



STPS6045CP/CPI/CW

POWER SCHOTTKY RECTIFIERS

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2x30 A
V_{RRM}	45 V
V_F	0.63 V

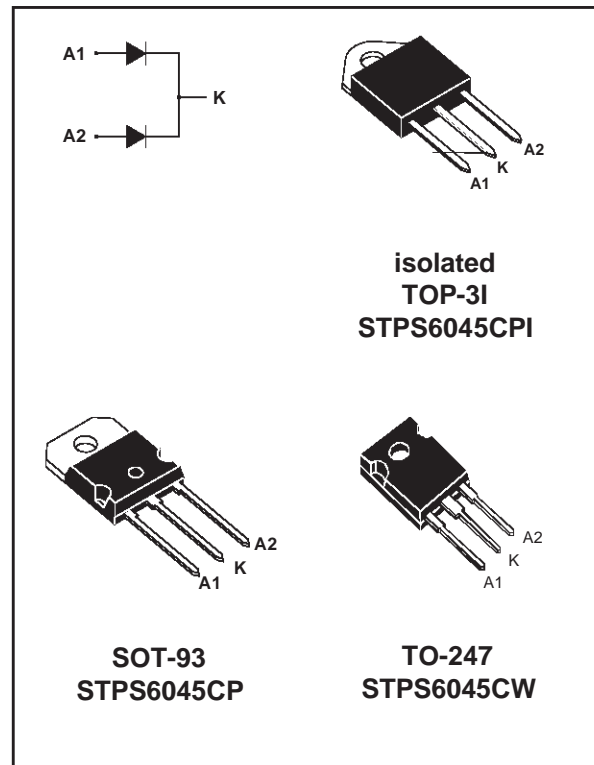
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREME FAST SWITCHING
- LOW THERMAL RESISTANCE
- INSULATED PACKAGE:TOP-3I
Insulating voltage = 2500V_{RMS}
Capacitance = 12pF

DESCRIPTION

Dual center tap schottky rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in SOT-93, TOP-3I or TO-247 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		Per diode	60	A	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SOT-93 TO-247	$T_c = 125^\circ\text{C}$	Per diode	30	A
		TOP-3I	$T_c = 105^\circ\text{C}$	Per device	60	
I_{FSM}	Surge non repetitive forward current		$t_p = 10 \text{ ms}$ Sinusoidal	Per diode	400	A
I_{RRM}	Peak repetitive reverse current		$t_p = 2 \mu\text{s}$ $F = 1 \text{ kHz}$	Per diode	1	A
T_{stg}	Storage temperature range			- 65 to + 150	$^\circ\text{C}$	
T_j	Maximum junction temperature			150	$^\circ\text{C}$	
dV/dt	Critical rate of rise of reverse voltage			10000	V/ μs	

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
R _{th(j-c)}	Junction to case	SOT-93/ TO-247	Per diode Total	0.95 0.55	°C/W
		TOP-3I	Per diode Total	1.8 1.1	
R _{th(c)}	Coupling	SOT-93/ TO-247		0.15	°C/W
		TOP-3I		0.4	

When the diodes 1 and 2 are used simultaneously:
 $\Delta T_J(\text{diode } 1) = P(\text{diode } 1) \times R_{th}(\text{Per diode}) + P(\text{diode } 2) \times R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (PER DIODE)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I _R *	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			500	μA
		T _j = 125°C				80	mA
V _F **	Forward voltage drop	T _j = 125°C	I _F = 60 A			0.78	V
		T _j = 125°C	I _F = 30 A			0.63	
		T _j = 25°C	I _F = 60 A			0.84	

Pulse test : * t_p = 5 ms, δ < 2 %

** t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation:

$$P = 0.48 \times I_{F(AV)} + 0.005 I_{F(RMS)}^2$$

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

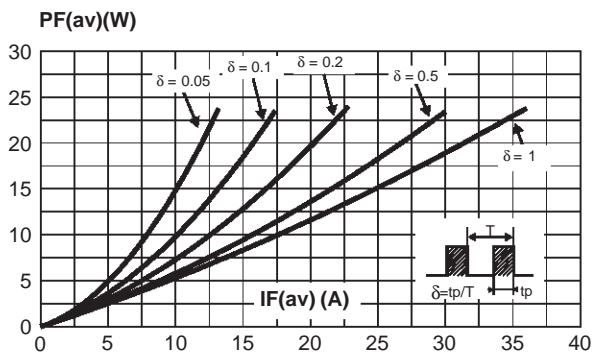


Fig. 2: Average current versus ambient temperature ($\delta=0.5$) (per diode) (SOT-93 and TO-247).

