



STPS20150CT/CG/CR/CFP

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

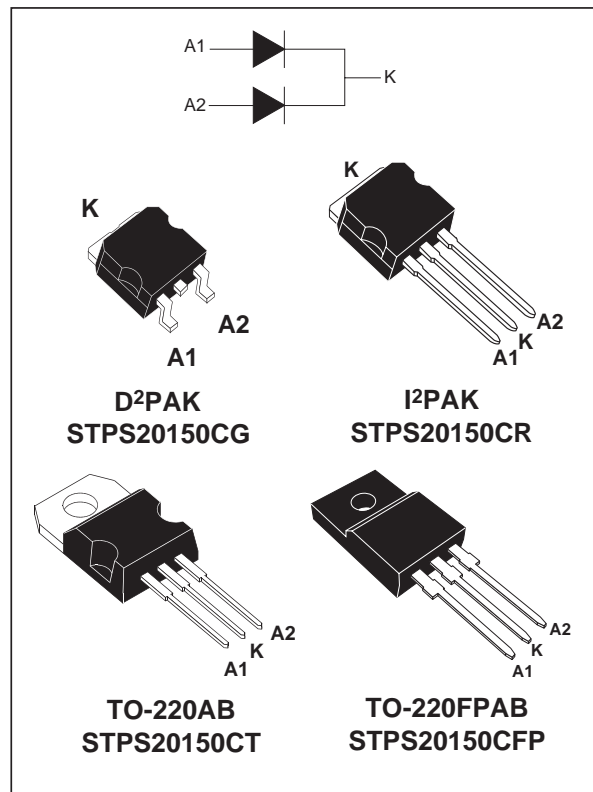
$I_{F(AV)}$	2 x 10 A
V_{RRM}	150 V
T_j	175°C
$V_F(max)$	0.75 V

FEATURES AND BENEFITS

- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- 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 $\delta = 0.5$	TO-220AB D ² PAK / I ² PAK	$T_c = 155^\circ\text{C}$	Per diode	10	A
		TO-220FPAB	$T_c = 135^\circ\text{C}$	Per device	20	
I_{FSM}	Surge non repetitive forward current		$t_p = 10\text{ ms}$ sinusoidal	180	A	
P_{ARM}	Repetitive peak avalanche power		$t_p = 1\mu\text{s}$ $T_j = 25^\circ\text{C}$	6700	W	
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	

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
R _{th(j-c)}	Junction to case	TO-220AB / D ² PAK / I ² PAK	Per diode	2.2	°C/W
		TO-220FPAB		4.5	
		TO-220AB / D ² PAK / I ² PAK	Total	1.3	
		TO-220FPAB		3.5	
R _{th(c)}		TO-220AB / D ² PAK / I ² PAK	Coupling	0.3	
		TO-220FPAB		2.5	

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°C	V _R = V _{RRM}			5.0	μA
		T _j = 125°C				5.0	mA
V _F **	Forward voltage drop	T _j = 25°C	I _F = 10 A			0.92	V
		T _j = 125°C	I _F = 10 A		0.69	0.75	
		T _j = 25°C	I _F = 20 A			1	
		T _j = 125°C	I _F = 20 A		0.79	0.86	

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

To evaluate the conduction losses use the following equation:
 $P = 0.64 \times I_{F(AV)} + 0.011 I_{F(RMS)}^2$

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

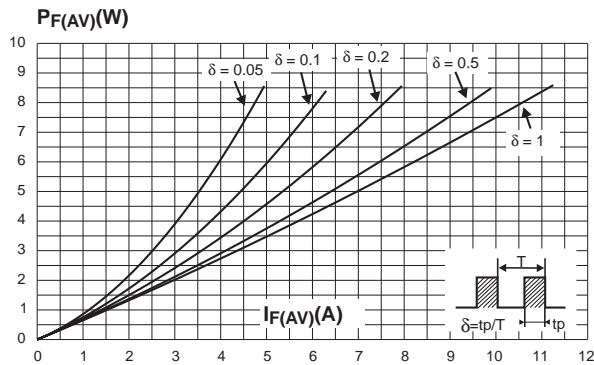


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode).

