



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

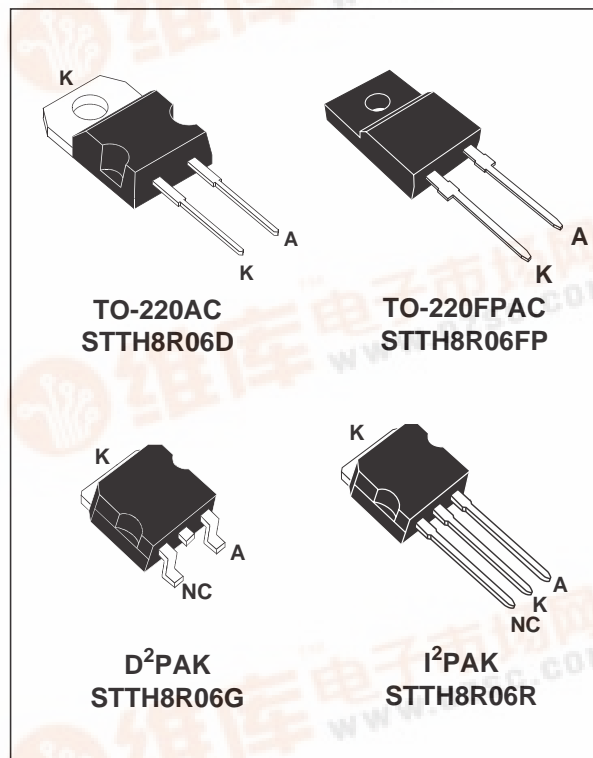
FEATURES AND BENEFITS

- 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	$t_p = 10\text{ ms}$ 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 TO-220FPAC	2.2 4.6	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	$V_R = 600V$	$T_j = 25^\circ C$			30	μA
			$T_j = 125^\circ C$		35	400	
V_F	Forward voltage drop	$I_F = 8 A$	$T_j = 25^\circ C$			2.9	V
			$T_j = 125^\circ C$		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
t_{rr}	$I_F = 0.5 A$ $I_{rr} = 0.25 A$ $I_R = 1 A$	$T_j = 25^\circ C$			25	ns
	$I_F = 1 A$ $di_F/dt = - 50 A/\mu s$ $V_R = 30V$				45	
I_{RM}	$V_R = 400 V$ $I_F = 8A$ $di_F/dt = - 200A/\mu s$	$T_j = 125^\circ C$		5.5	7.2	A
S factor				0.3		
Qrr				150		
t_{fr}	$I_F = 8 A$ $di_F/dt = 64 A/\mu s$ $V_{FR} = 1.1 \times V_{Fmax}$	$T_j = 25^\circ C$			150	ns
V_{FP}					5	V

Fig. 1: Conduction losses versus average current.

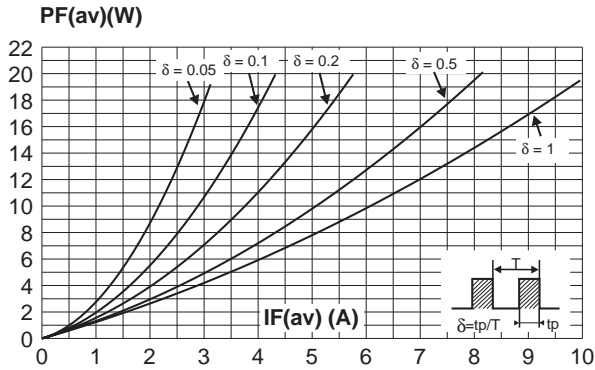


Fig. 2: Forward voltage drop versus forward current.

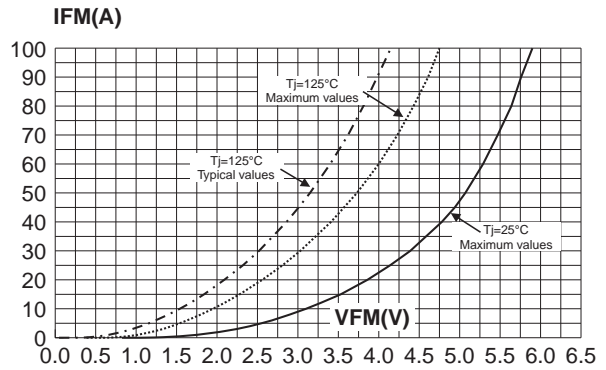


Fig. 3-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC, I²PAK, D²PAK).

