



STPS3045CP/CPI/CW

POWER SCHOTTKY RECTIFIERS

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2x15 A
V_{RRM}	45 V
V_F	0.57 V

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- HIGH AVALANCHE CAPABILITY
- LOW THERMAL RESISTANCE
- INSULATED PACKAGE :TOP-3I
Insulating voltage = 2500V_{RMS}
Capacitance = 12pF

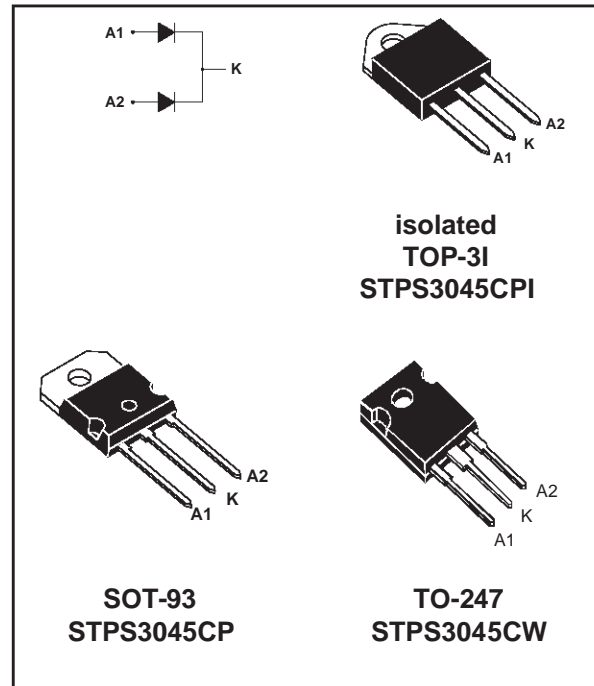
DESCRIPTION

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	30	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SOT-93 TO-247	$T_c = 135^\circ\text{C}$ Per diode	15	A
		TOP-3I	$T_c = 125^\circ\text{C}$ Per device	30	
I_{FSM}	Surge non repetitive forward current		$t_p = 10 \text{ ms}$ Sinusoidal Per diode	220	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 + 175	$^\circ\text{C}$
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-2247	Per diode total	1.5 0.8	°C/W
		TOP-3I	Per diode total	2.2 1.6	
R _{th(c)}	Coupling	SOT-93/ TO-247		0.1	°C/W
		TOP-3I		1.0	

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}			200	μA
		T _j = 125°C				40	mA
V _F **	Forward voltage drop	T _j = 125°C	I _F = 30 A			0.72	V
		T _j = 125°C	I _F = 15 A			0.57	
		T _j = 25°C	I _F = 30 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 :

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

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

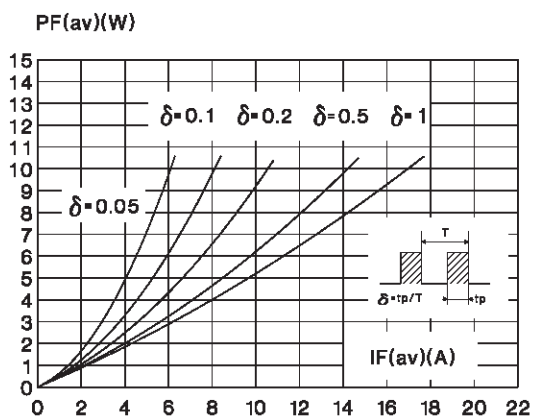


Fig. 2: Average current versus ambient temperature (per diode) (SOT-93 and TO-247).

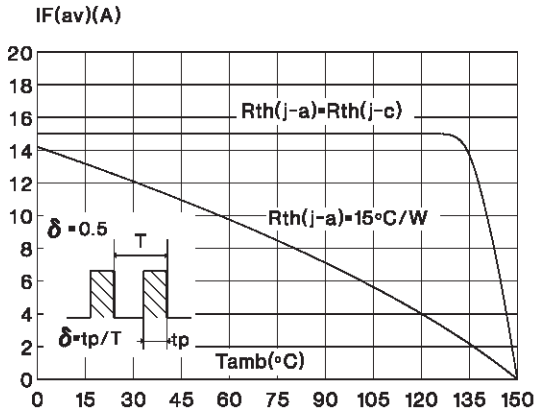


Fig. 3: Average current versus ambient temperature (per diode) (TOP-31).