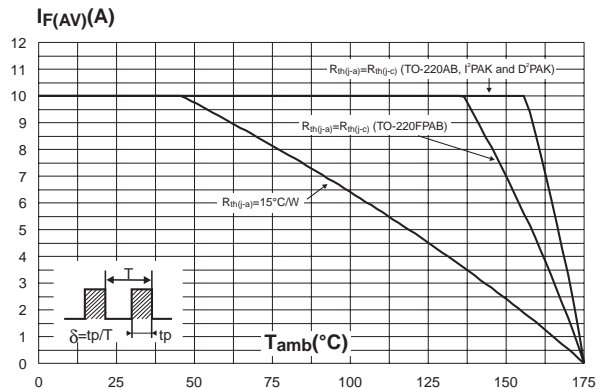


Fig. 3: Normalized avalanche power derating versus pulse duration.

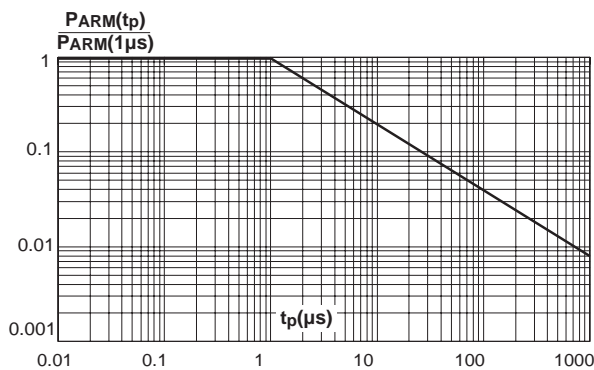


Fig. 4: Normalized avalanche power derating versus junction temperature.

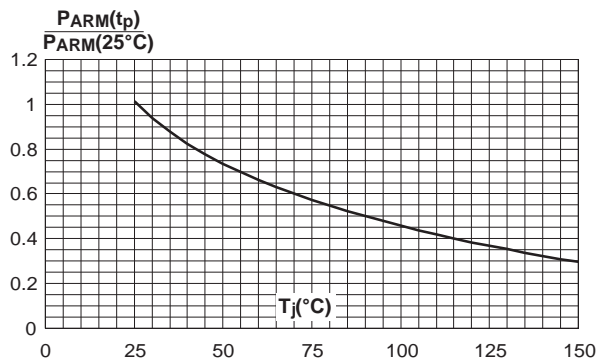


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values, per diode). TO-220AB, I²PAK and D²PAK

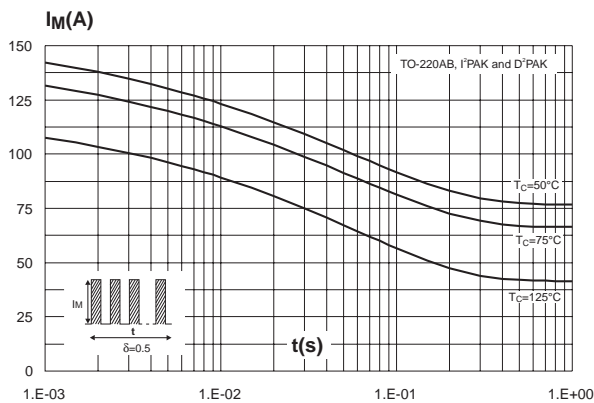


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values, per diode). TO-220FPAB

