

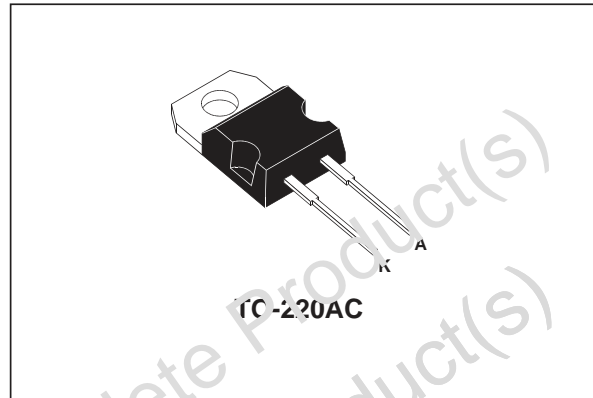


# STPS1645D

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>16 A</b>
<b>V<sub>RRM</sub></b>	<b>45 V</b>
<b>T<sub>j (max)</sub></b>	<b>175 °C</b>
<b>V<sub>F (max)</sub></b>	<b>0.57 V</b>



### 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 <sub>RRM</sub>	Repetitive peak reverse voltage	45	V
I <sub>F(RMS)</sub>	RMS forward current	30	A
I <sub>F(AV)</sub>	Average forward current $\delta = 0.5$	16	A
I <sub>FSM</sub>	Surge non repetitive forward current $t_p = 10 \text{ ms}$ Sinusoidal	220	A
I <sub>RRM</sub>	Repetitive peak reverse current $t_p = 2 \text{ } \mu\text{s}$ square $F = 1 \text{ kHz}$	1	A
I <sub>RSM</sub>	Non repetitive peak reverse current $t_p = 100 \text{ } \mu\text{s}$ square	3	A
T <sub>stg</sub>	Storage temperature range	- 65 to + 175	°C
T <sub>j</sub>	Maximum operating junction temperature *	175	°C
dV/dt	Critical rate of rise of reverse voltage	10000	V/ $\mu\text{s}$

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

# STPS1645D

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	1.6	$^{\circ}\text{C}/\text{W}$

## STATIC ELECTRICAL CHARACTERISTICS

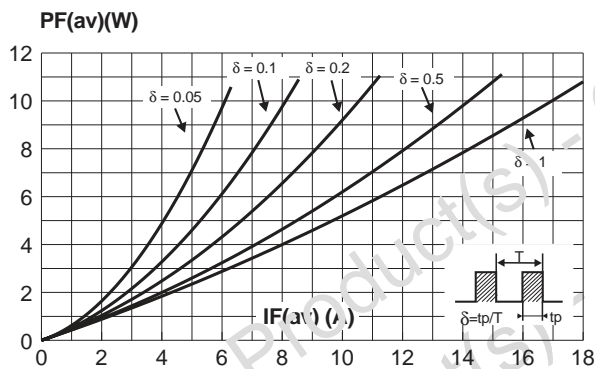
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			200	$\infty\text{A}$
		$T_j = 125^{\circ}\text{C}$			11	40	mA
$V_F^*$	Forward voltage drop	$T_j = 125^{\circ}\text{C}$	$I_F = 16\text{ A}$		0.5	0.57	V

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

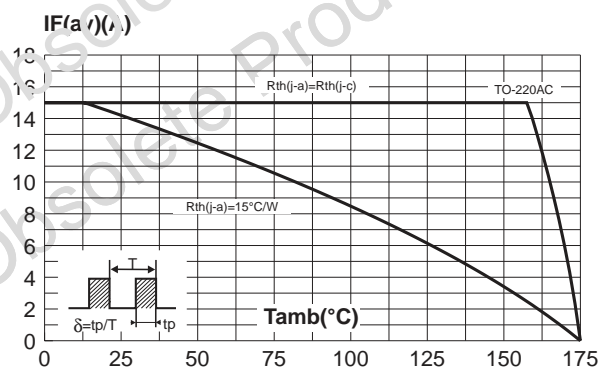
To evaluate the conduction losses use the following equation :

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

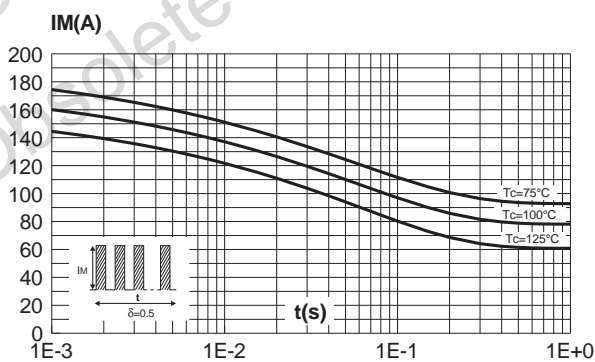
**Fig. 1:** Average forward power dissipation versus average forward current.



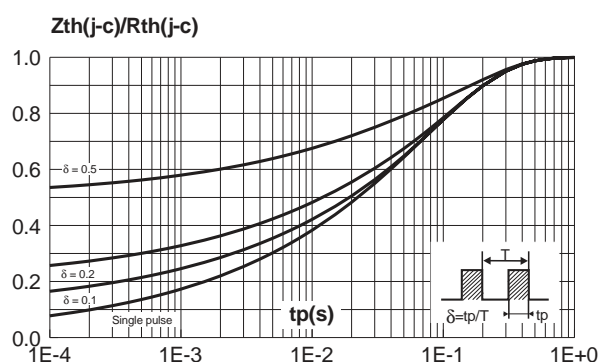
**Fig. 2:** Average current versus ambient temperature ( $\delta = 0.5$ ).