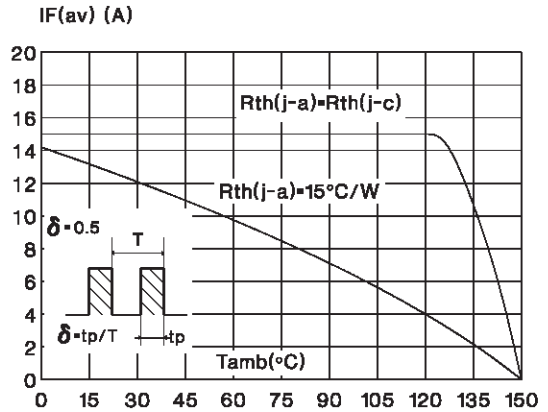


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (SOT-93 and TO-247).

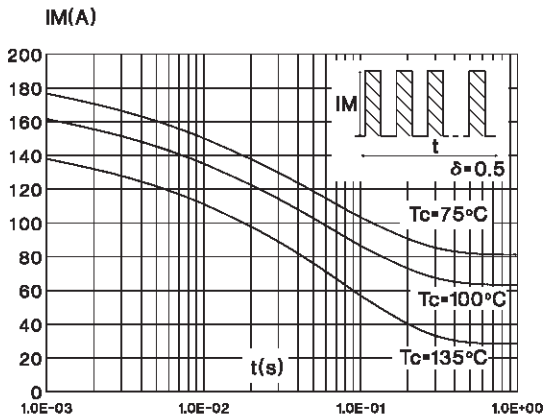


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (TOP-31).

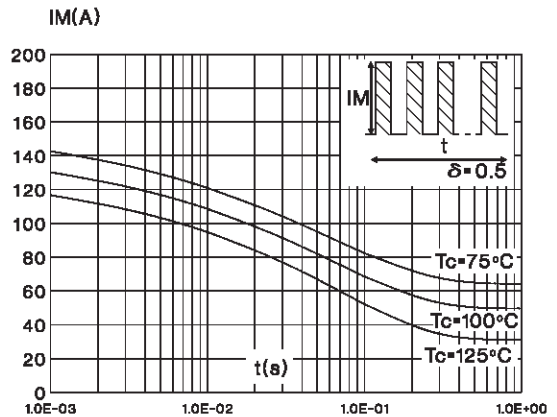


Fig. 6: Relative variation of thermal transient impedance junction to case versus pulse duration.

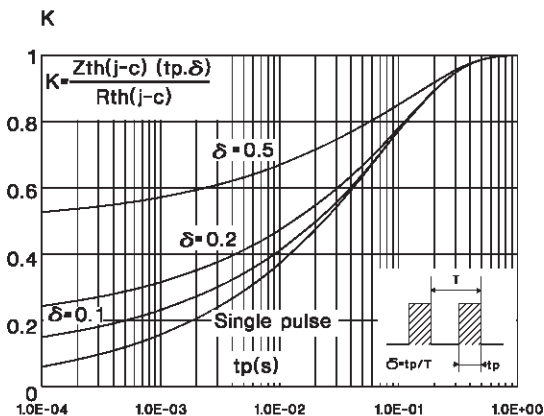
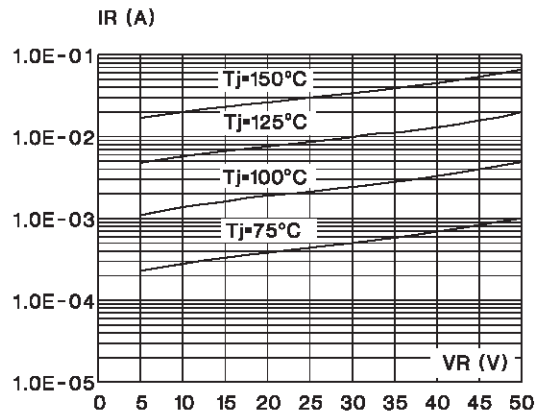


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values) (per diode).



