



STTH8R06D/FP/G/R

TURBO 2 ULTRAFAST HIGH VOLTAGE RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	8 A
V_{RRM}	600 V
$I_{RM}(typ.)$	5.5A
$T_j(max)$	175 °C
$V_F(max)$	1.8 V
$t_{rr}(max)$	45 ns

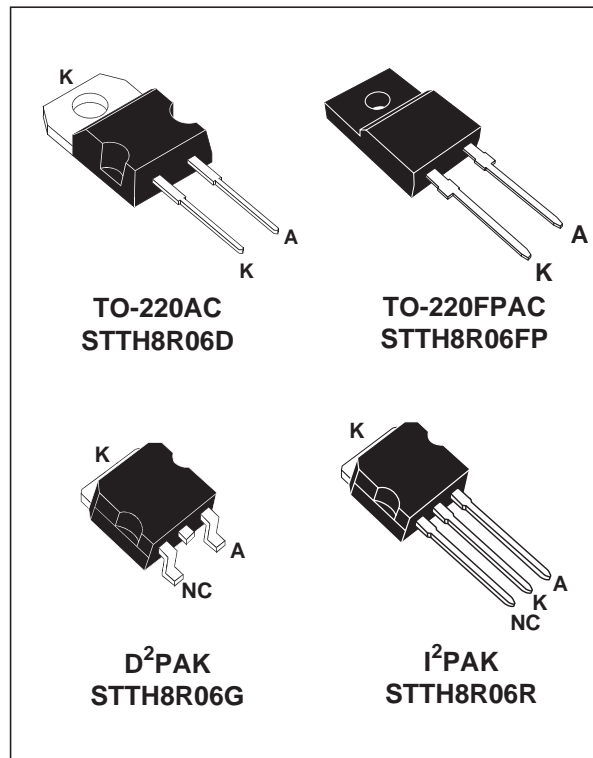
FEATURES AND BENEFITS

- Ultrafast switching
- Low reverse recovery current
- Reduces switching losses
- Low thermal resistance

DESCRIPTION

The STTH8R06D/FP/G/R, which is using ST 600V technology, is specially suited as boost diode in continuous mode power factor corrections and hard switching conditions.

The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		600	V
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AC $T_c = 130^\circ\text{C}$ D ² PAK / I ² PAK $T_c = 130^\circ\text{C}$ TO-220FPAC $T_c = 85^\circ\text{C}$	8	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	80	A
T_{stg}	Storage temperature range		- 65 + 175	°C
T_j	Maximum operating junction temperature		+ 175	°C

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THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	TO-220AC / D ² PAK / I ² PAK	2.2	°C/W
		TO-220FPAC	4.6	

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I _R	Reverse leakage current	V _R = 600V	T _j = 25°C			30	μA
			T _j = 125°C		35	400	
V _F	Forward voltage drop	I _F = 8 A	T _j = 25°C			2.9	V
			T _j = 125°C		1.4	1.8	

To evaluate the maximum conduction losses use the following equation :
 $P = 1.16 \times I_{F(AV)} + 0.08 I_{F(RMS)}^2$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Tests conditions		Min.	Typ.	Max.	Unit
trr	I _F = 0.5 A I _{rr} = 0.25 A I _R = 1A	T _j = 25°C			25	ns
	I _F = 1 A dI _F /dt = - 50 A/μs V _R = 30V				45	
I _{RM}	V _R = 400 V I _F = 8A dI _F /dt = - 200A/μs	T _j = 125°C		5.5	7.2	A
S factor				0.3		
Q _{rr}				150		
t _{fr}	I _F = 8 A dI _F /dt = 64 A/μs	T _j = 25°C			150	ns
V _{FP}	V _{FR} = 1.1 x V _{Fmax}				5	V

Fig. 1: Conduction losses versus average current.

