STPS30L45CG/CR/CT/CW/CFP

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCTS CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
V_{RRM}	45 V
Tj (max)	150 °C
V_F (max)	0.50 V

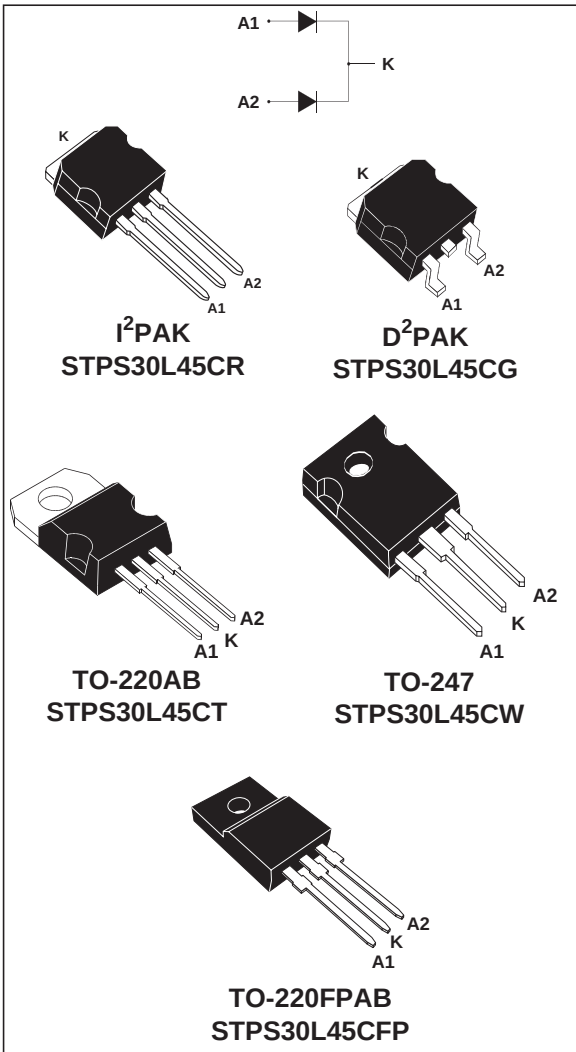
FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP MEANING VERY SMALL CONDUCTION LOSSES
- LOW SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- LOW THERMAL RESISTANCE
- AVALANCHE RATED
- INSULATED PACKAGE: TO-220FPAB
  Insulating voltage: 2000V DC
  Capacitance = 45pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap schottky rectifiers suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-247, TO-220AB, TO-220FPAB, D^2PAK and I^2PAK these devices are intended for use in low voltage, high frequency inverters, free-wheeling and polarity protection applications.



I^2PAK
STPS30L45CR

D^2PAK
STPS30L45CG

TO-220AB
STPS30L45CT

TO-247
STPS30L45CW

TO-220FPAB
STPS30L45CFP

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	TO-220FPAB	Tc = 110°C δ = 0.5	Per diode	15	A
		TO-220AB, TO-247, I^2PAK, D^2PAK	Tc = 135°C δ = 0.5	Per device	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_{RSM}	Non repetitive peak reverse current		tp = 100 µs square		3	A
P_{ARM}	Repetitive peak avalanche power		tp = 1µs Tj = 25°C		6000	W
T_{stg}	Storage temperature range				- 65 to + 150	°C
Tj	Maximum operating junction temperature *				150	°C
dV/dt	Critical rate of rise of reverse voltage				10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
$R_{th\ (j-c)}$	Junction to case	TO-220FPAB	Per diode	4	°C/W
			Total	3.2	
		TO-220AB, TO-247, I^2PAK, D^2PAK	Per diode	1.60	
			Total	0.85	
$R_{th\ (c)}$		TO-220FPAB	Coupling	2.5	°C/W
		TO-220AB, TO-247, I^2PAK, D^2PAK		0.10	

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			0.4	mA
		Tj = 125°C			100	200	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 15 A			0.55	V
		Tj = 125°C	I_F = 15 A		0.42	0.50	
		Tj = 25°C	I_F = 30 A			0.74	
		Tj = 125°C	I_F = 30 A		0.59	0.67	

Pulse test : * tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation :
$P = 0.330 \times I_{F(AV)} + 0.011\ I_F^2{}_{(RMS)}$

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

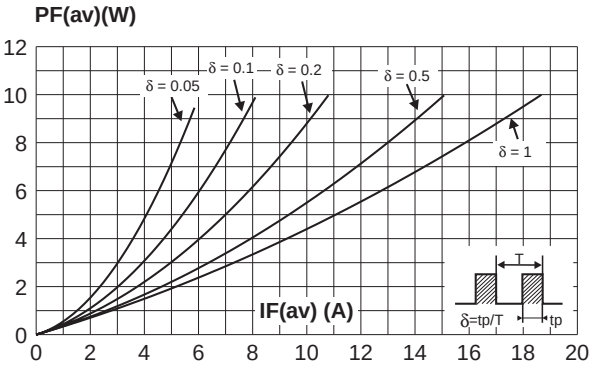


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

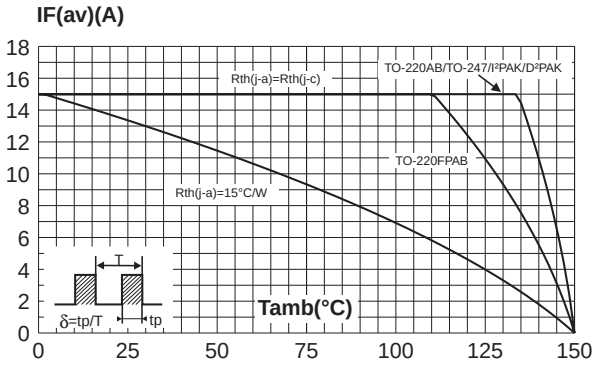


Fig. 3: Normalized avalanche power derating versus pulse duration.

