



STPS3045CT/CG/CR/CP/CPI/CW

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
V_{RRM}	45 V
$T_j (max)$	175 °C
V_F	0.57 V

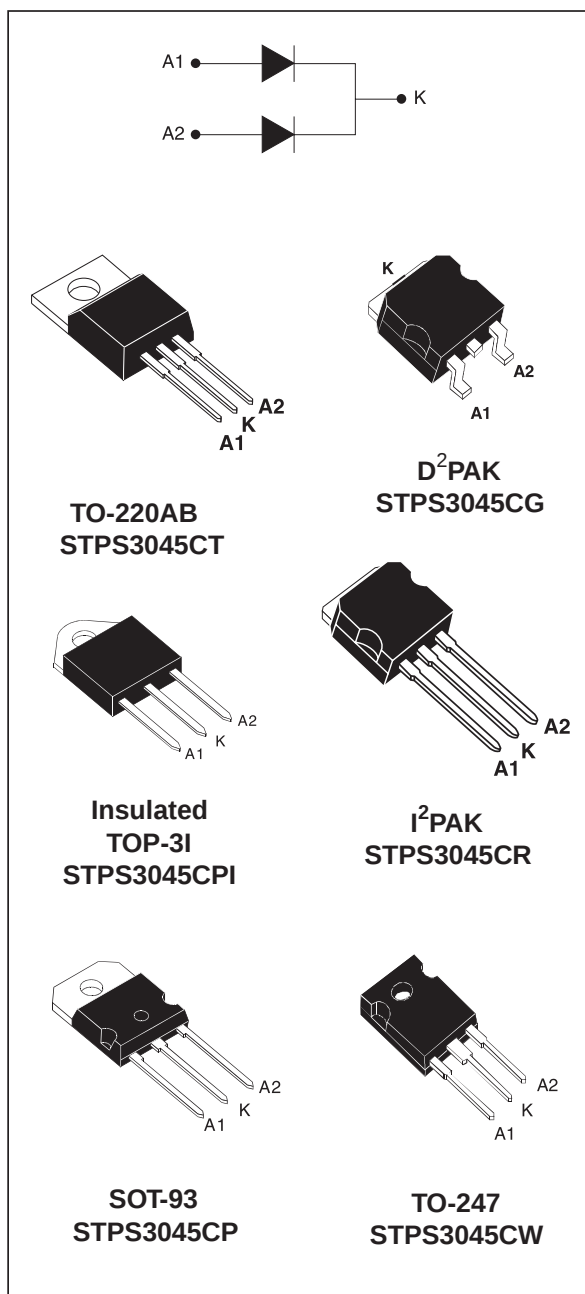
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY 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 TO-220AB, D²PAK, I²PAK, TO-247, SOT93 or TOP-3I, this device is especially 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				30	A
I _{F(AV)}	Average forward current δ = 0.5	TO-220AB D ² PAK / I ² PAK SOT-93 TO-247	Tc = 155°C	Per diode Per device	15 30	A
		TOP-3I	Tc = 150°C			
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
Tstg	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

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

THERMAL RESISTANCES

Symbol	Parameter			Value	Unit
R _{th(j-c)}	Junction to case	TO-220AB D ² PAK / I ² PAK	Per diode Total	1.60 0.85	°C/W
		SOT-93 TO-247	Per diode Total	1.5 0.8	
		TOP-3I	Per diode Total	2.2 1.6	
R _{th(c)}		TO-220AB D ² PAK / I ² PAK SOT-93 TO-247	Coupling	0.10	
		TOP-3I	Coupling	1.0	

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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			200	μA
		$T_j = 125^\circ\text{C}$			11	40	mA
V_F^*	Forward voltage drop	$T_j = 125^\circ\text{C}$	$I_F = 15\text{ A}$		0.5	0.57	V
		$T_j = 25^\circ\text{C}$	$I_F = 30\text{ A}$			0.84	
		$T_j = 125^\circ\text{C}$	$I_F = 30\text{ A}$		0.65	0.72	

