

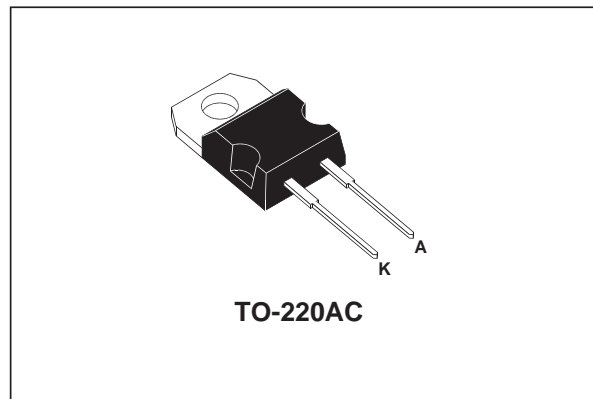


STPS1645D

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	16 A
V_{RRM}	45 V
T_j (max)	175 °C
V_F (max)	0.57 V



FEATURES AND BENEFITS

- Very small conduction losses
- Negligible switching losses
- Extremely fast switching

DESCRIPTION

Single chip Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

Packaged in TO-220AC, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values)

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 $\delta = 0.5$ T _c = 155°C	16	A
I _{FSM}	Surge non repetitive forward current tp = 10 ms Sinusoidal	220	A
I _{RRM}	Repetitive peak reverse current tp = 2 μ s square F = 1kHz	1	A
I _{RSM}	Non repetitive peak reverse current tp = 100 μ s square	3	A
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/ μ s

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ 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	1.6	$^{\circ}\text{C}/\text{W}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			200	μA
		$T_j = 125^{\circ}\text{C}$			11	40	mA
V_F^*	Forward voltage drop	$T_j = 125^{\circ}\text{C}$	$I_F = 16\text{ A}$		0.5	0.57	V

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

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.01 I_{F(RMS)}^2$$

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

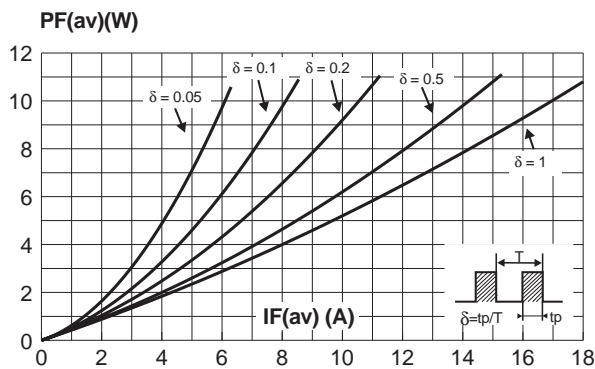


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

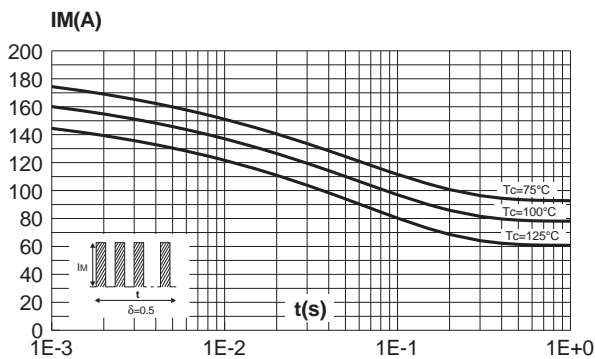


Fig. 2: Average current versus ambient temperature ($\delta : 0.5$).

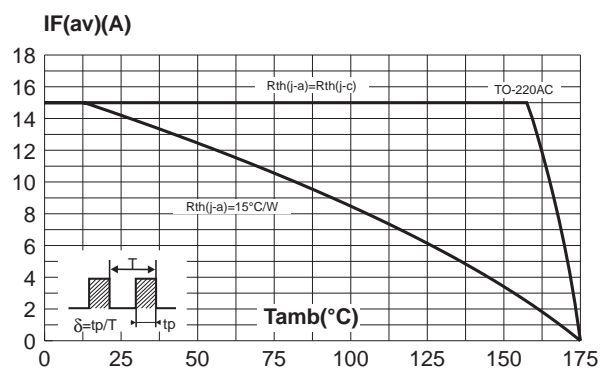


Fig. 4: Relative variation of thermal transient impedance junction to case versus pulse duration.