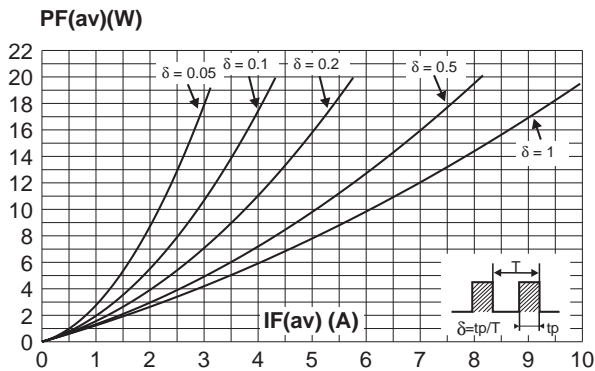


Fig. 2: Forward voltage drop versus forward current.

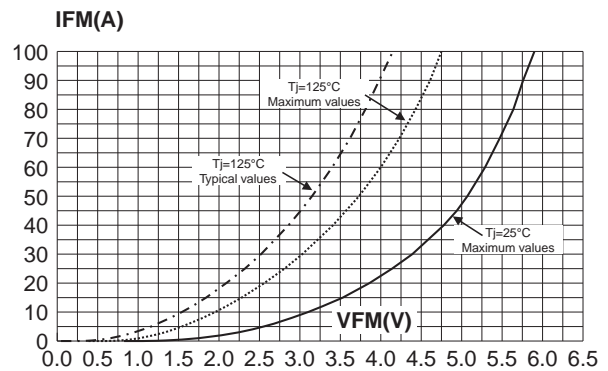


Fig. 3-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC, I²PAK, D²PAK).

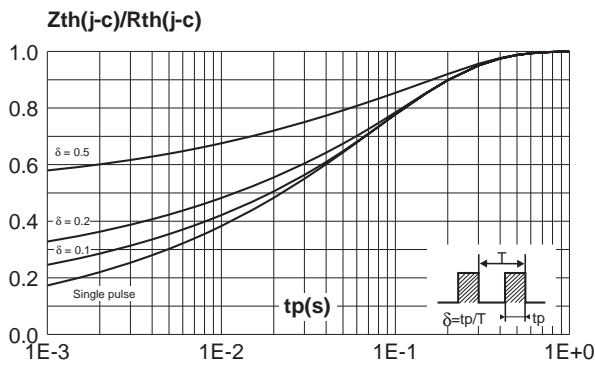


Fig. 3-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAC).

