

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2x30 A
V_{RRM}	45 V
$T_j(\text{max})$	175 °C
$V_F(\text{max})$	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

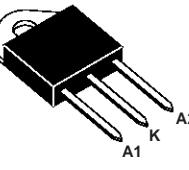
Dual center tap Schottky rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged either 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.

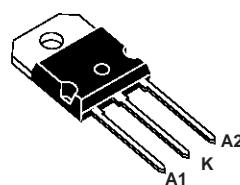
ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter				Value	Unit		
V_{RRM}	Repetitive peak reverse voltage				45	V		
$I_{F(RMS)}$	RMS forward current				60	A		
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SOT-93	$T_c = 150^\circ\text{C}$	Per diode	30	A		
		TO-247	$T_c = 130^\circ\text{C}$	Per device	60			
I_{FSM}	Surge non repetitive forward current		$tp = 10 \text{ ms sinusoidal}$		400	A		
I_{RRM}	Repetitive Peak reverse current		$tp = 2 \mu\text{s square}$ $F = 1\text{kHz}$		1	A		
I_{RSR}	Non repetitive peak reverse current		$tp = 100 \mu\text{s square}$		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/μs		

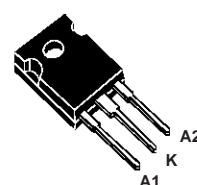
* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink



Insulated
TOP-3I
STPS6045CPI



SOT-93
STPS6045CP



TO-247
STPS6045CW

STPS6045CP/CPI/CW

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th(j-c)}$	Junction to case	SOT-93 / TO-247	Per diode Total	0.95 0.55	$^{\circ}\text{C/W}$
		TOP-3I	Per diode Total	1.8 1.1	
$R_{th(c)}$		SOT-93 / TO-247	Coupling	0.15	
		TOP-3I		0.4	

When the diodes 1 and 2 are used simultaneously:

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

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$T_J = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			500	μA
		$T_J = 125^{\circ}\text{C}$			20	80	mA
V_F *	Forward voltage drop	$T_J = 125^{\circ}\text{C}$	$I_F = 30 \text{ A}$		0.53	0.63	V
		$T_J = 25^{\circ}\text{C}$	$I_F = 60 \text{ A}$			0.84	
		$T_J = 125^{\circ}\text{C}$	$I_F = 60 \text{ A}$		0.68	0.78	

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

To evaluate the conduction losses use the following equation:

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

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

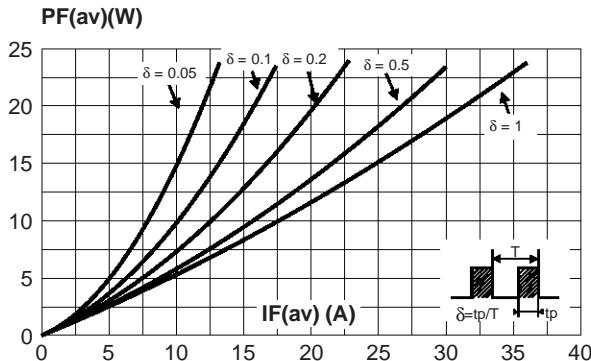
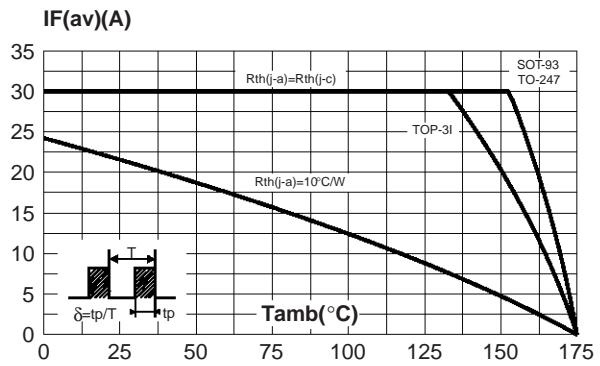
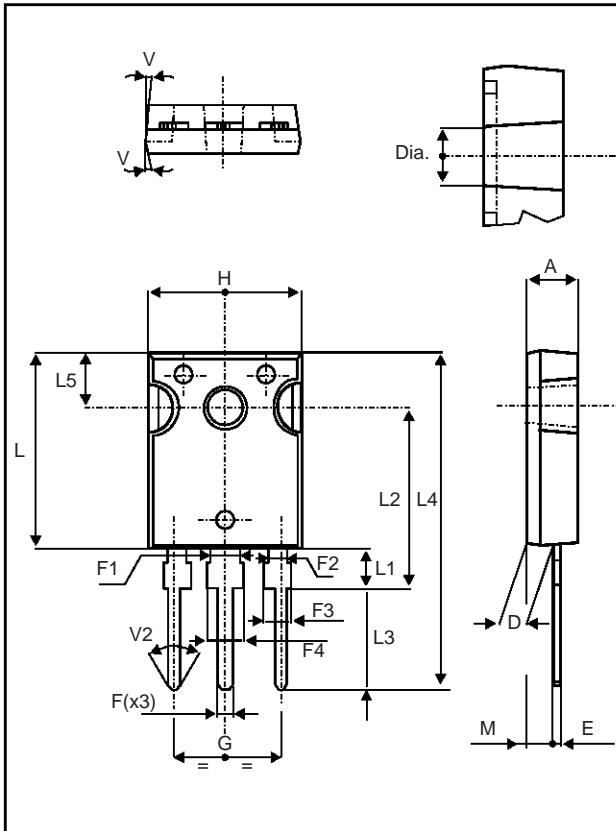


Fig. 2: Average current versus ambient temperature ($\delta=0.5$, per diode).



PACKAGE MECHANICAL DATA
TO-247



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
D	2.20		2.60	0.086		0.102
E	0.40		0.80	0.015		0.031
F	1.00		1.40	0.039		0.055
F1		3.00			0.118	
F2		2.00			0.078	
F3	2.00		2.40	0.078		0.094
F4	3.00		3.40	0.118		0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
L3	14.20		14.80	0.559		0.582
L4		34.60			1.362	
L5		5.50			0.216	
M	2.00		3.00	0.078		0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55		3.65	0.139		0.143

Type	Marking	Package	Weight	Base qty	Delivery mode
STPS6045CP	STPS6045CP	SOT-93	3.97 g.	30	Tube
STPS6045CPI	STPS6045CPI	TOP-31	4.46 g.	30	Tube
STPS6045CW	STPS6045CW	TO-247	4.36 g.	30	Tube