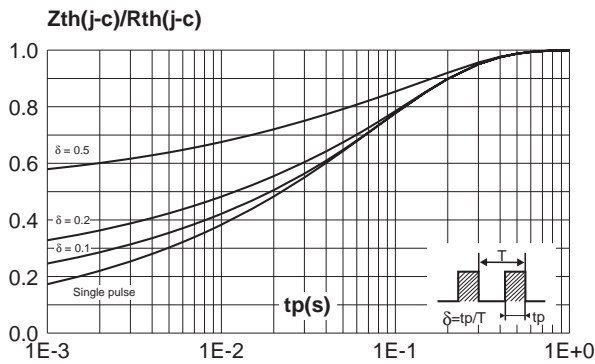


Fig. 3-2: Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAC).

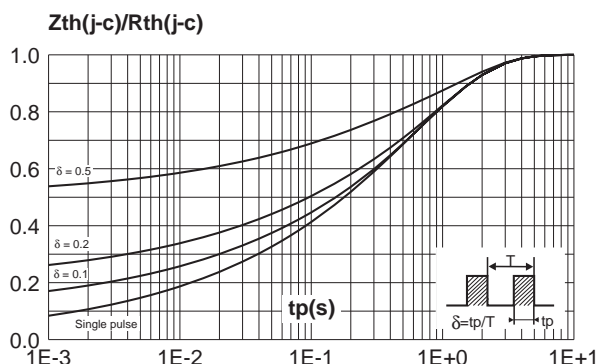


Fig. 4: Peak reverse recovery current versus dI_F/dt (90% confidence).

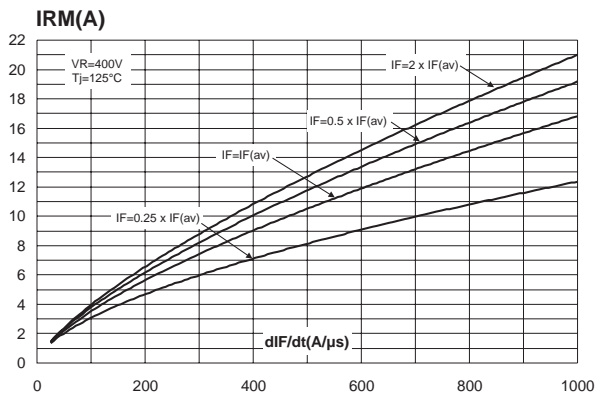


Fig. 5: Reverse recovery time versus dI_F/dt (90% confidence).

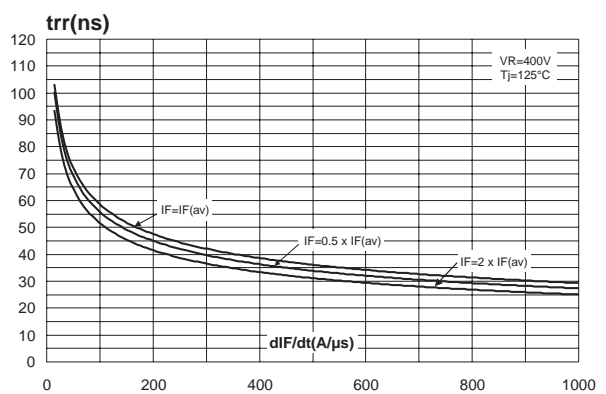


Fig. 6: Reverse recovery charges versus di_F/dt (90% confidence).

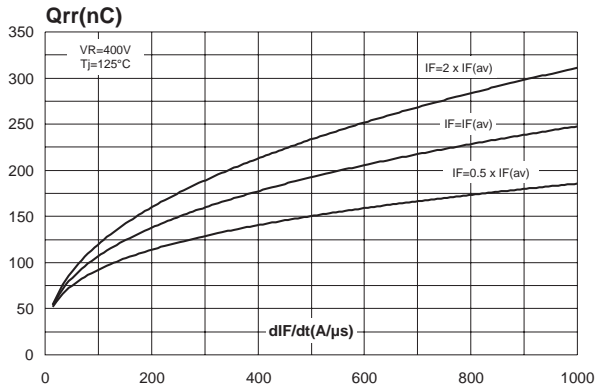


Fig. 7: Softness factor (t_b/t_a) versus di_F/dt (typical values).

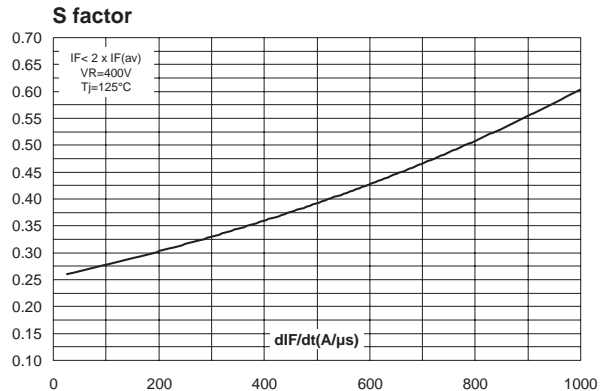


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: $T_j=125^\circ\text{C}$).

