



STPS20150CT/CG/CR/CFP

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

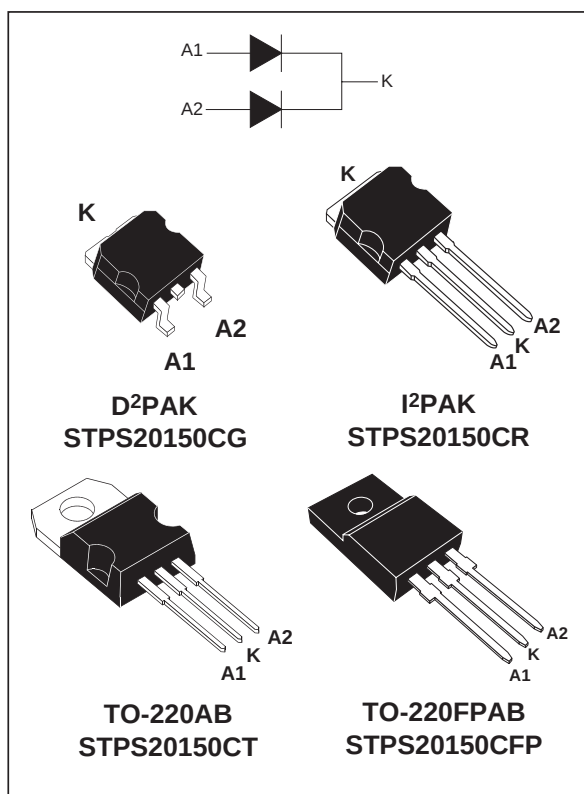
$I_{F(AV)}$	2 x 10 A
V_{RRM}	150 V
T_j	175°C
$V_F(max)$	0.75 V

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 δ = 0.5	TO-220AB D ² PAK / I ² PAK	T _c = 155°C	Per diode	10	A
		TO-220FPAB	T _c = 135°C	Per device	20	
I _{FSM}	Surge non repetitive forward current		tp = 10 ms sinusoidal		180	A
P _{ARM}	Repetitive peak avalanche power		tp = 1μs T _j = 25°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	Tj = 25°C	$V_R = V_{RRM}$			5.0	μA
		Tj = 125°C				5.0	mA
V_F^{**}	Forward voltage drop	Tj = 25°C	$I_F = 10 \text{ A}$			0.92	V
		Tj = 125°C	$I_F = 10 \text{ A}$		0.69	0.75	
		Tj = 25°C	$I_F = 20 \text{ A}$			1	
		Tj = 125°C	$I_F = 20 \text{ A}$		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).

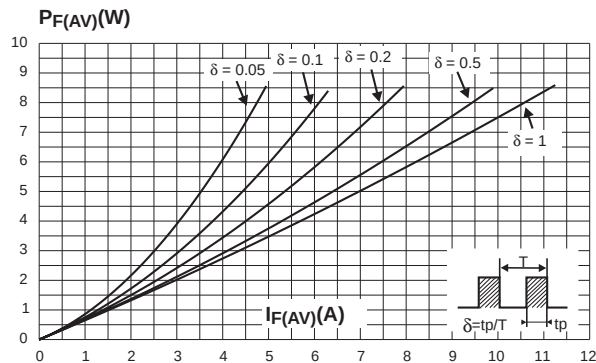


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$, per diode).

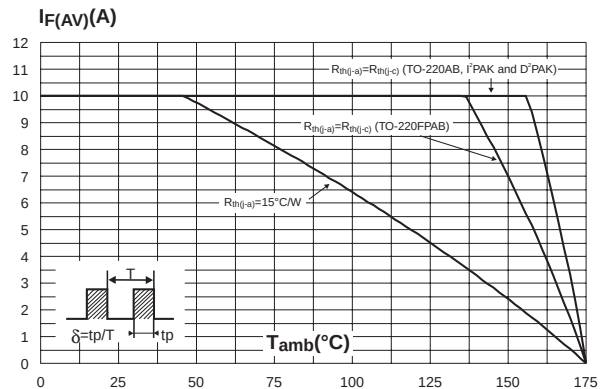


Fig. 3: Normalized avalanche power derating versus pulse duration.