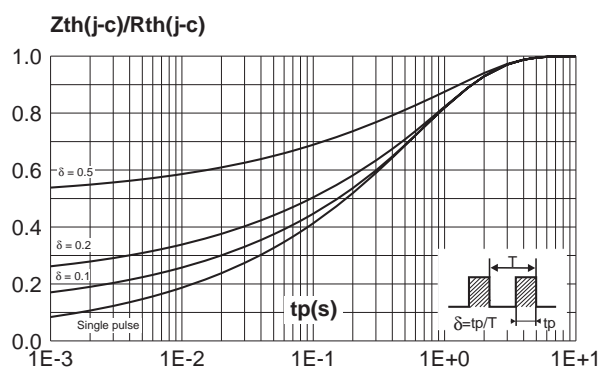


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

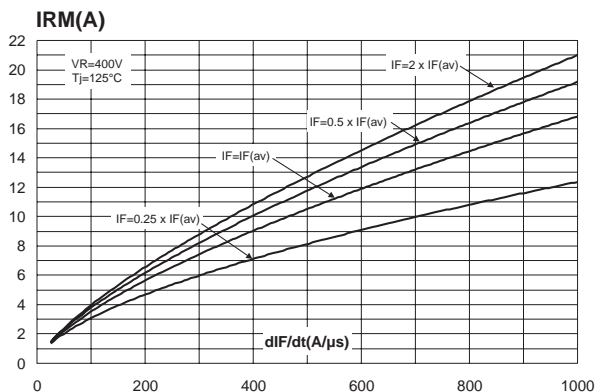


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

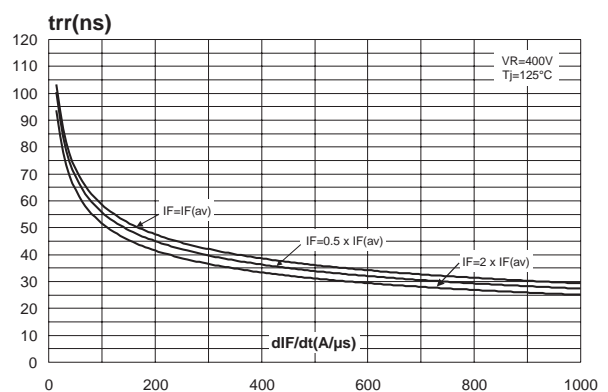


Fig. 6: Reverse recovery charges versus dI_F/dt (90% confidence).

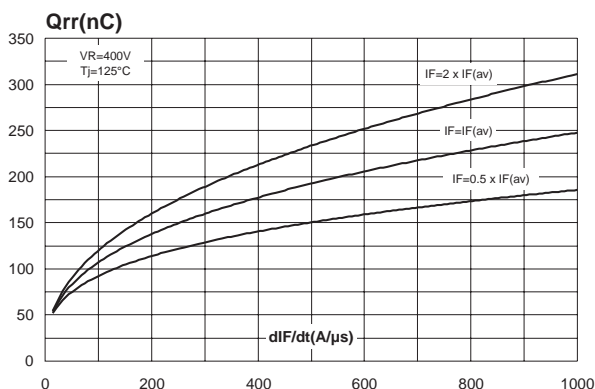


Fig. 7: Softness factor (t_b/t_a) versus dI_F/dt (typical values).

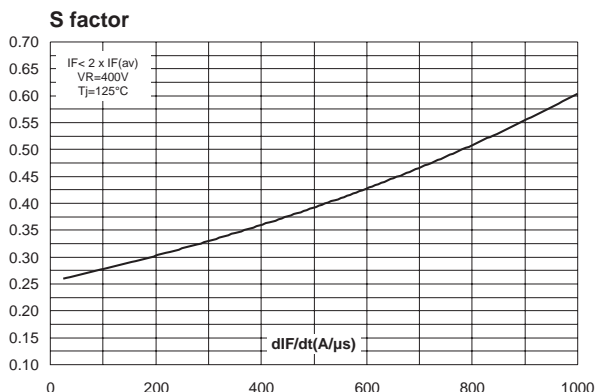


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: $T_j=125^\circ\text{C}$).

