

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I _{F(AV)}	2 x 15 A
V _{RMM}	45 V
T _{j(max)}	175 °C
V _F	0.57 V

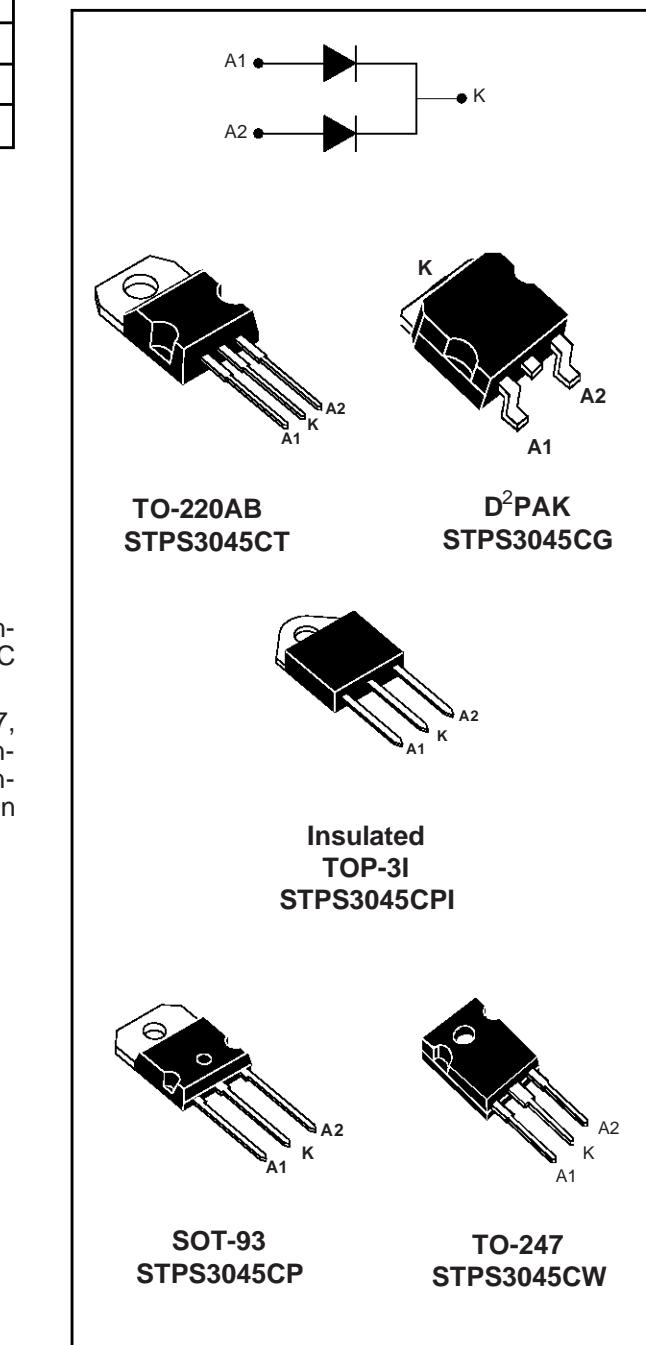
FEATURES AND BENEFITS

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

DESCRIPTION

Dual center tap Schottky rectifier suited for Switch-Mode Power Supply and high frequency DC to DC converters.

Packaged either in TO-220AB, D²PAK, TO-247, SOT93 or TOP-3I, this device is especially intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



STPS3045CT/CG/CP/CPI/CW

ABSOLUTE RATINGS (limiting values, per diode)

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 $\delta = 0.5$	TO-220AB D ² PAK SOT-93 TO-247	T _c = 155°C	Per diode Per device	15	A			
		TOP-3I	T _c = 150°C		30				
I _{FSM}	Surge non repetitive forward current		tp = 10 ms sinusoidal		220	A			
I _{RRM}	Repetitive peak reverse current		tp = 2 µs square F = 1kHz		1	A			
I _{RSR}	Non repetitive peak reverse current		tp = 100 µs 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/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
R _{th (j-c)}	Junction to case	TO-220AB D ² PAK	Per diode	1.60	°C/W	
		SOT-93 TO-247	Total	0.85		
		TOP-3I	Per diode	1.5		
R _{th (c)}		TOP-3I	Total	0.8		
		TO-220AB D ² PAK SOT-93 TO-247	Coupling	2.2		
		TOP-3I	Coupling	1.6		
		TOP-3I	Coupling	0.10		
		TOP-3I	Coupling	1.0		