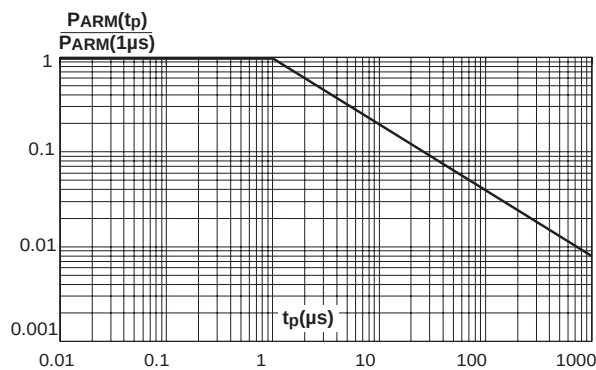


Fig. 4: Normalized avalanche power derating versus junction temperature.

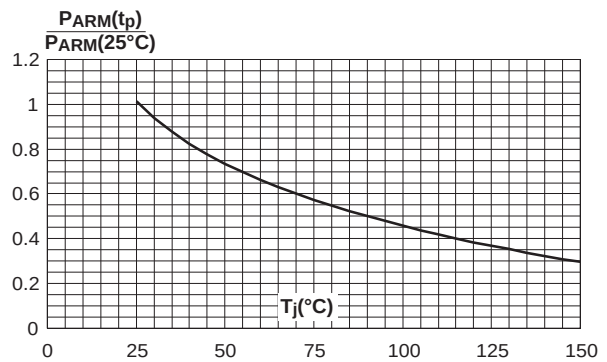


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (maximum values, per diode). TO-220AB, I²PAK and D²PAK

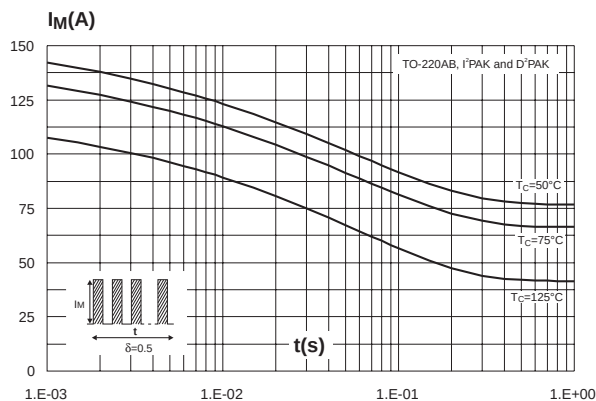


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (maximum values, per diode). TO-220FPAB

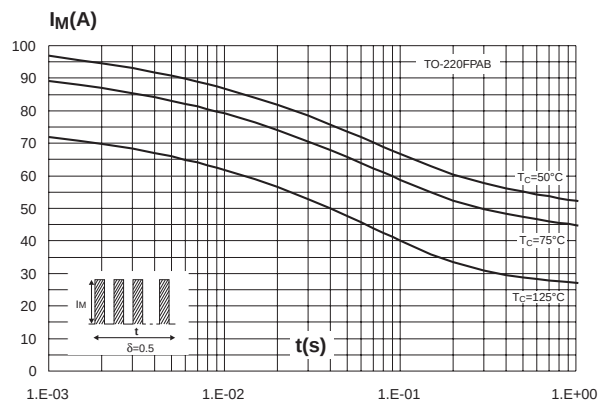


Fig. 6-1: Relative variation of thermal impedance junction to case versus pulse duration. TO-220AB, I²PAK and D²PAK