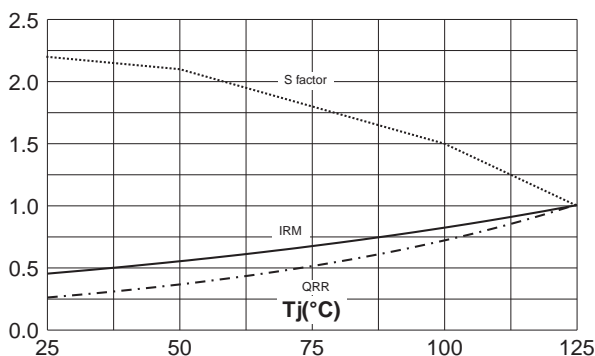


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

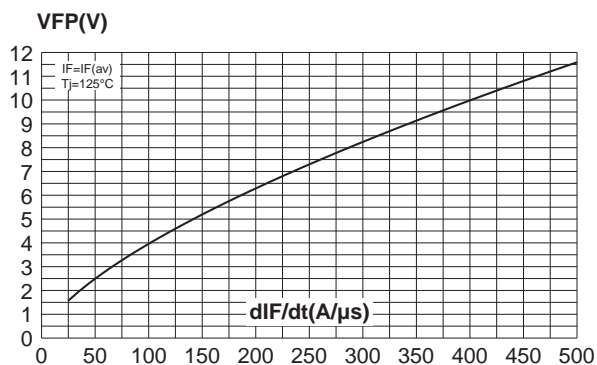


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

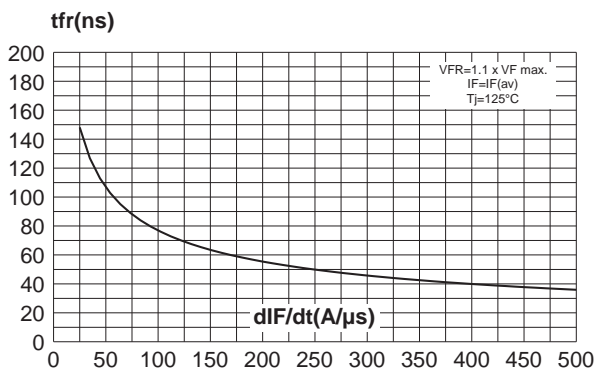
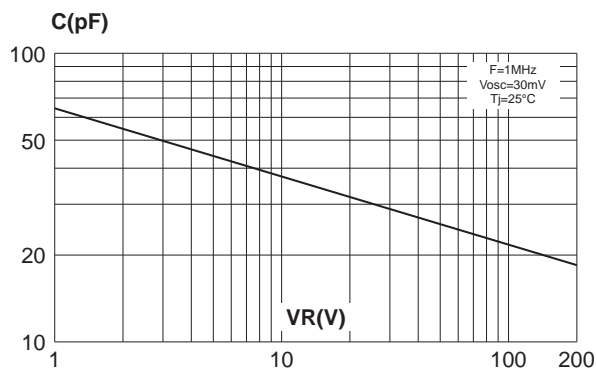
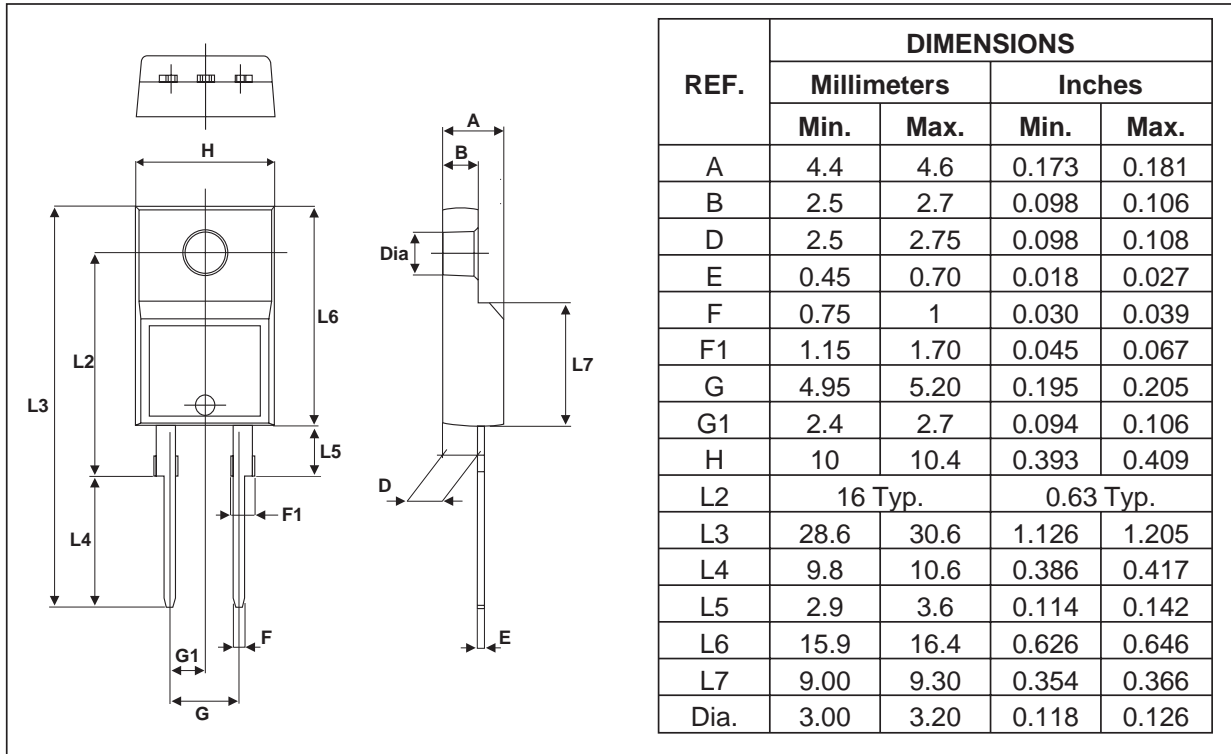