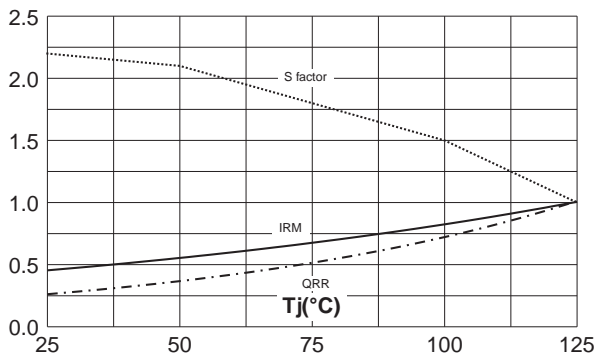


Fig. 9: Transient peak forward voltage versus di_F/dt (90% confidence).

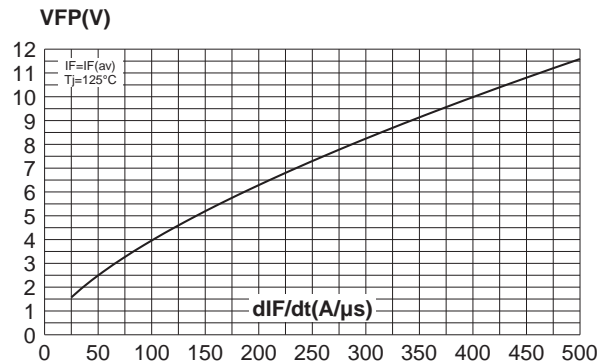


Fig. 10: Forward recovery time versus di_F/dt (90% confidence).

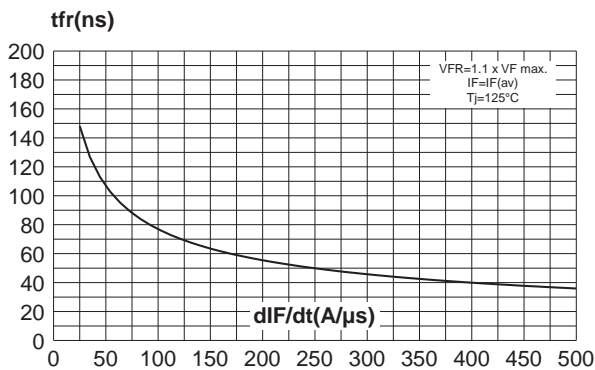
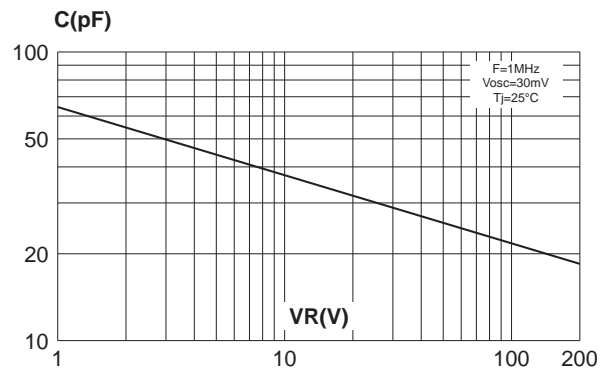
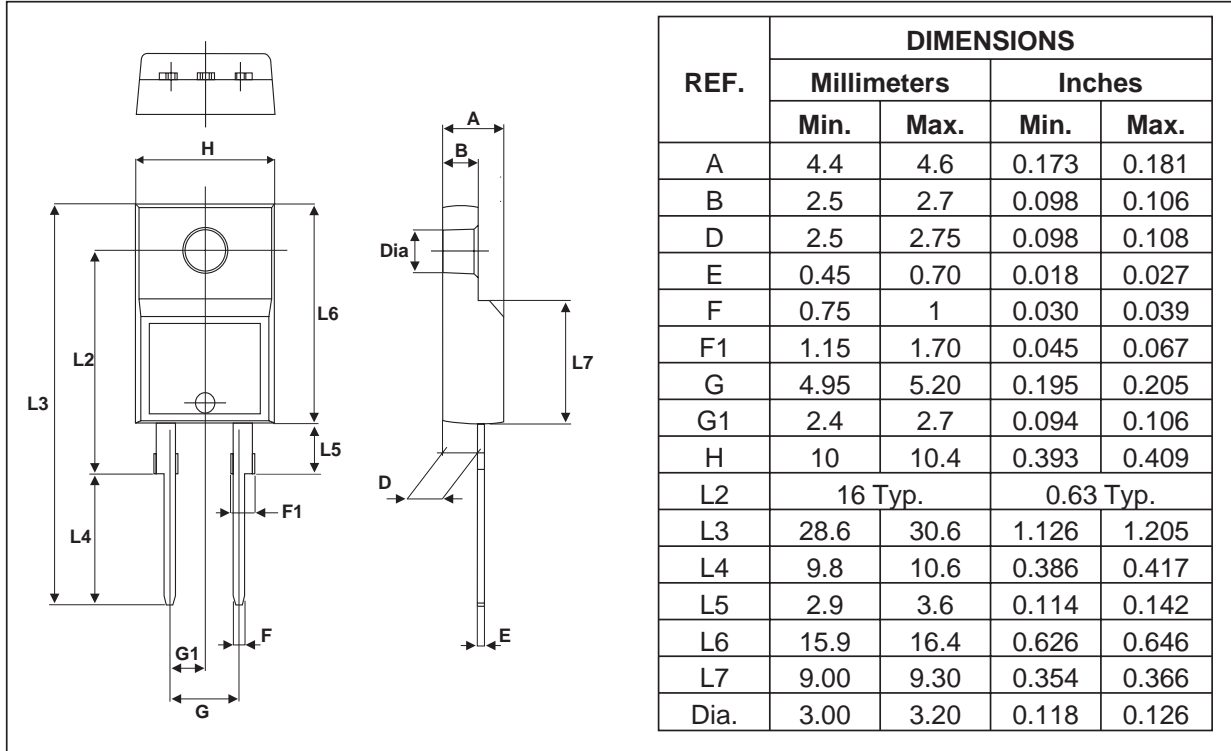