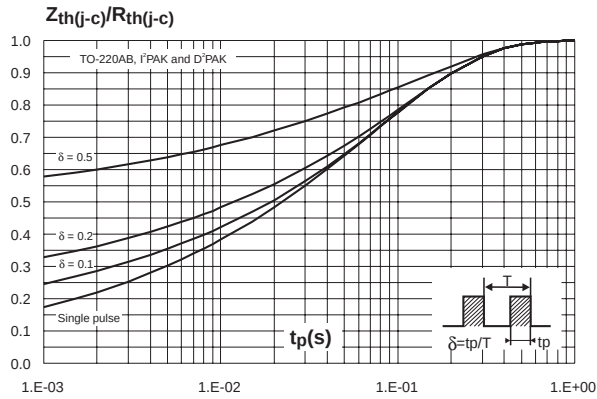


Fig. 6-2: Relative variation of thermal impedance junction to case versus pulse duration. TO-220FPAB

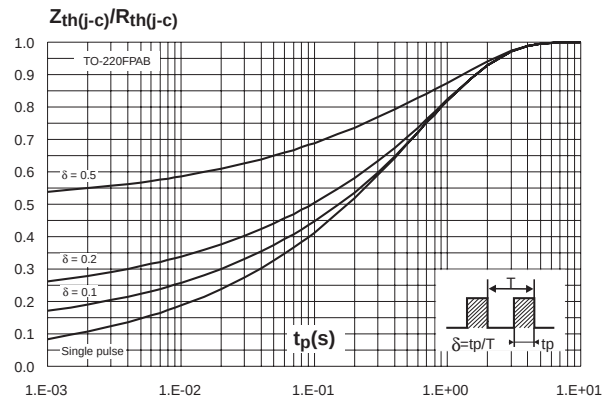


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

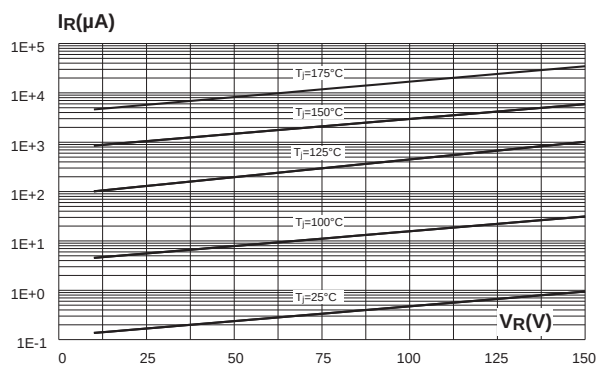


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

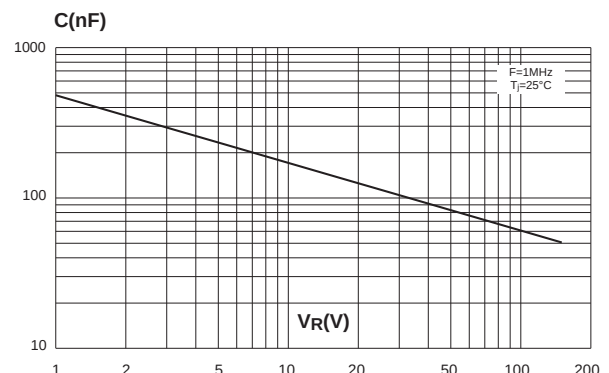


Fig. 8: Forward voltage drop versus forward current (per diode).