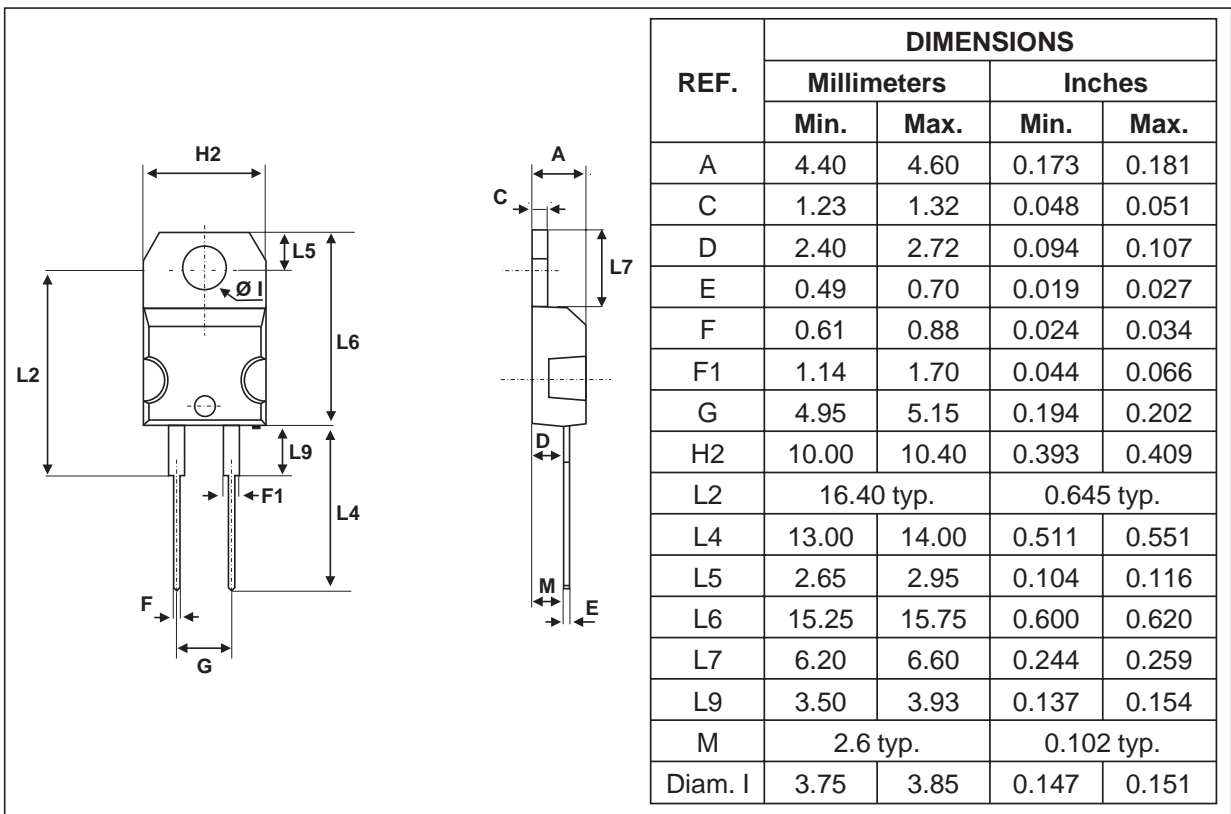
Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA
TO-220FPAC