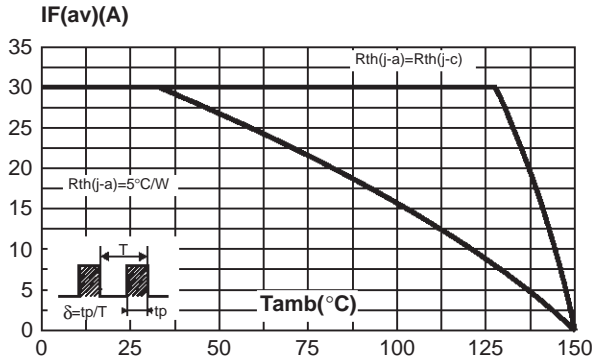


Fig. 3: Average current versus ambient temperature ($\delta=0.5$) (per diode) (TOP-3I).

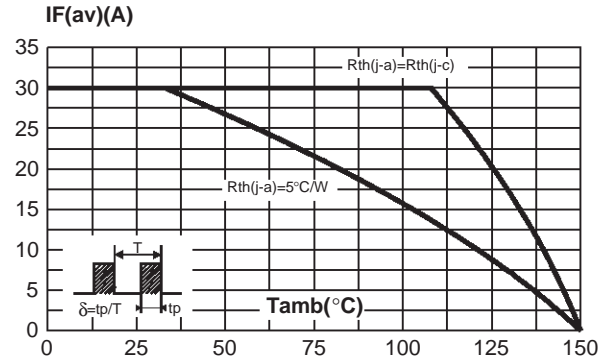


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (SOT-93 and TO-247).

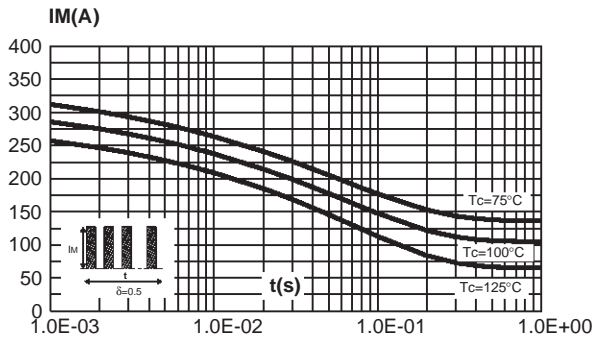


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (TOP-3I).

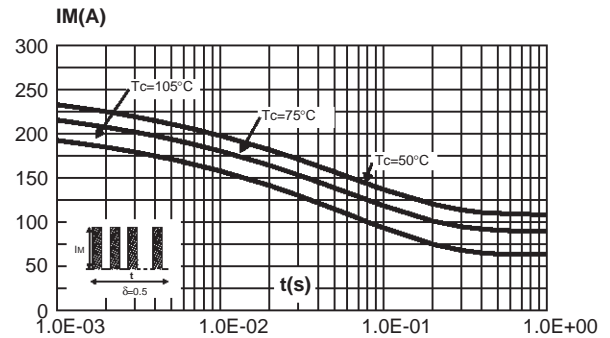


Fig. 6: Relative variation of thermal transient impedance junction to case versus pulse duration.