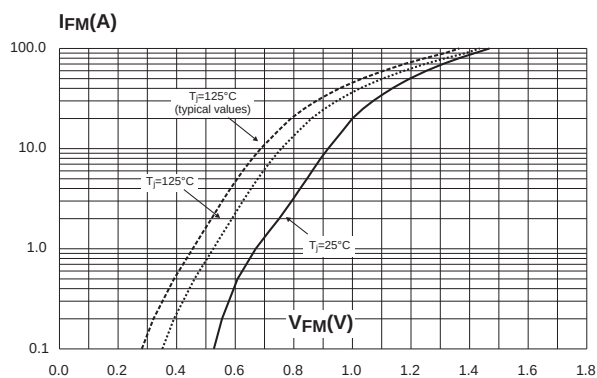
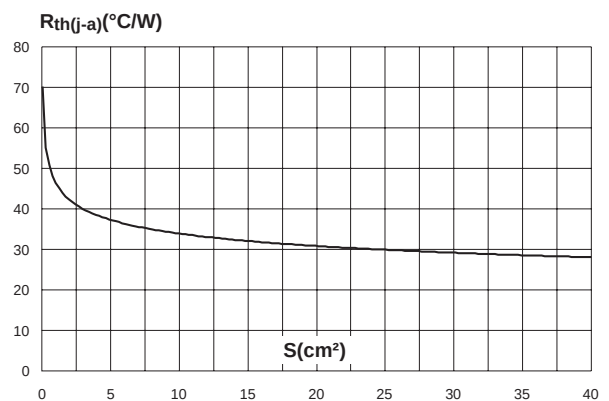


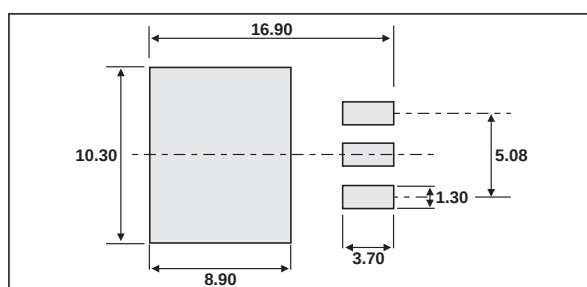
Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board, Cu = 35 μm) (STPS20150CG only).