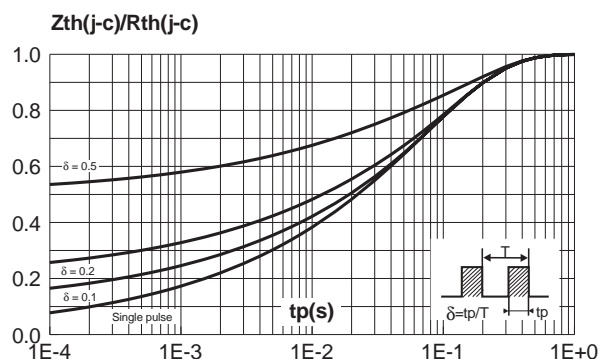


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

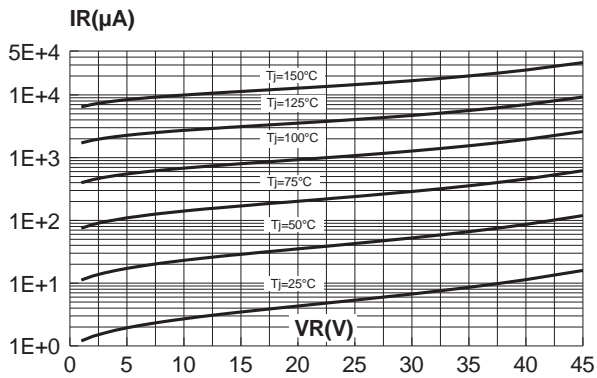


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

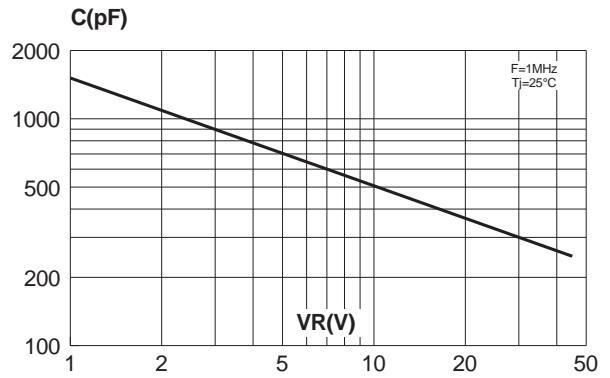
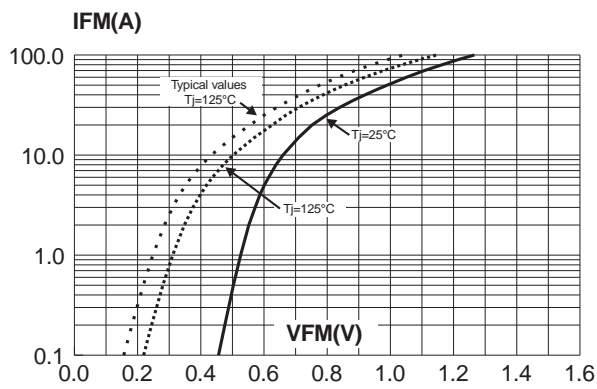
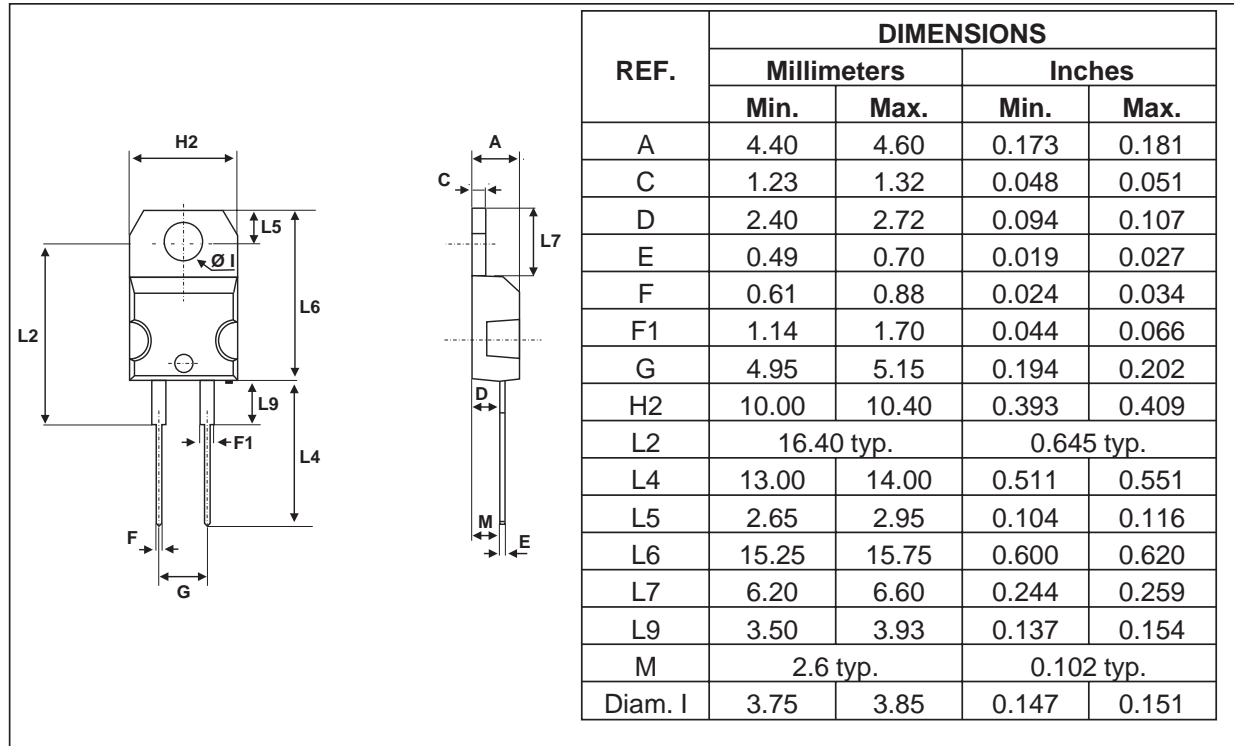


Fig. 7: Forward voltage drop versus forward current (maximum values).



STPS1645D

PACKAGE MECHANICAL DATA TO-220AC



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS1645D	STPS1645D	TO-220AC	1.86 g	50	Tube

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

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