When the diodes 1 and 2 are used simultaneously:

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

STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			200	μA
		$T_j = 125^\circ\text{C}$			11	40	mA
V_F *	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 15 \text{ A}$		0.5	0.57	V
		$T_j = 25^\circ\text{C}$	$I_F = 30 \text{ A}$			0.84	
		$T_j = 125^\circ\text{C}$	$I_F = 30 \text{ A}$		0.65	0.72	

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

To evaluate the conduction losses use the following equation :
 $P = 0.42 \times I_{F(\text{AV})} + 0.01 I_{F(\text{RMS})}^2$

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

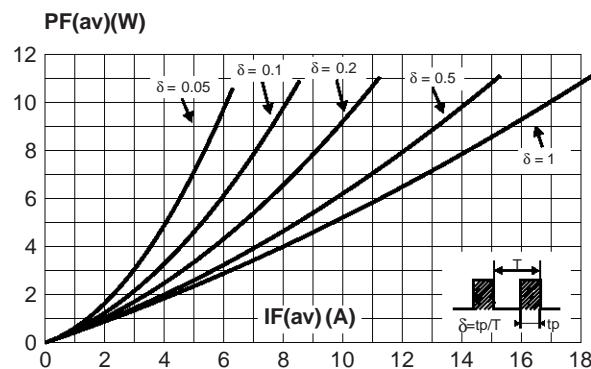
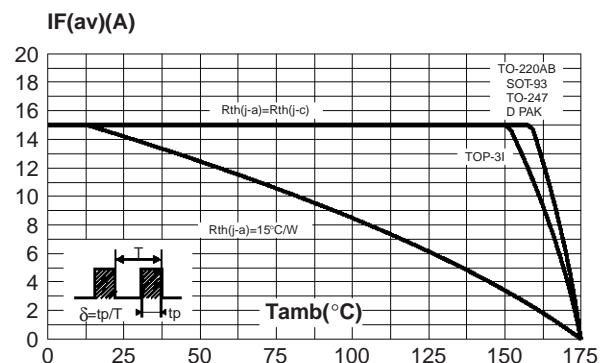
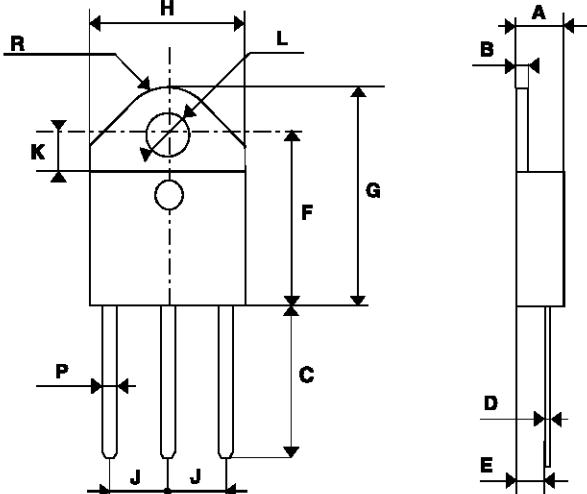


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$, per diode).



PACKAGE MECHANICAL DATA
TOP-3I (isolated)

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



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS3045CT	STPS3045CT	TO-220AB	2.23 g.	50	Tube
STPS3045CG	STPS3045CG	D ² PAK	1.48 g.	50	Tube
STPS3045CG-TR	STPS3045CG	D ² PAK	1.48 g.	1000	Tape & reel
STPS3045CP	STPS3045CP	SOT-93	3.97 g.	30	Tube
STPS3045CPI	STPS3045CPI	TOP-3I	4.46 g.	30	Tube
STPS3045CW	STPS3045CW	TO-247	4.36 g.	30	Tube

- Cooling method: by conduction (C)
- Recommended torque value (SOT-93, TOP-3I, TO-247): 0.8 N.m.
- Recommended torque value (TO-220AB): 0.55 N.m.
- Maximum torque value (SOT-93, TOP-3I, TO-247): 1.0 N.m.
- Maximum torque value (TO-220AB): 0.7 N.m.
- Epoxy meets UL94,V0