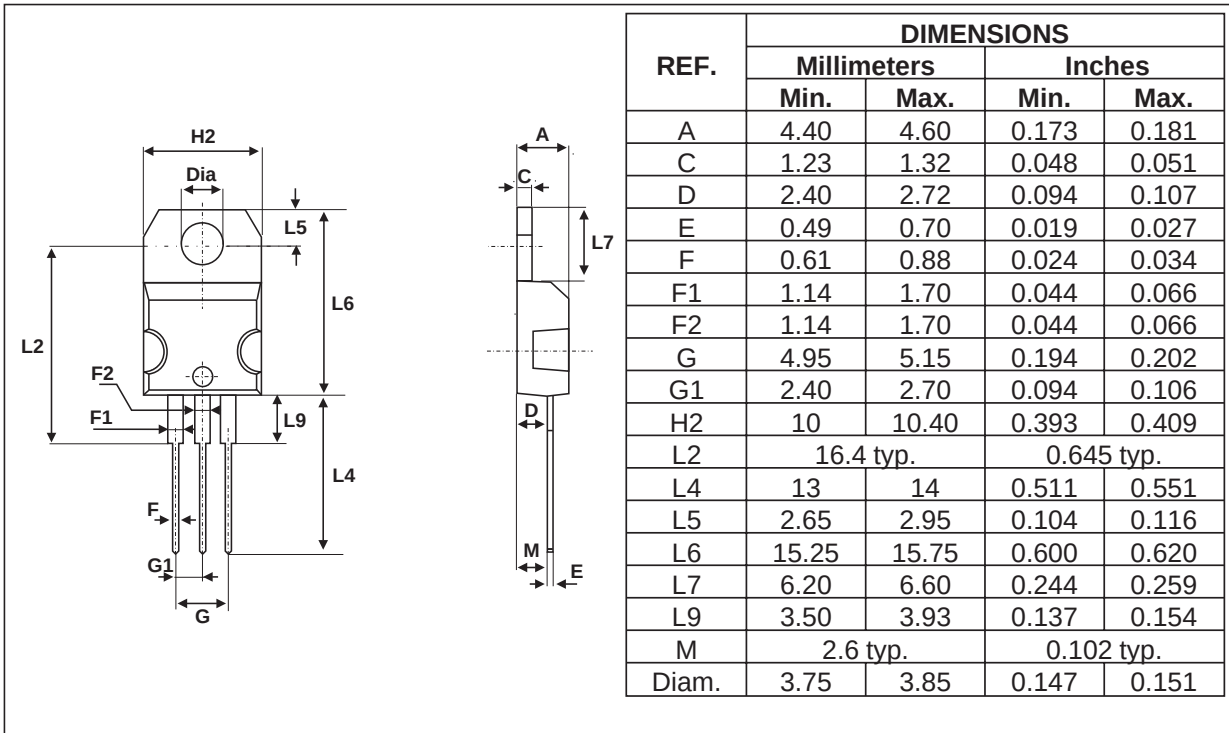
PACKAGE MECHANICAL DATA **D²PAK**

REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.60	0.169		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.70		0.93	0.027		0.037
B2	1.25	1.40		0.049	0.055	
C	0.45		0.60	0.017		0.024
C2	1.21		1.36	0.047		0.054
D	8.95		9.35	0.352		0.368
E	10.00		10.28	0.393		0.405
G	4.88		5.28	0.192		0.208
L	15.00		15.85	0.590		0.624
L2	1.27		1.40	0.050		0.055
L3	1.40		1.75	0.055		0.069
R		0.40			0.016	
V2	0°		8°	0°		8°

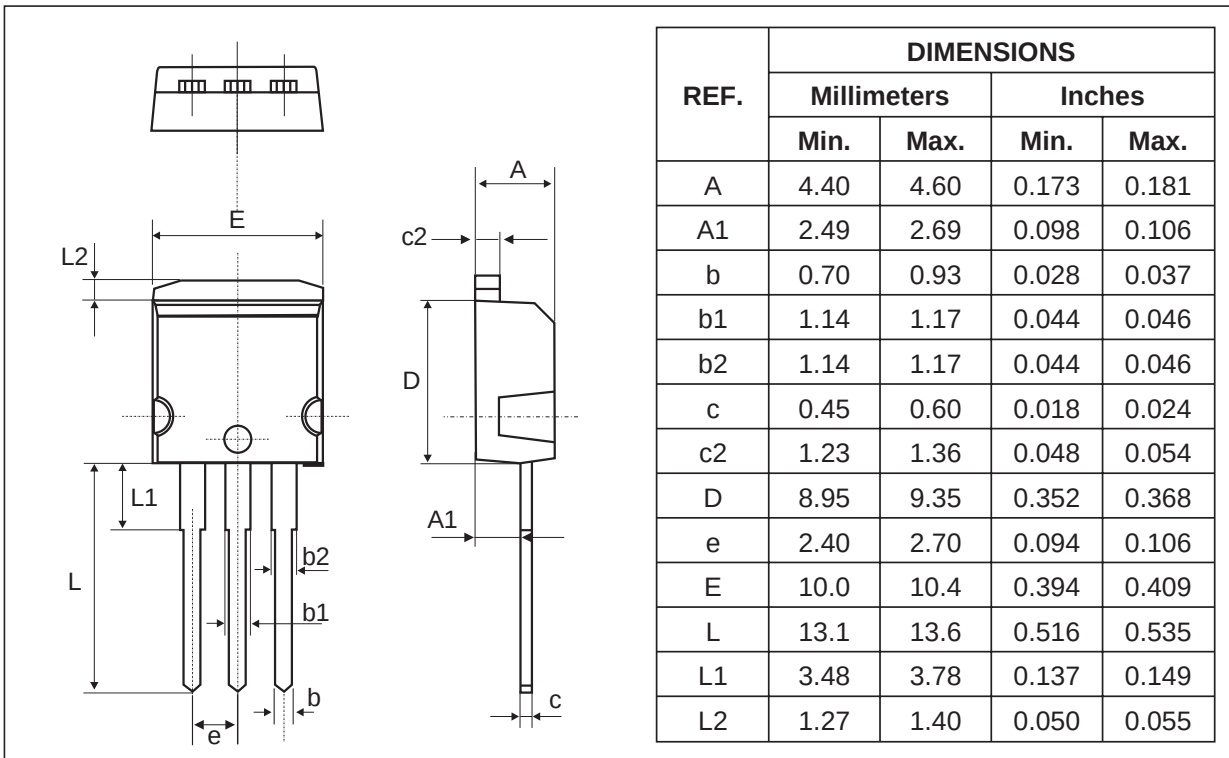
FOOT PRINT DIMENSIONS (in millimeters)