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

To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.01 I_{F(RMS)}^2$$

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

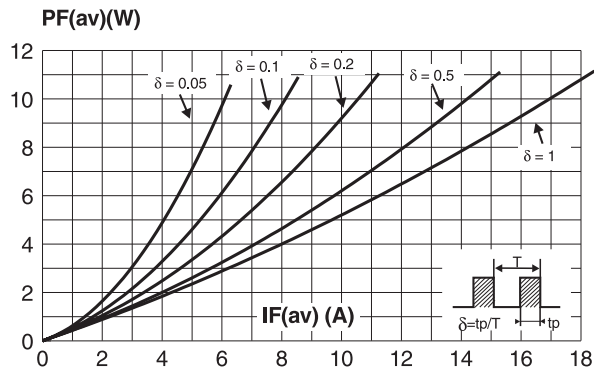


Fig. 2: Average current versus ambient temperature ($\delta = 0.5$, per diode).

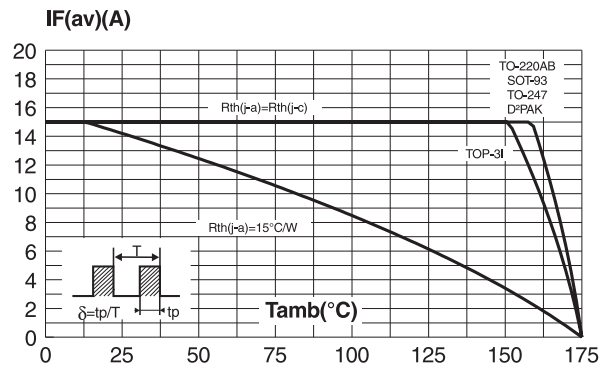


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB, D²PAK, I²PAK, SOT-93 and TO-247).

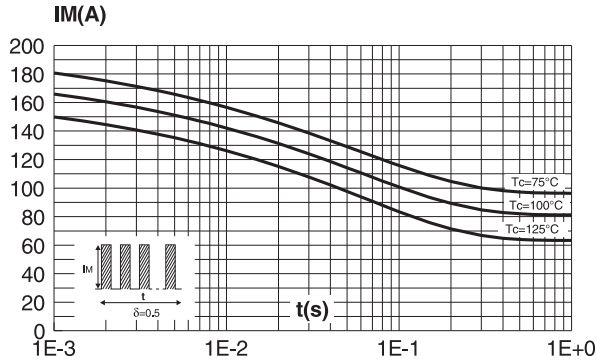


Fig. 4: Relative variation of thermal transient impedance junction to case versus pulse duration.

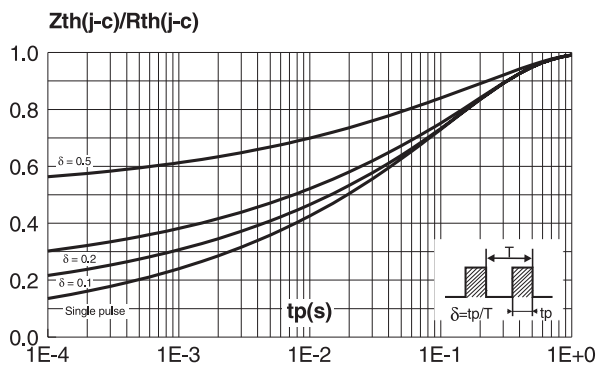


Fig. 6: Junction capacitance versus reverse voltage applied (typical values, per diode).

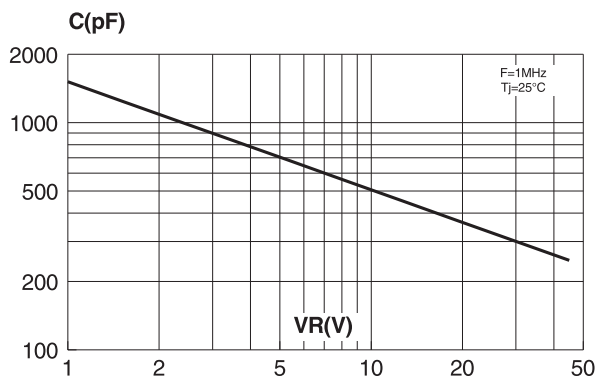


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TOP-3I).