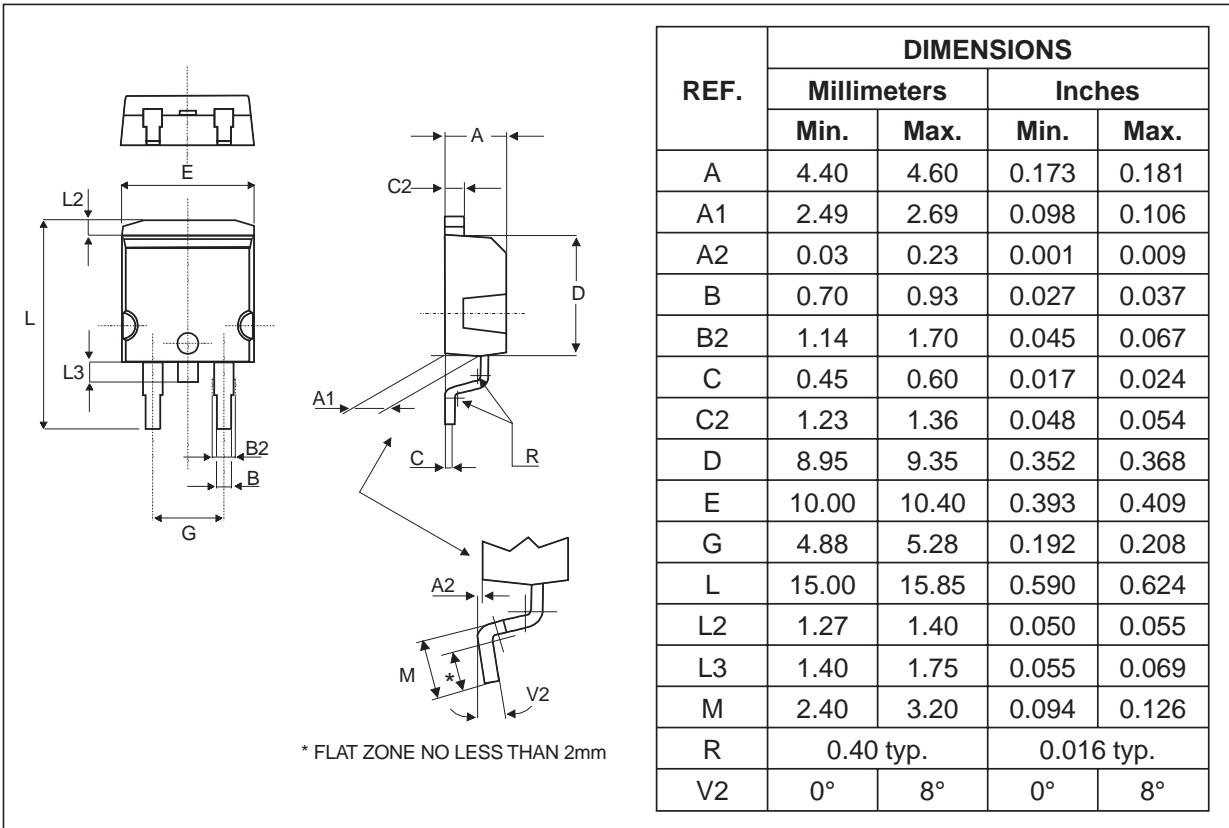


PACKAGE MECHANICAL DATA
TO-220AC

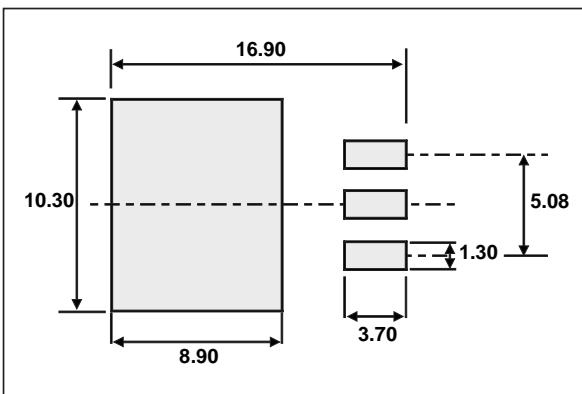


PACKAGE MECHANICAL DATA

D²PAK



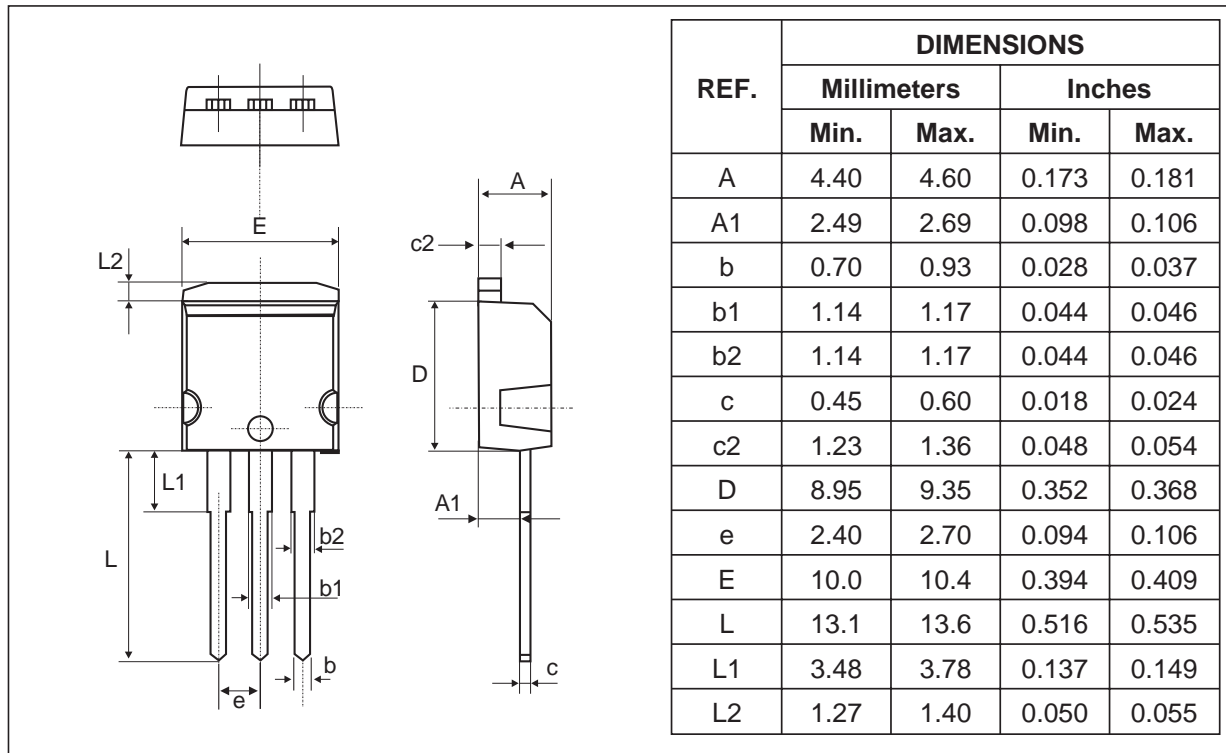
FOOTPRINT (in millimeters)



STTH8R06D/FP/G/R

PACKAGE MECHANICAL DATA

I²PAK



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH8R06D	STTH8R06D	TO-220AC	1.9 g	50	Tube
STTH8R06FP	STTH8R06FP	TO-220FPAC	1.7 g	50	Tube
STTH8R06G	STTH8R06G	D ² PAK	1.5 g	50	Tube
STTH8R06R	STTH8R06R	I ² PAK	1.5 g	50	Tube

- Cooling method: by conduction (C)
- Recommended torque value (TO-220AC): 0.55 Nm
- Maximum torque value (TO-220AC / TO-220FPAC): 0.7 Nm
- Epoxy meets UL 94,V0

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