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

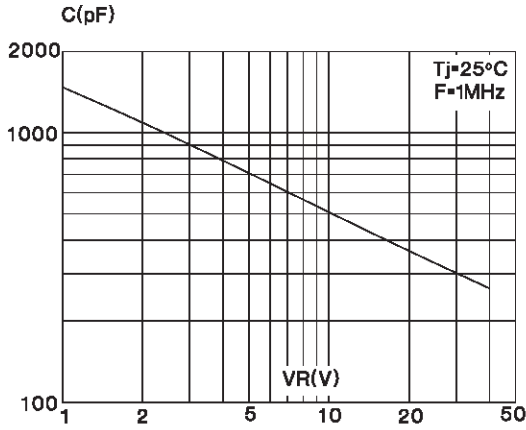
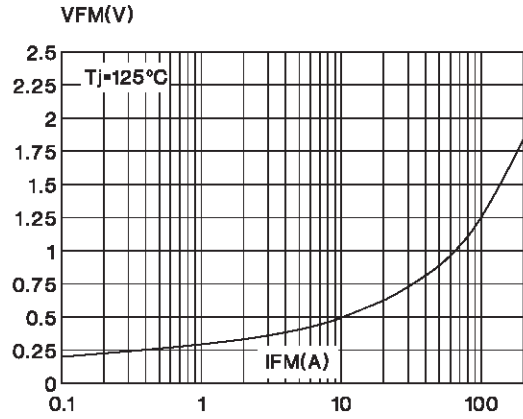
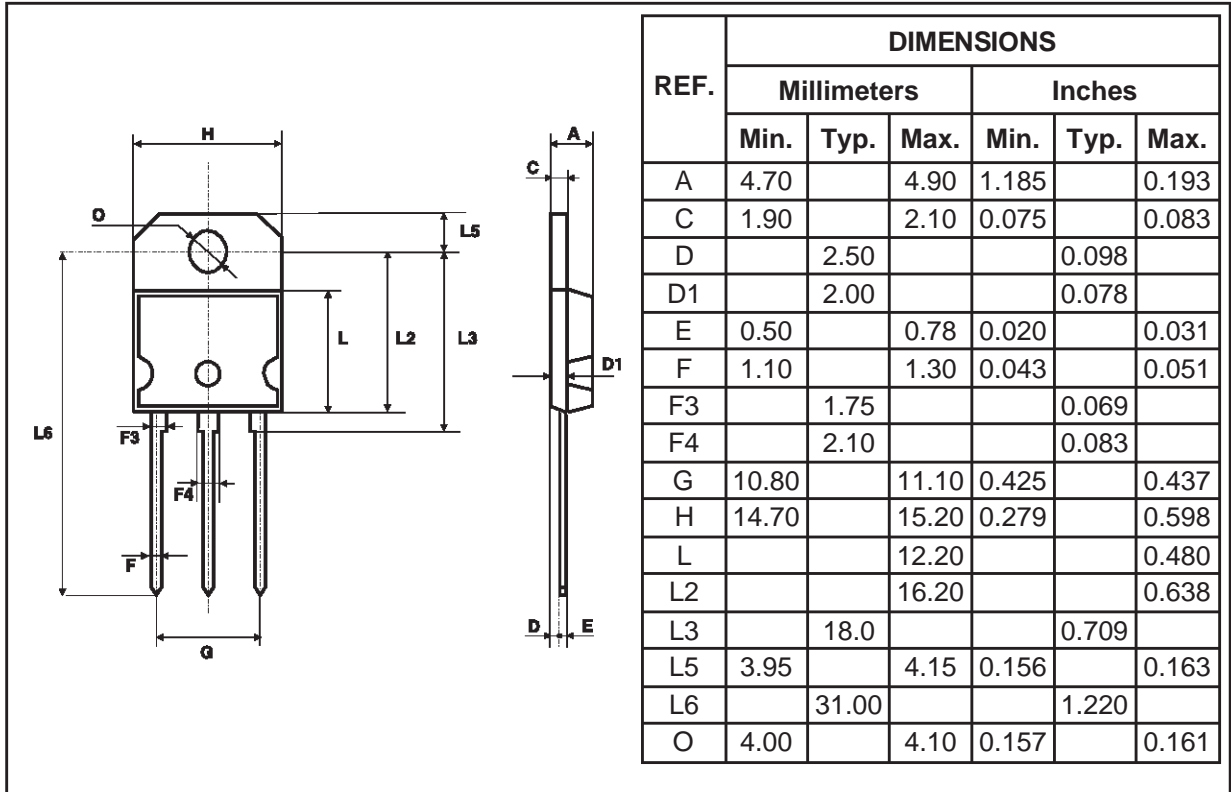


Fig. 9: Forward voltage drop versus forward current (maximum values) (per diode).