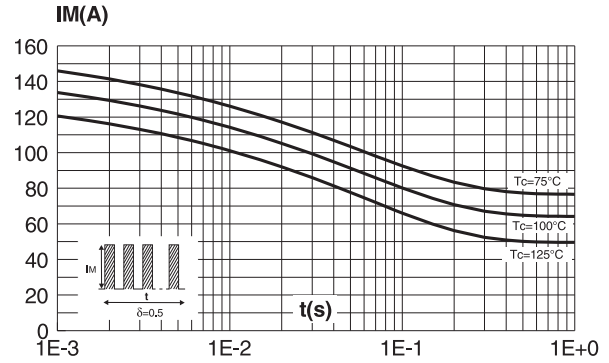


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values, per diode).

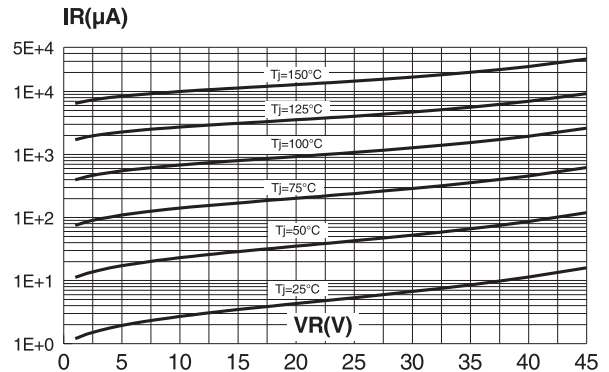
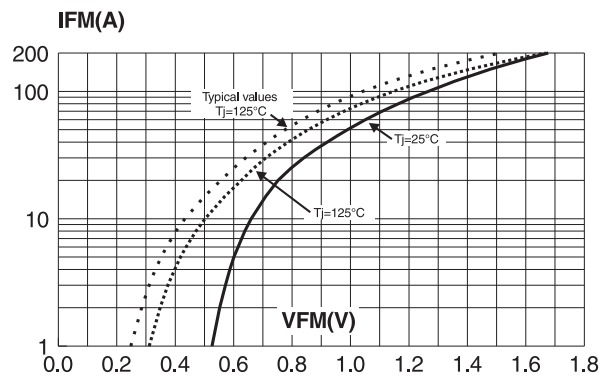
