STPS30150CT/CW/CFP

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

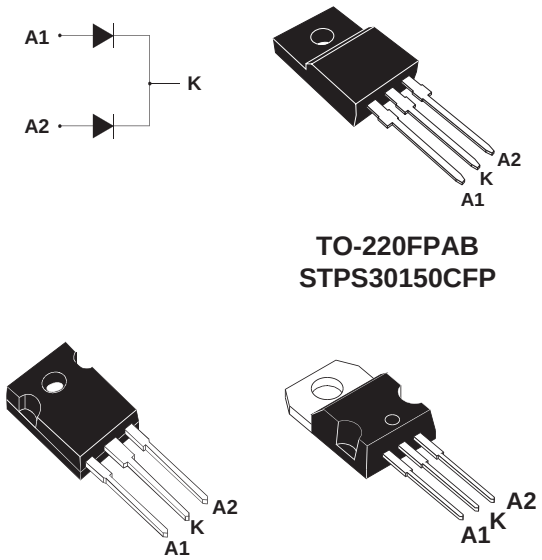
$I_{F(AV)}$	2 x 15 A
V_{RRM}	150 V
Tj	175°C
V_F (max)	0.75 V

FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- INSULATED PACKAGE: TO-220FPAB
  Insulating voltage: 2000V DC
  Capacitance: 45pF
- AVALANCHE CAPABILITY SPECIFIED

DESCRIPTION

Dual center tap schottky rectifier designed for high frequency Switched Mode Power Supplies.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter				Value	Unit
V_{RRM}	Repetitive peak reverse voltage				150	V
$I_{F(RMS)}$	RMS forward current				30	A
$I_{F(AV)}$	Average forward current δ = 0.5	TO-220FPAB	Tc = 110°C	per diode per device	15	A
		TO-220AB	Tc = 155°C			
		TO-247			30	
I_{FSM}	Surge non repetitive forward current		tp = 10 ms sinusoidal		220	A
P_{ARM}	Repetitive peak avalanche power		tp = 1µs Tj = 25°C		10500	W
T_{stg}	Storage temperature range				- 65 to + 175	°C
Tj	Maximum operating junction temperature *				175	°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 Total	4 3.3	°C/W
		TO-220AB	Per diode Total	1.6 0.85	
		TO-247	Per diode Total	1.5 0.8	
$R_{th\ (c)}$		TO-220FPAB	Coupling	2.6	
		TO-220AB	Coupling	0.1	
		TO-247	Coupling	0.1	

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	$V_R = V_{RRM}$			6.5	µA
		Tj = 125°C				8	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 15 A			0.92	V
		Tj = 125°C	I_F = 15 A		0.69	0.75	
		Tj = 25°C	I_F = 30 A			1	
		Tj = 125°C	I_F = 30 A		0.8	0.86	

Pulse test : * tp = 5 ms, δ < 2%
** tp = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

$P = 0.64 \times I_{F(AV)} + 0.0073\ I_{F^2(RMS)}$

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

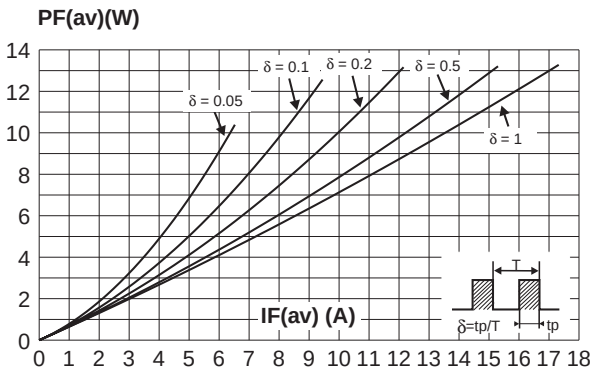


Fig. 2: Average forward current versus ambient temperature (δ = 0.5, per diode).