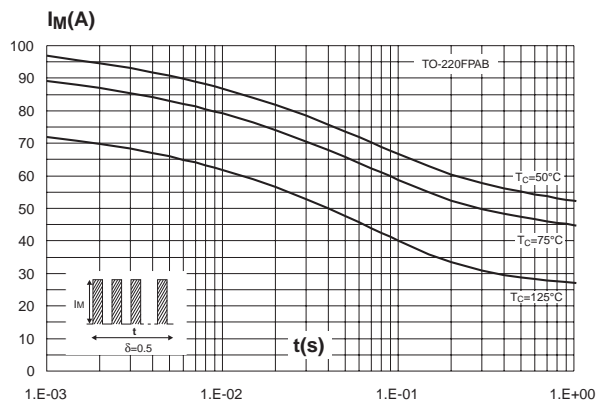


Fig. 6-1: Relative variation of thermal impedance junction to case versus pulse duration. TO-220AB, I²PAK and D²PAK

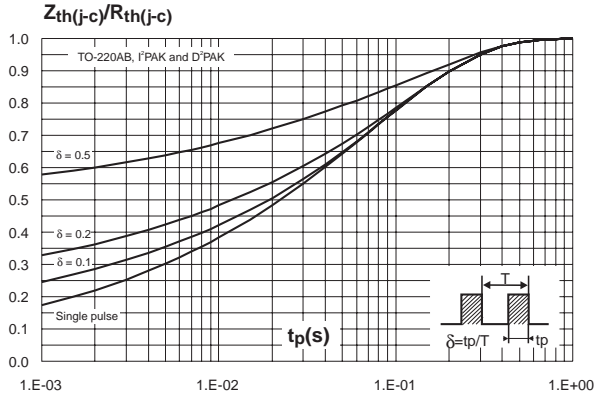


Fig. 6-2: Relative variation of thermal impedance junction to case versus pulse duration. TO-220FPAB

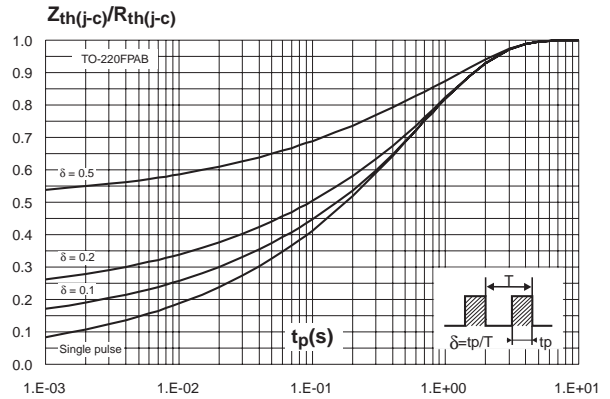


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

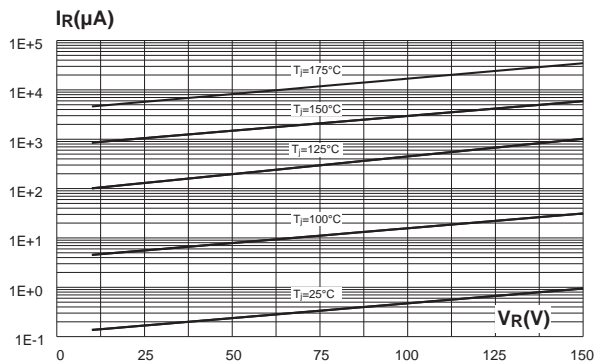


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

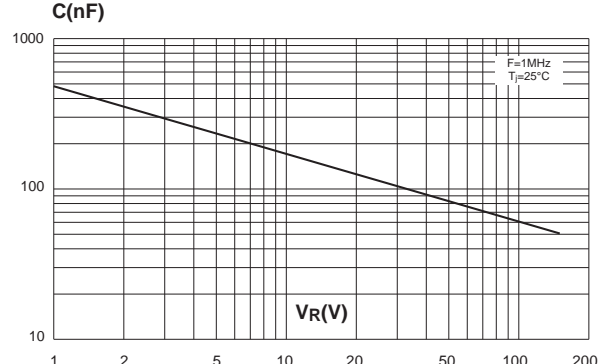


Fig. 8: Forward voltage drop versus forward current (per diode).