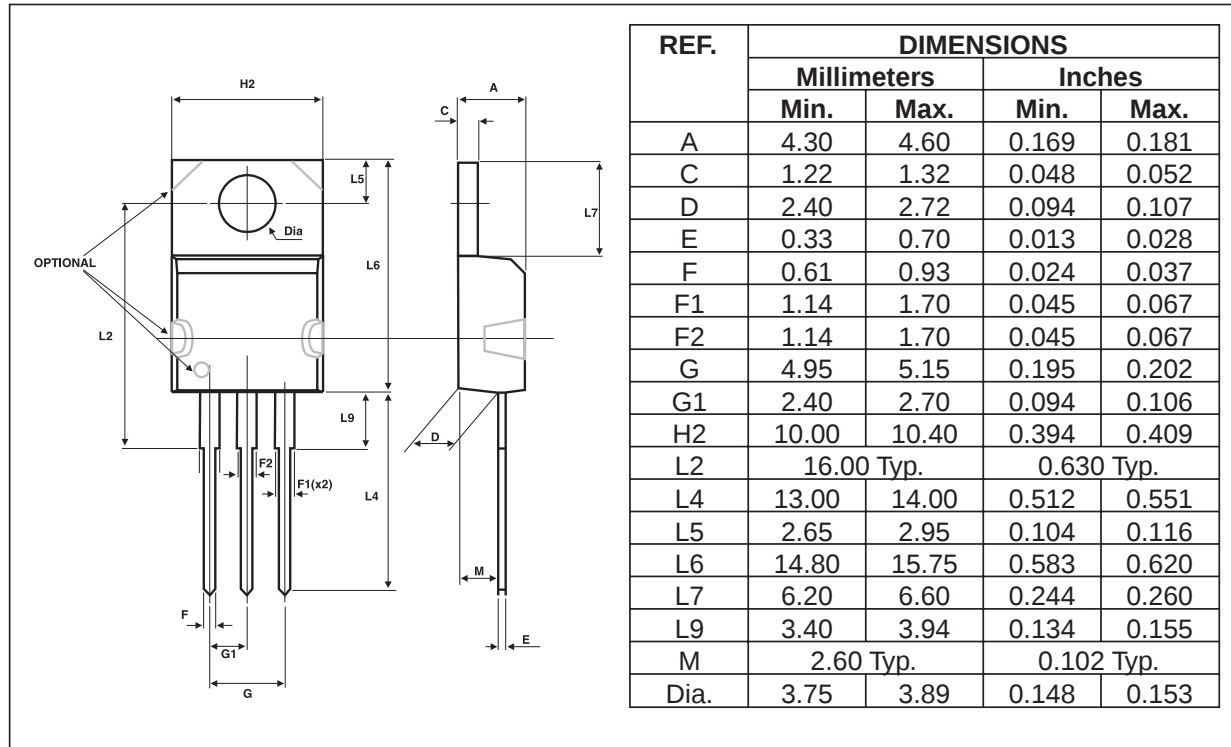
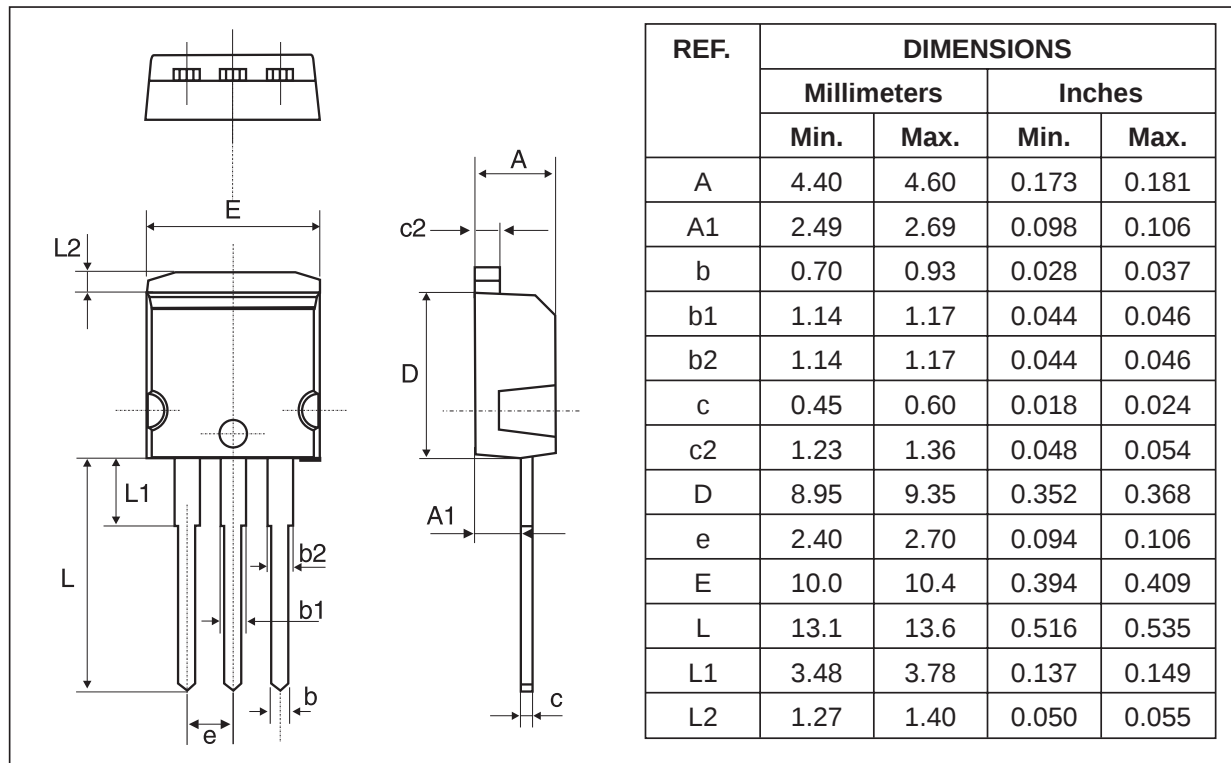
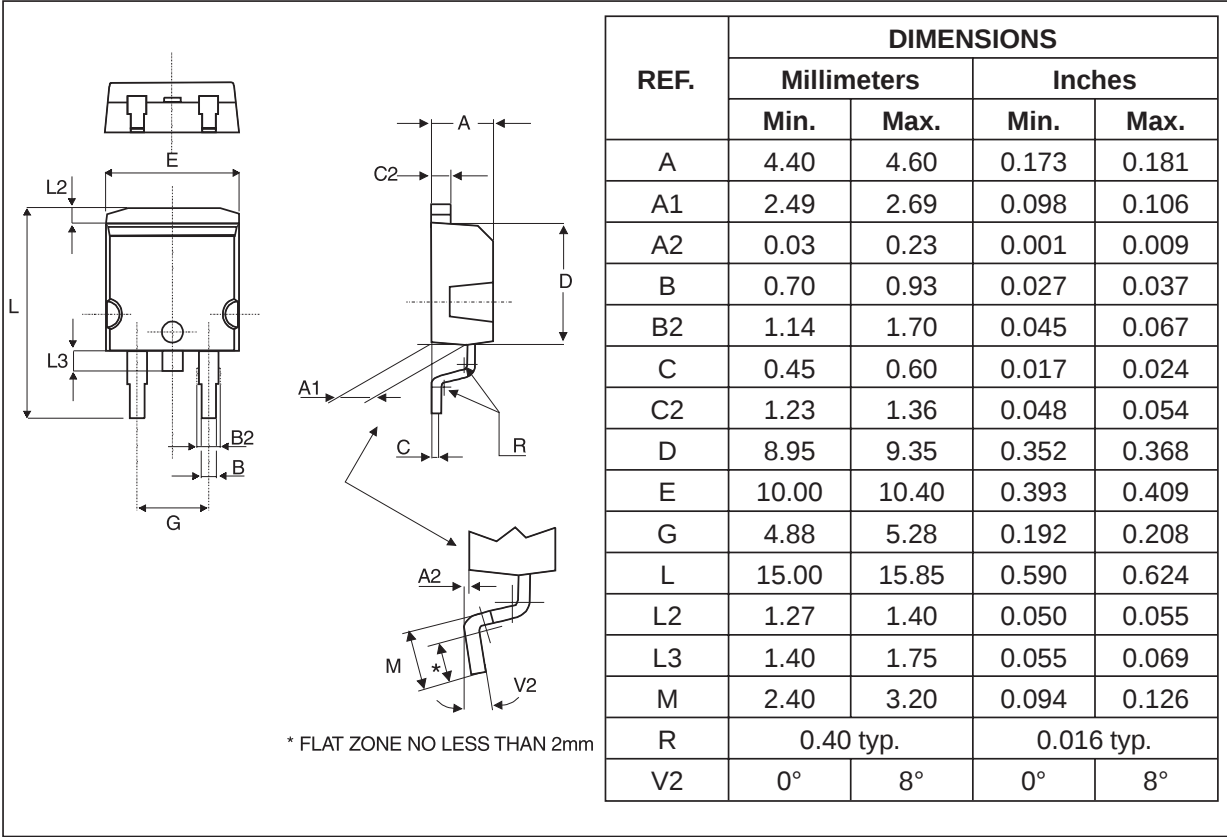