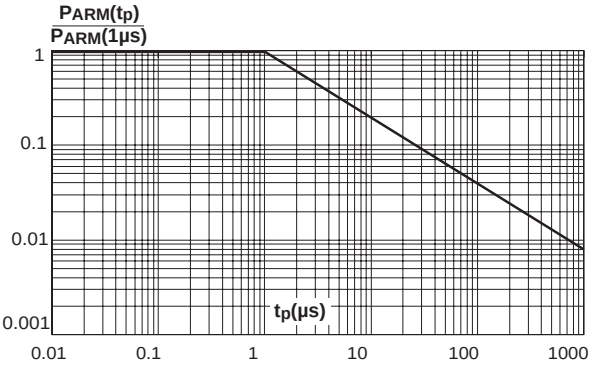


Fig. 4: Normalized avalanche power derating versus junction temperature.

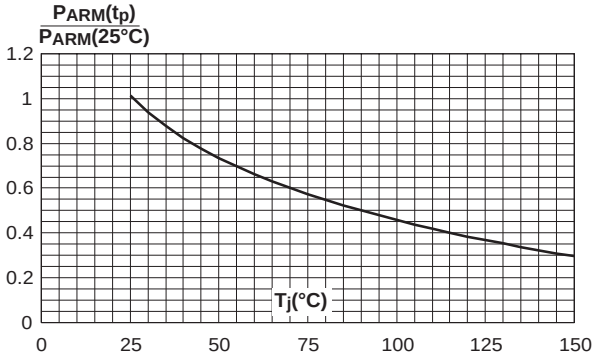


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

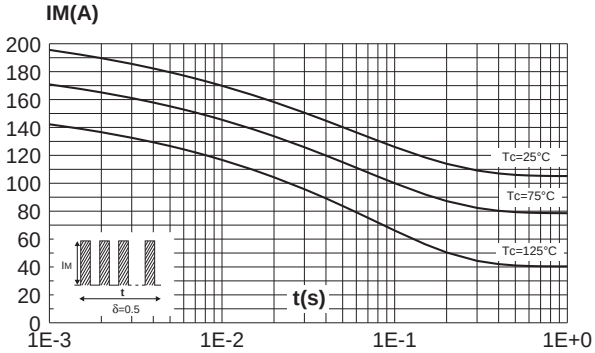
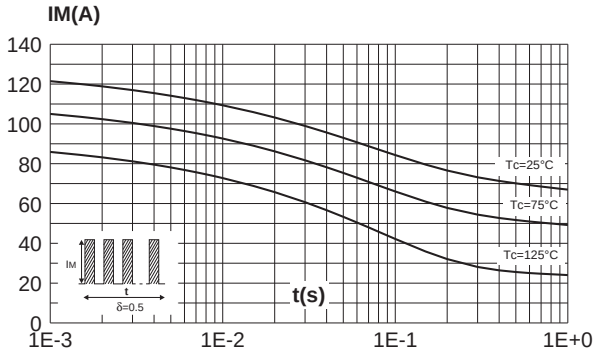
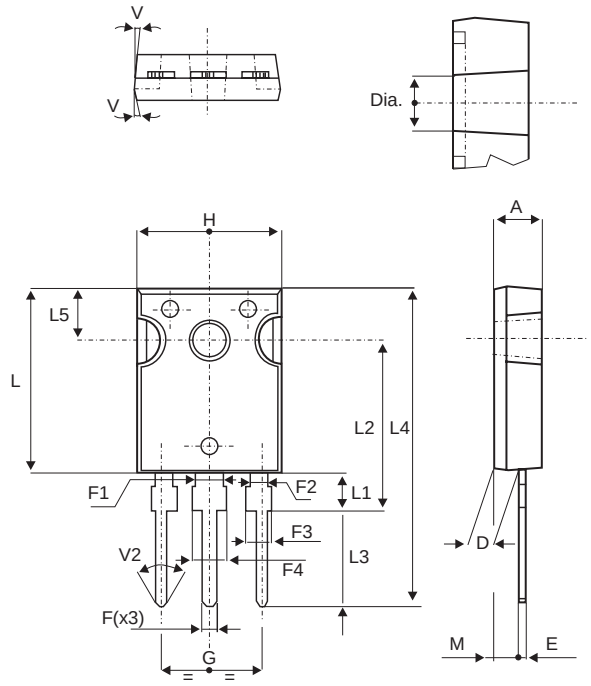


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220FPAB only).



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

- Cooling method : C
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS30L45CT	STPS30L45CT	TO-220AB	2g	50	Tube
STPS30L45CG	STPS30L45CG	D^2PAK	1.8g	50	Tube
STPS30L45CG-TR	STPS30L45CG	D^2PAK	1.8g	500	Tape & reel
STPS30L45CW	STPS30L45CW	TO-247	4.4g	30	Tube
STPS30L45CR	STPS30L45CR	I^2PAK	1.4g	50	Tube
STPS30L45CFP	STPS30L45CFP	TO-220FPAB	1.9 g	50	Tube

- Epoxy meets UL94,V0