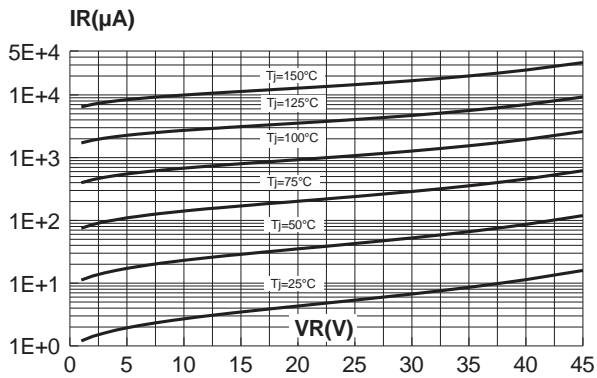
**Fig. 3:** Non-repetitive surge peak forward current versus overload duration (maximum values).



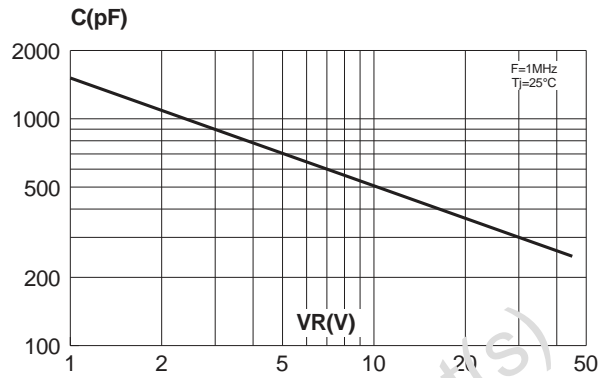
**Fig. 4:** Relative variation of thermal transient impedance junction to case versus pulse duration.



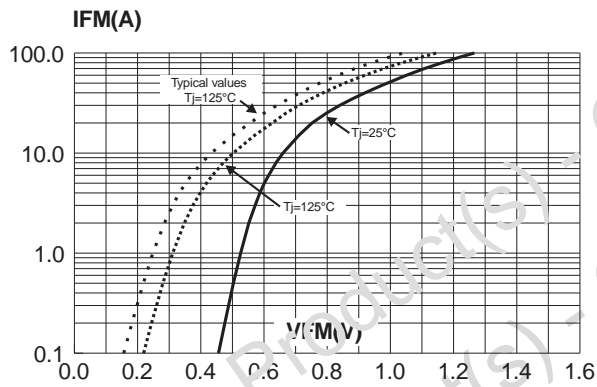
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values).



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



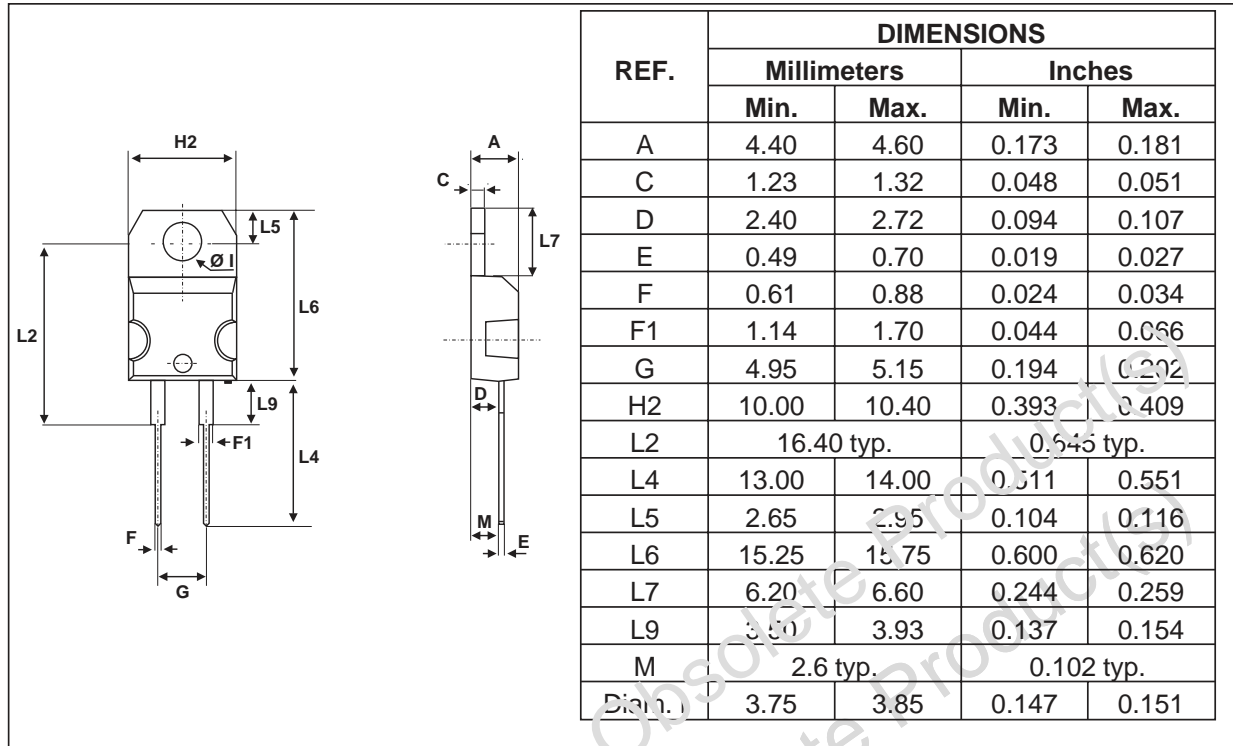
**Fig. 7:** Forward voltage drop versus forward current (maximum values).



Obsolete Product(s)  
 Obsolete Product(s)

# 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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