Fig. 7: Forward voltage drop versus forward current (maximum values, per diode).

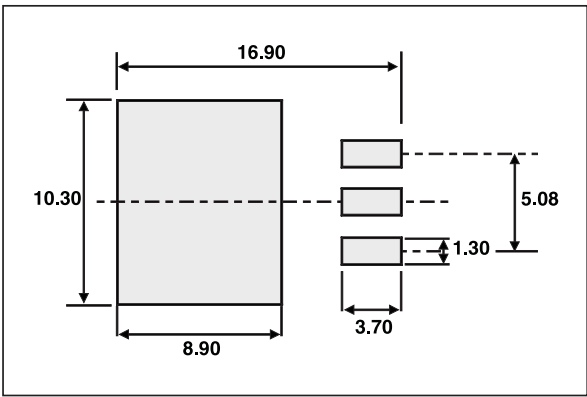


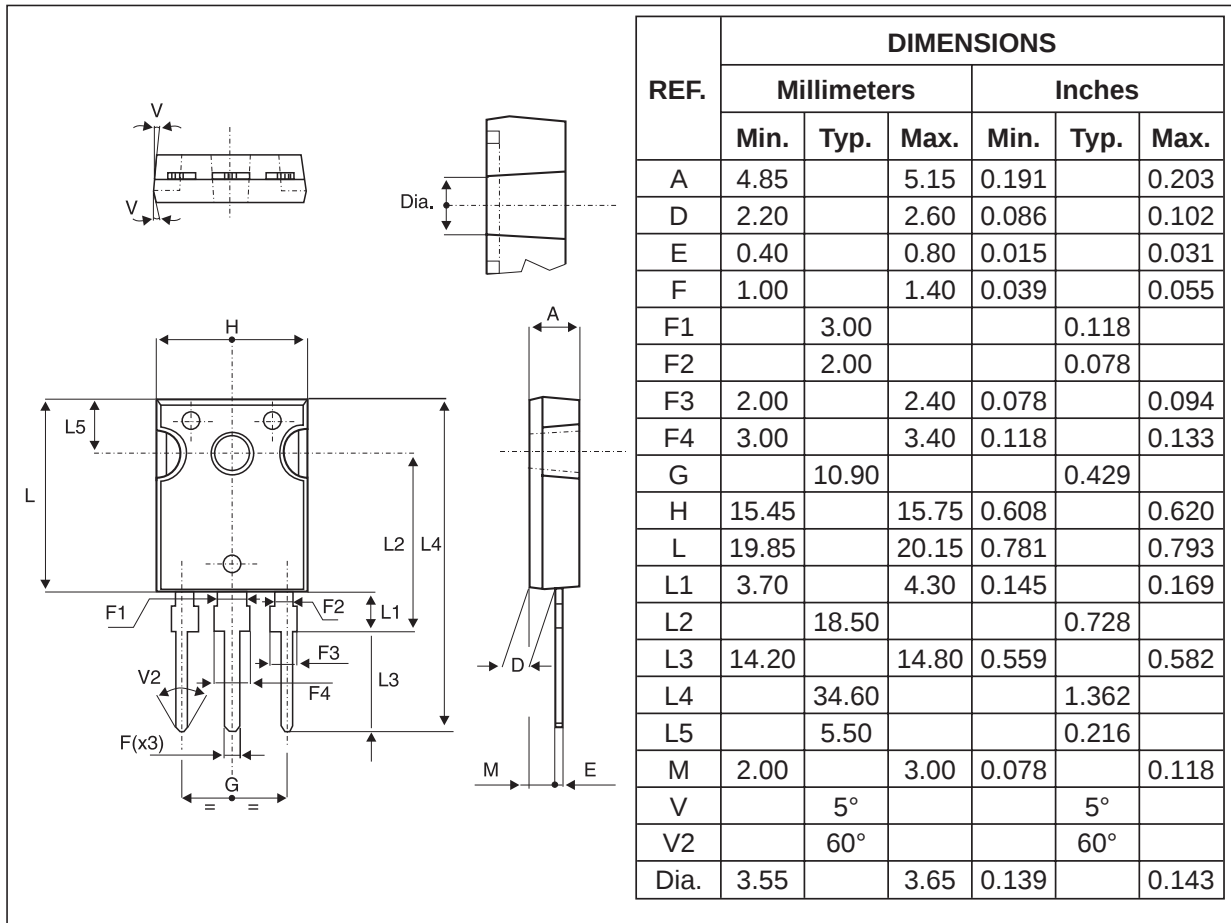