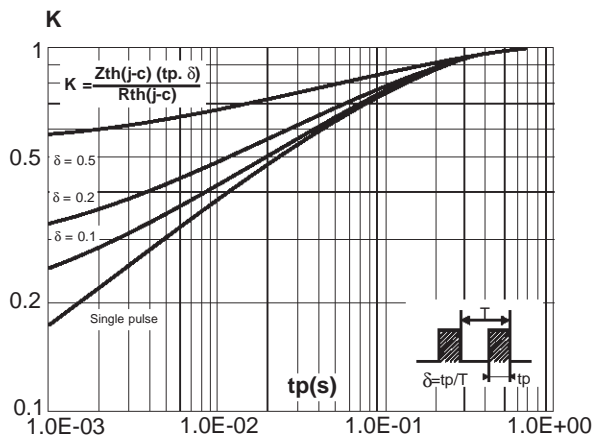
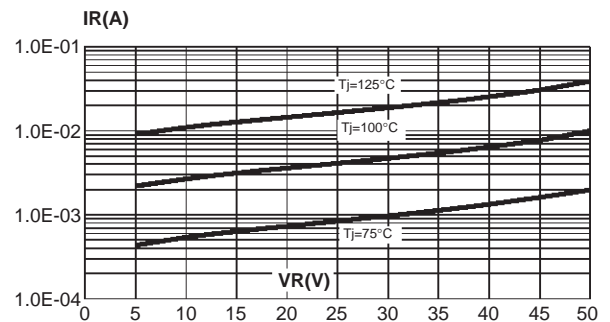


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).



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

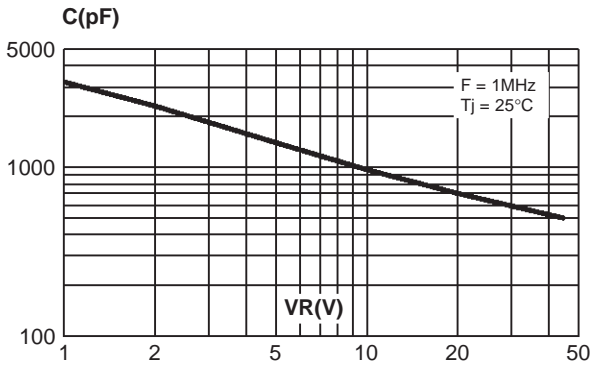
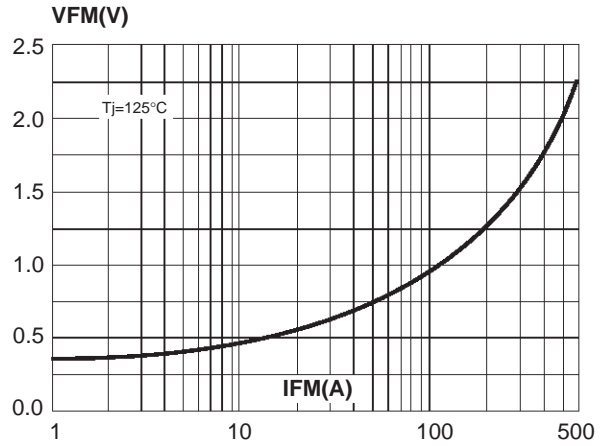
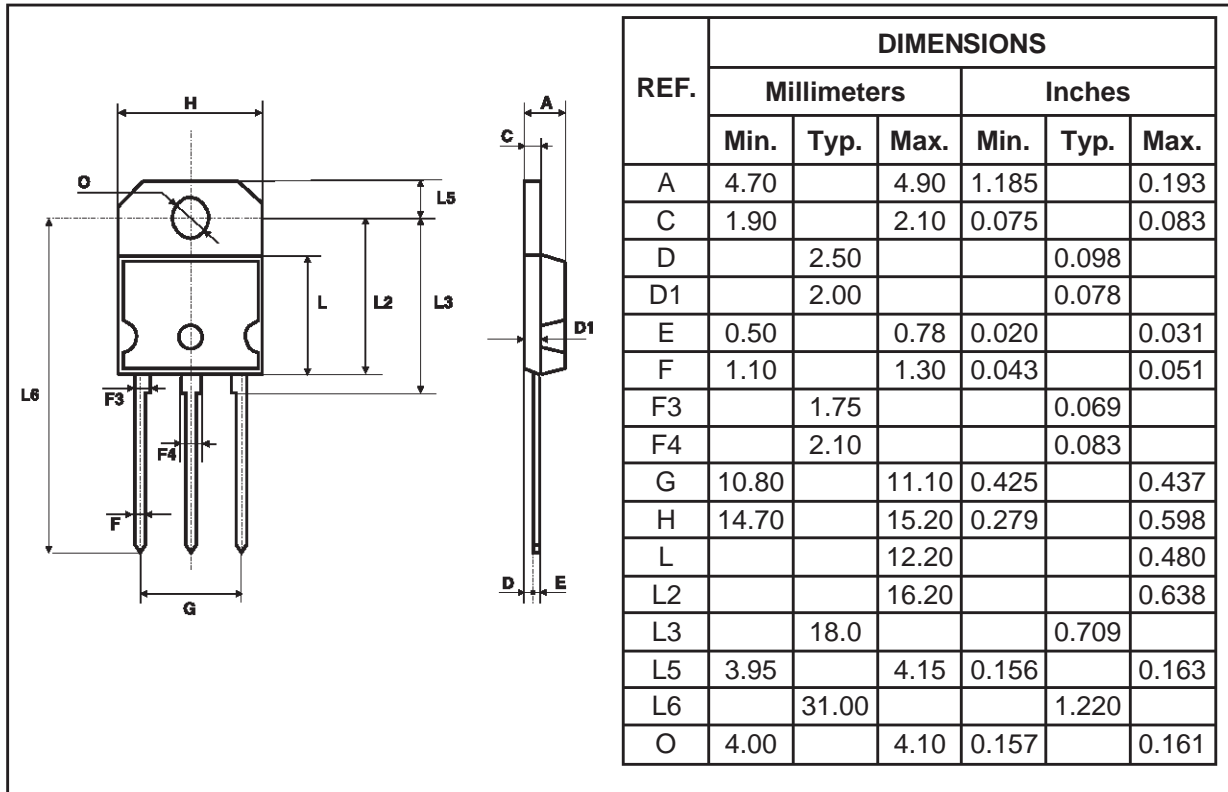


Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).

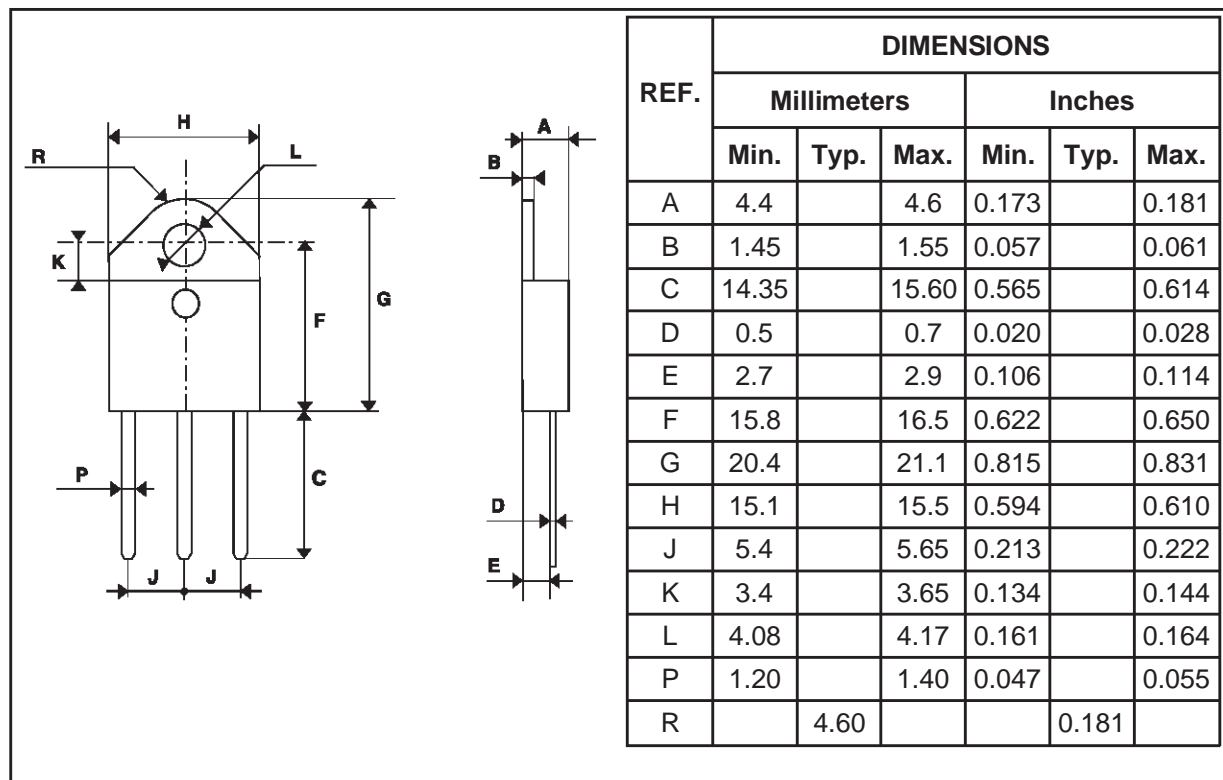


PACKAGE MECHANICAL DATA SOT-93



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 5.3 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N