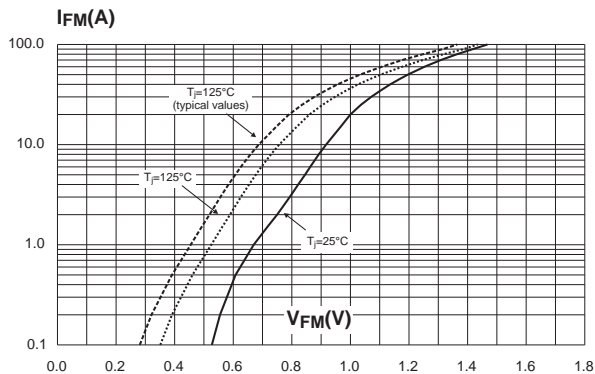
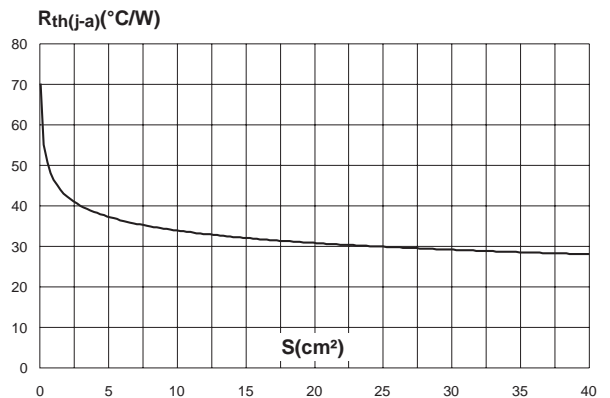
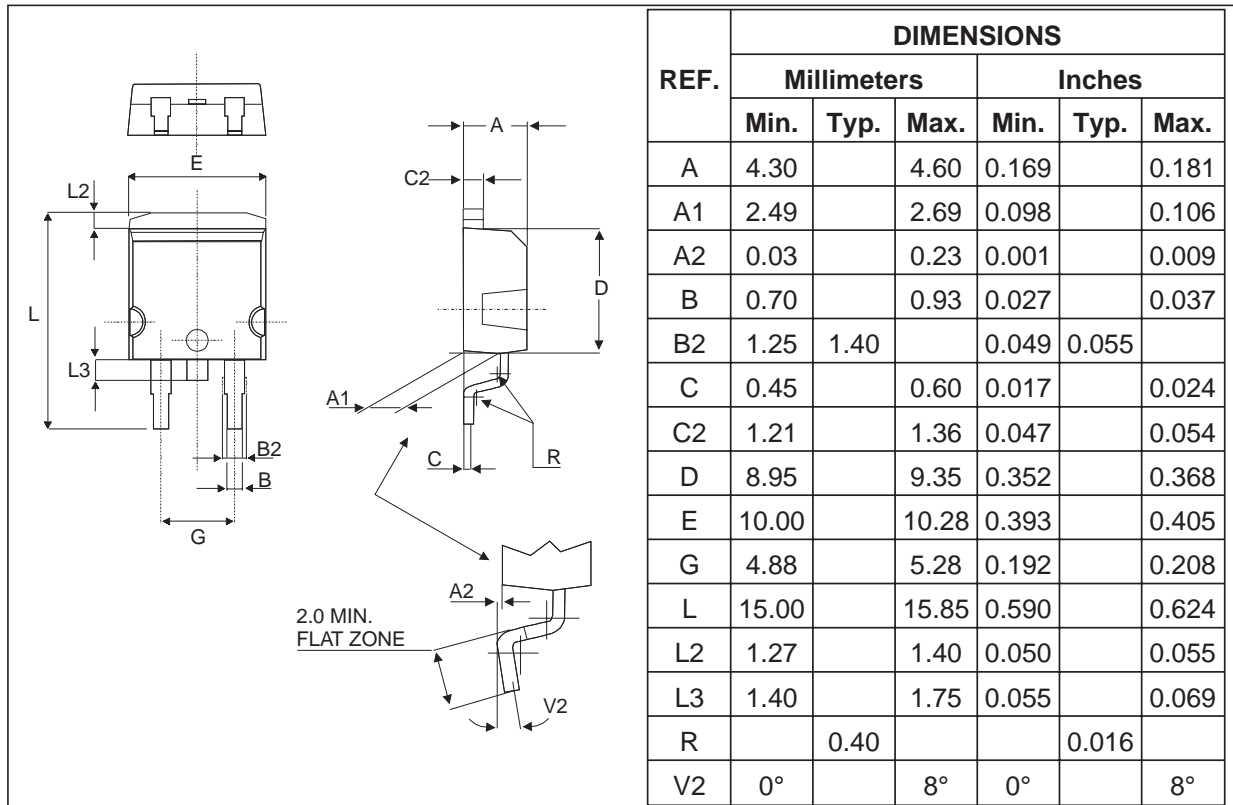