PACKAGE MECHANICAL DATA
TO-220AB

PACKAGE MECHANICAL DATA
I²PAK


PACKAGE MECHANICAL DATA
D²PAK



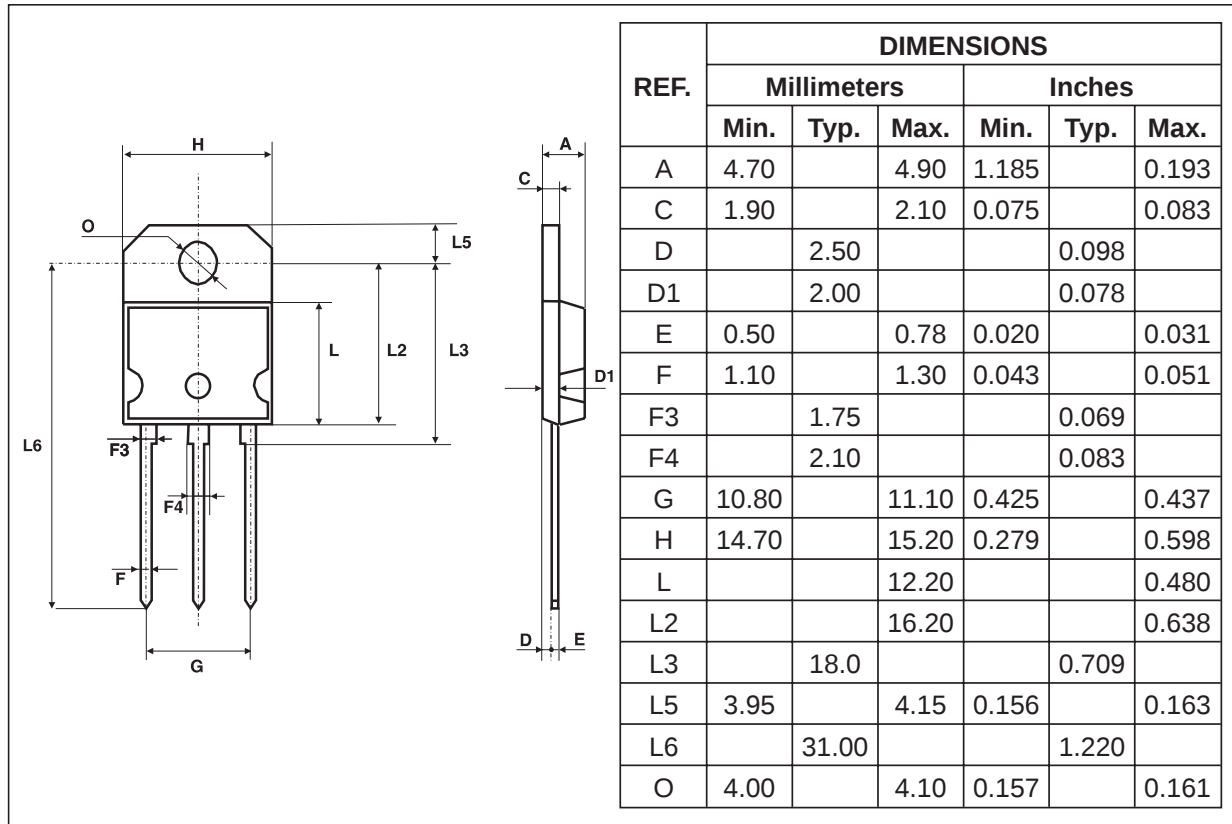
FOOTPRINT DIMENSIONS (in millimeters)