PACKAGE MECHANICAL DATA
SOT-93



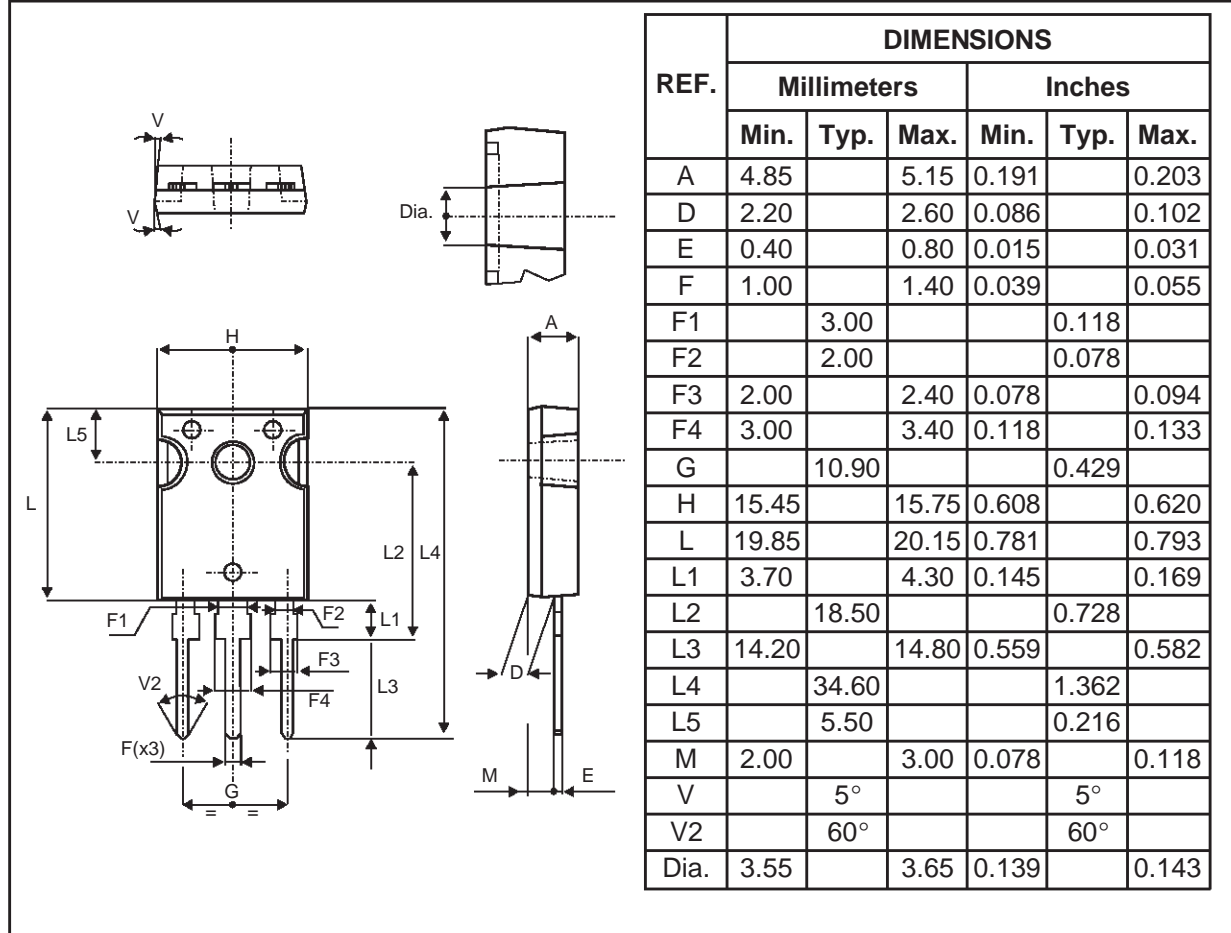
- **Marking** : Type number
- Cooling method : C
- Weight : 5.3 g
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA
 TOP-3I (isolated)

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.5		0.7	0.020		0.028
E	2.7		2.9	0.106		0.114
F	15.8		16.5	0.622		0.650
G	20.4		21.1	0.815		0.831
H	15.1		15.5	0.594		0.610
J	5.4		5.65	0.213		0.222
K	3.4		3.65	0.134		0.144
L	4.08		4.17	0.161		0.164
P	1.20		1.40	0.047		0.055
R		4.60			0.181	

- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 4.7 g
- **Recommended torque value** : 0.8m.N
- **Maximum torque value** : 1.0m.N

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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