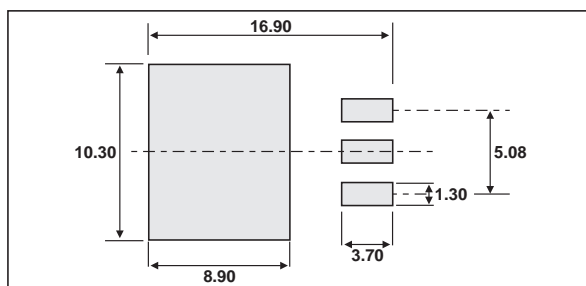
Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, $Cu = 35\mu m$) (STPS20150CG only).



PACKAGE MECHANICAL DATA
D²PAK

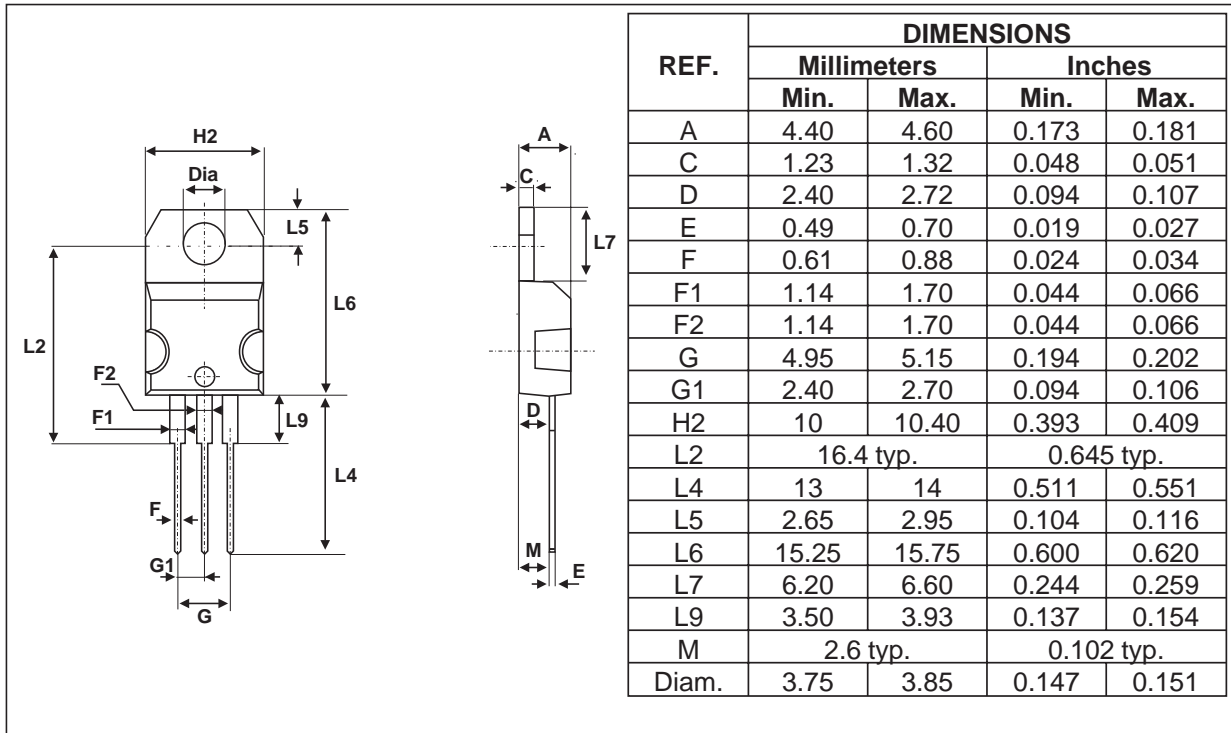


FOOT PRINT DIMENSIONS (in millimeters)