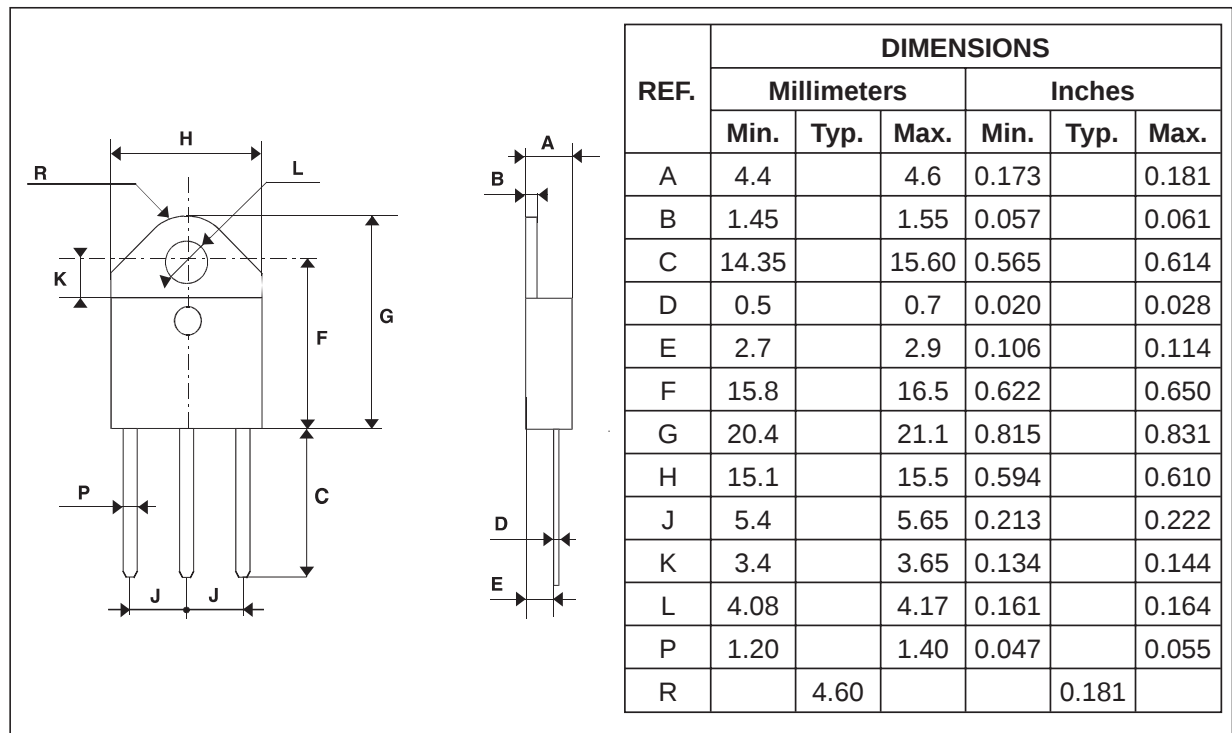
PACKAGE MECHANICAL DATA
TO-247


STPS3045CT/CG/CR/CP/CPI/CW

PACKAGE MECHANICAL DATA SOT-93



PACKAGE MECHANICAL DATA TOP-3I (isolated)



Type	Marking	Package	Weight	Base qty	Delivery mode
STPS3045CT	STPS3045CT	TO-220AB	2.23 g.	50	Tube
STPS3045CG	STPS3045CG	D ² PAK	1.48 g.	50	Tube
STPS3045CG-TR	STPS3045CG	D ² PAK	1.48 g.	1000	Tape & reel
STPS3045CR	STPS3045CR	I ² PAK	1.48 g.	50	Tube
STPS3045CP	STPS3045CP	SOT-93	3.97 g.	30	Tube
STPS3045CPI	STPS3045CPI	TOP-3I	4.46 g.	120	Bulk
STPS3045CW	STPS3045CW	TO-247	4.46 g.	30	Tube

- Cooling method: by conduction (C)
- Recommended torque value (SOT-93, TOP-3I, TO-247): 0.8 N.m.
- Recommended torque value (TO-220AB): 0.55 N.m.
- Maximum torque value (SOT-93, TOP-3I, TO-247): 1.0 N.m.
- Maximum torque value (TO-220AB): 0.7 N.m.
- Epoxy meets UL94,V0

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