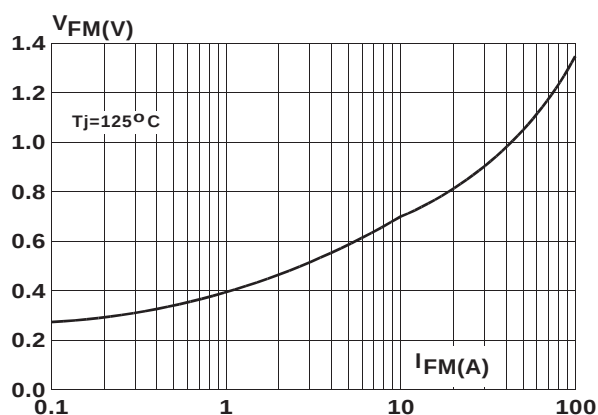
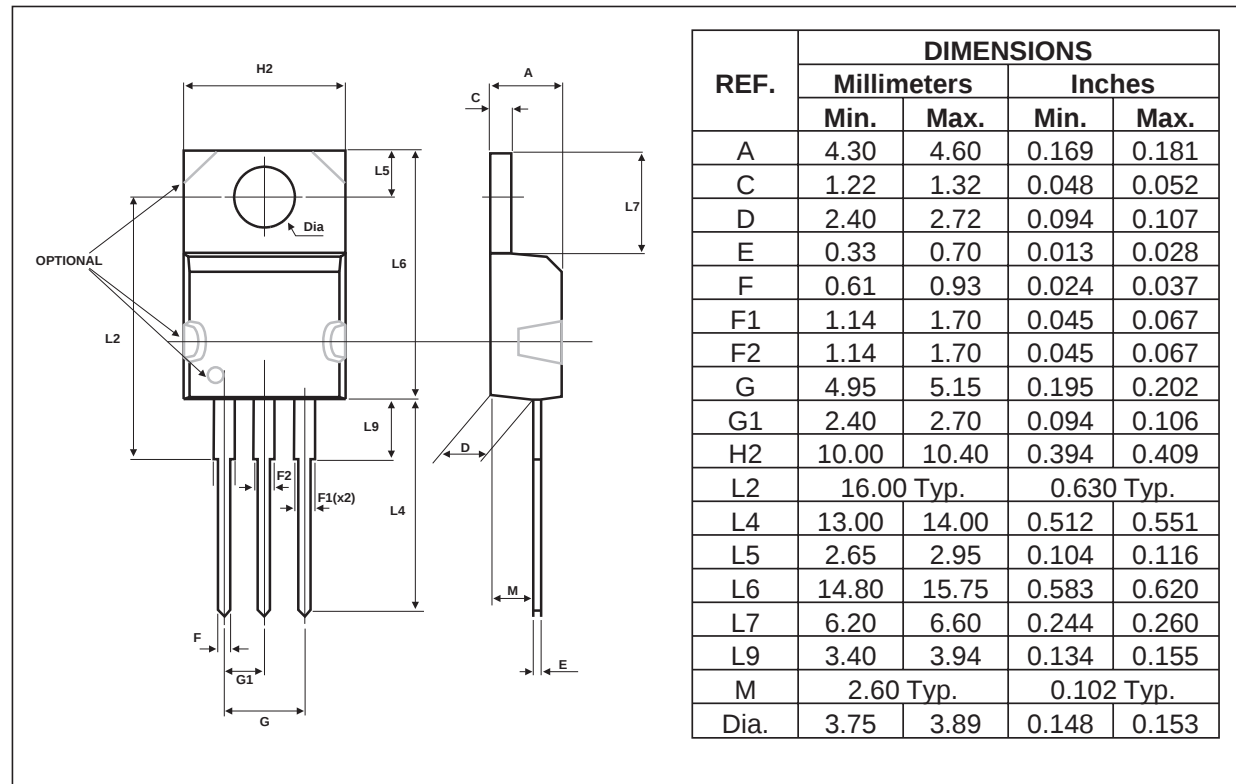


Fig. 7 : Forward voltage drop versus forward current. (Maximum values) (Per diode)



STPS20100CT

PACKAGE MECHANICAL DATA TO-220AB (JEDEC outline)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20100CT	STPS20100CT	TO-220AB	2.23g	50	Tube

- Cooling method : by conduction (C)
- Recommended torque value : 0.55N.m.
- Maximum torque value : 0.7N.m.
- Epoxy meets UL94,V0

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