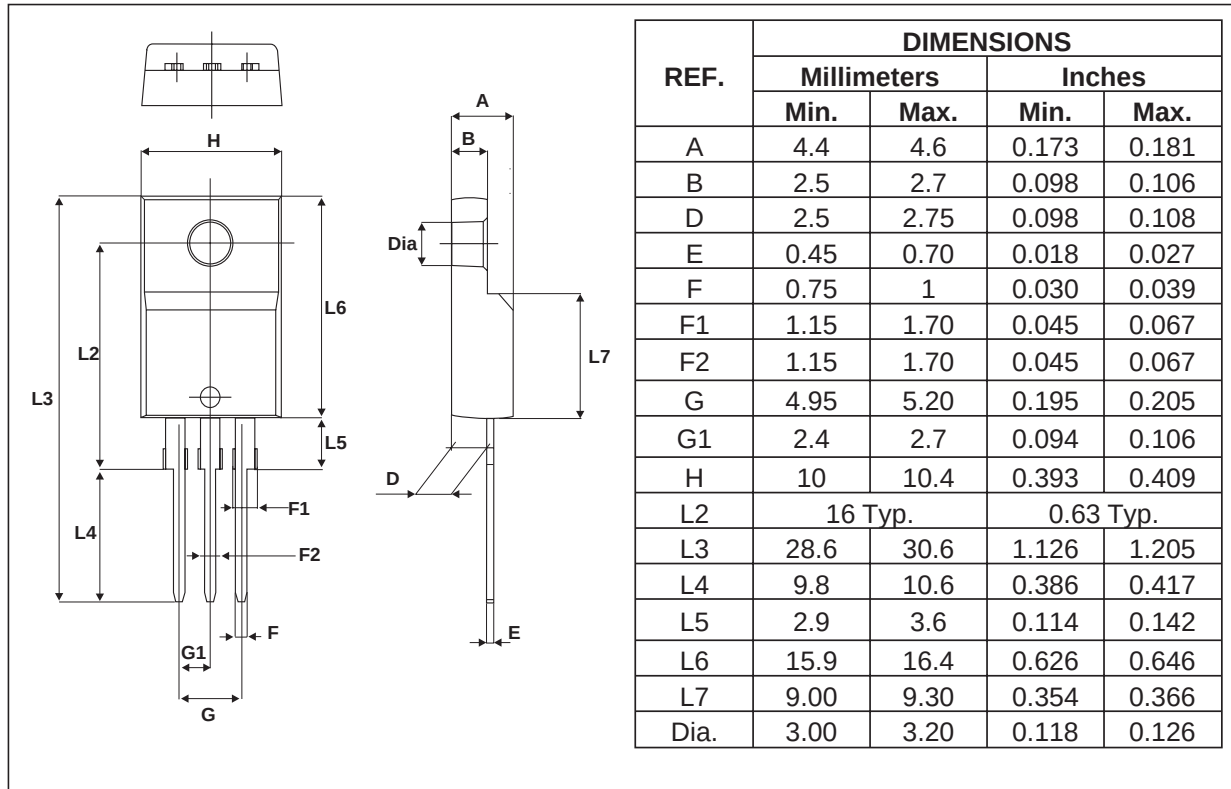


PACKAGE MECHANICAL DATA
TO-220AB



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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