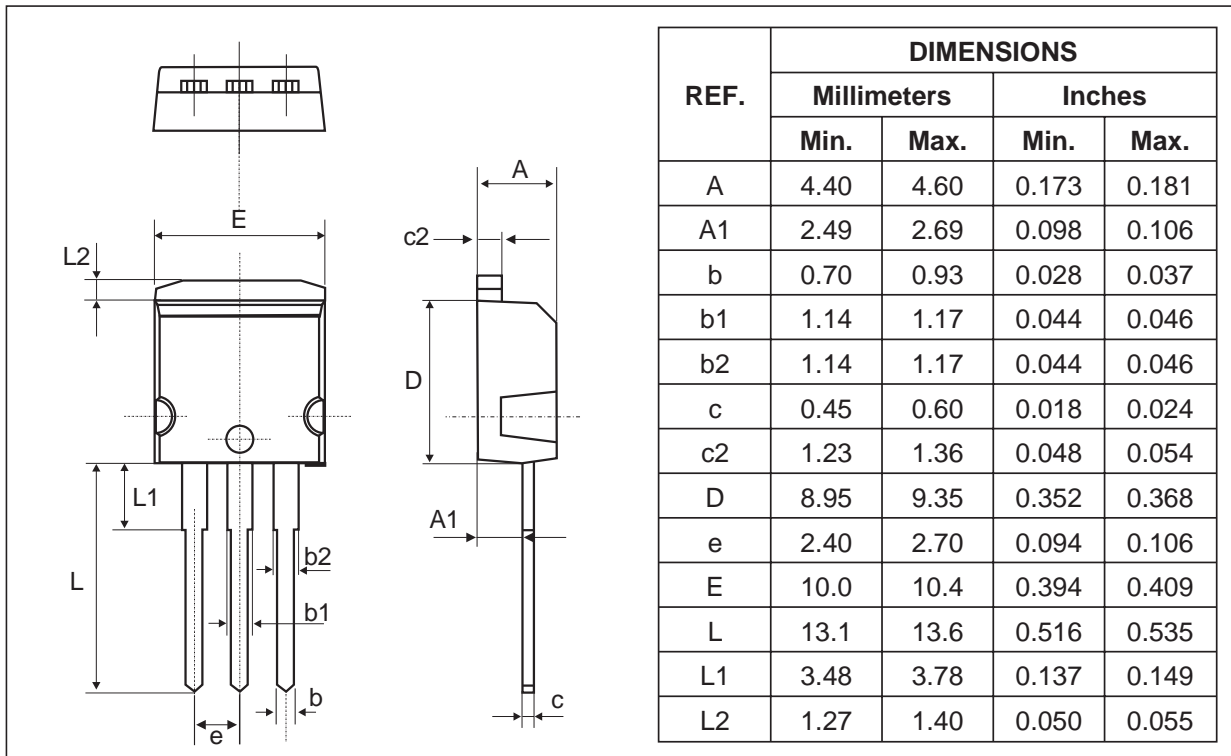


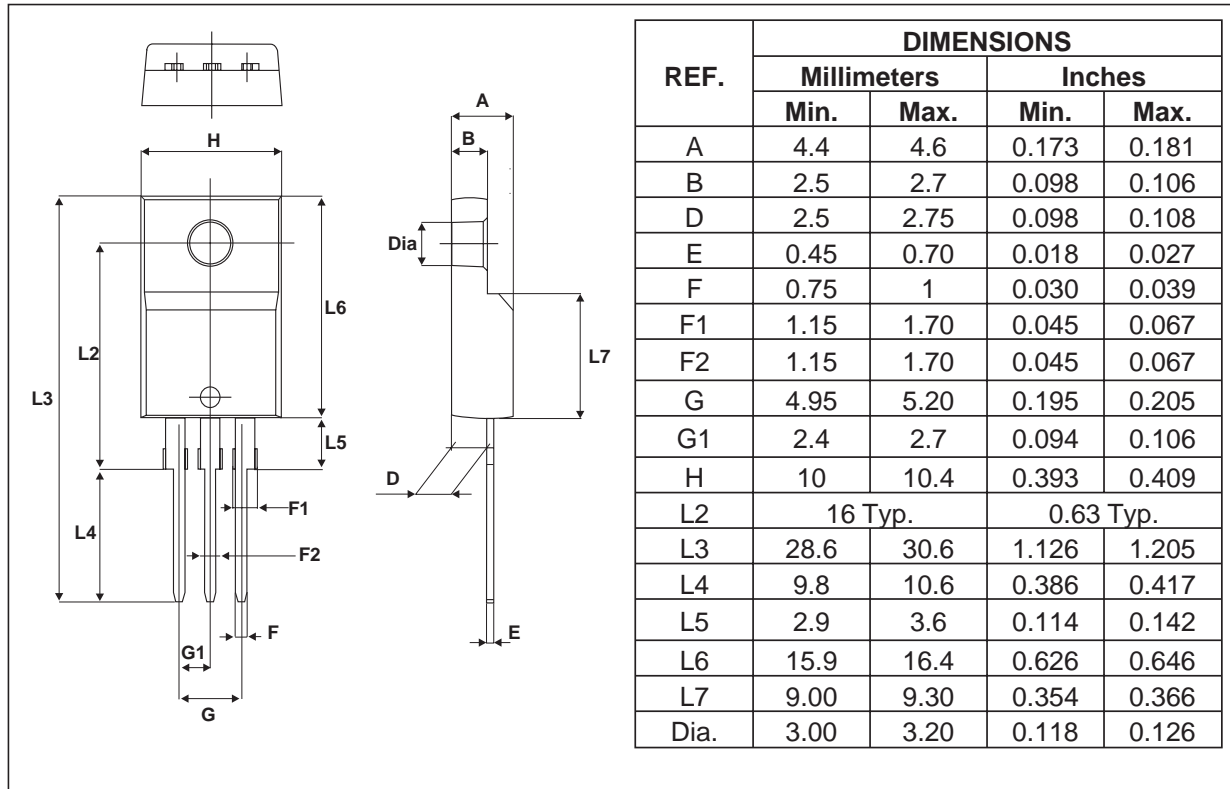
STPS20150CT/CG/CR/CFP

PACKAGE MECHANICAL DATA
TO-220AB



PACKAGE MECHANICAL DATA
I²PAK



PACKAGE MECHANICAL DATA
 TO-220FPAB

OTHER INFORMATION

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS20150CT	STPS20150CT	TO-220AB	2.20 g	50	Tube
STPS20150CG	STPS20150CG	D ² PAK	1.48 g	50	Tube
STPS20150CG-TR	STPS20150CG	D ² PAK	1.48 g	1000	Tape & Reel
STPS20150CR	STPS20150CR	I ² PAK	1.49 g	50	Tube
STPS20150CFP	STPS20150CFP	TO-220FPAB	2.0 g	50	Tube

■ EPOXY MEETS UL94,V0

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