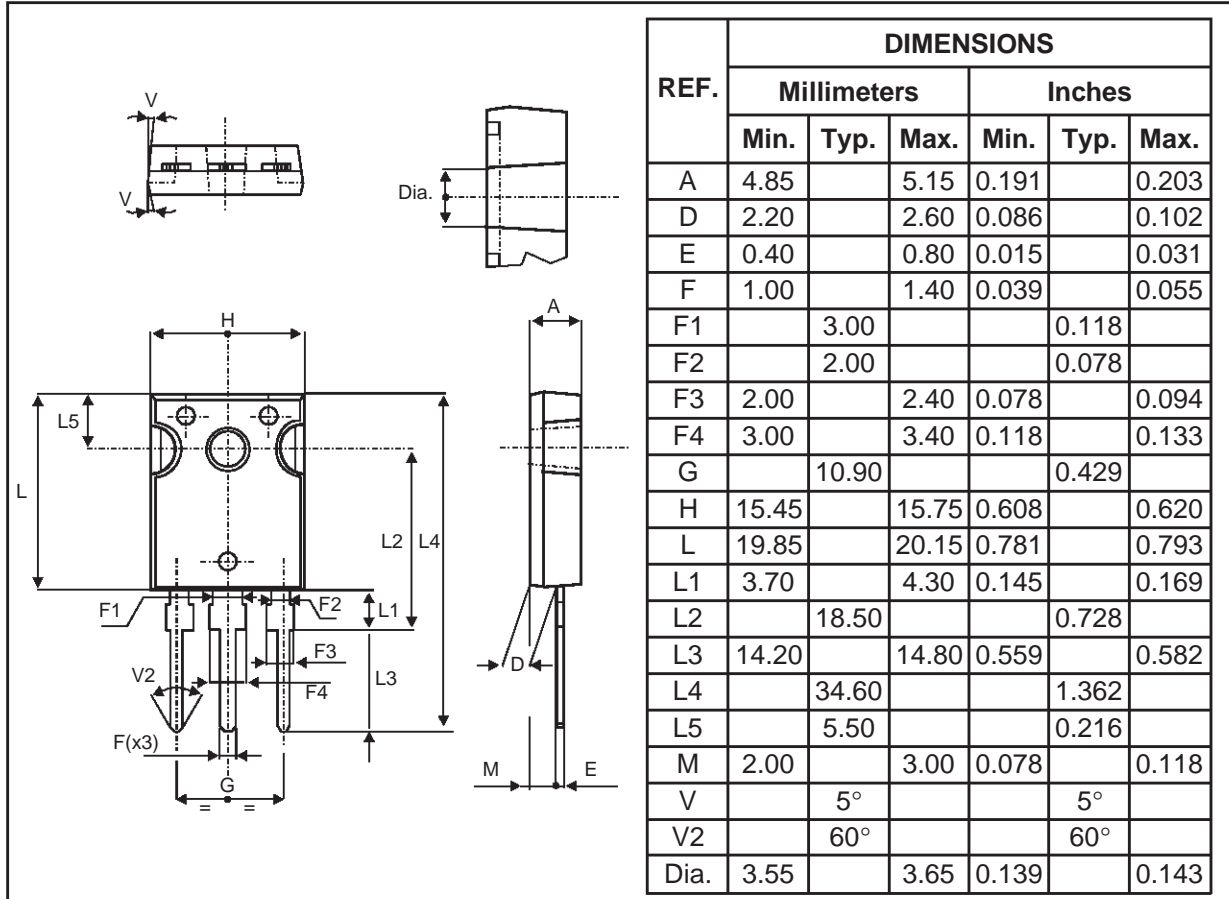
PACKAGE MECHANICAL DATA
TOP-3l (isolated)



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 5.3 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N

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PACKAGE MECHANICAL DATA TO-247



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 4.4 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N

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