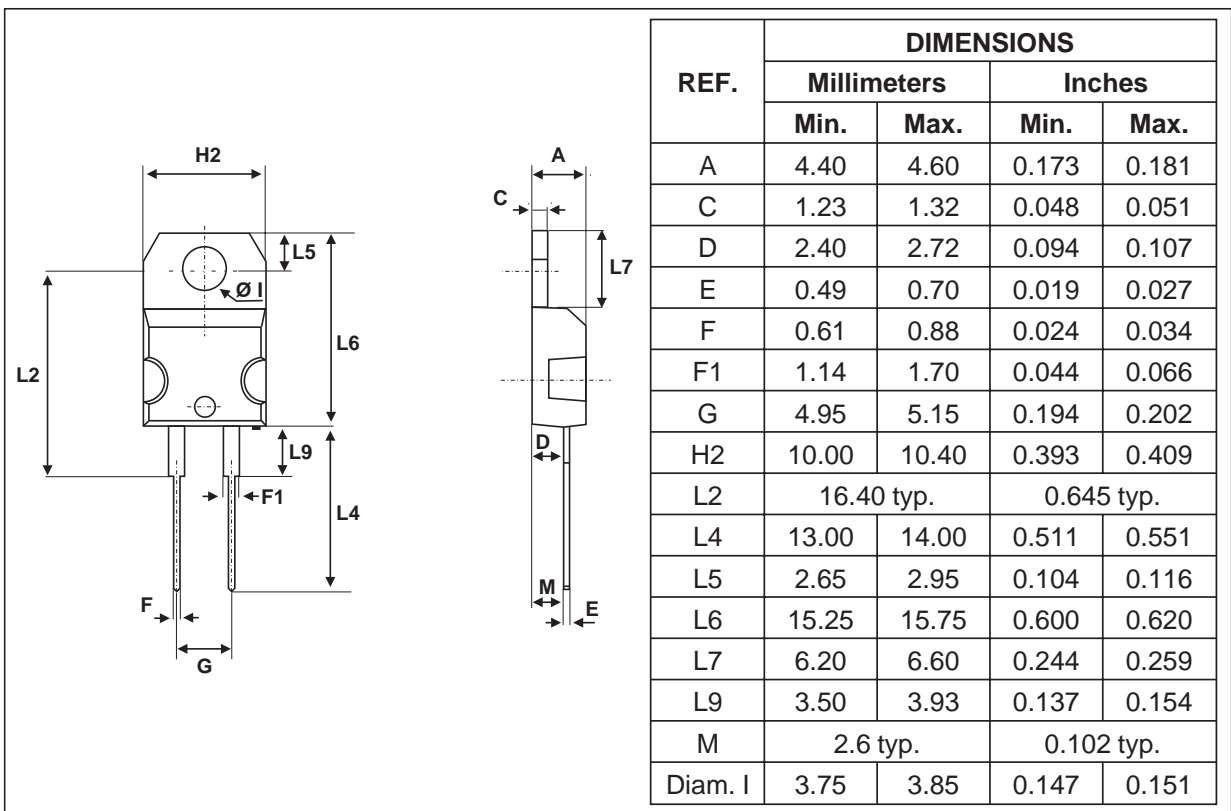
Fig. 11: Junction capacitance versus reverse voltage applied (typical values).



PACKAGE MECHANICAL DATA
TO-220FPAC



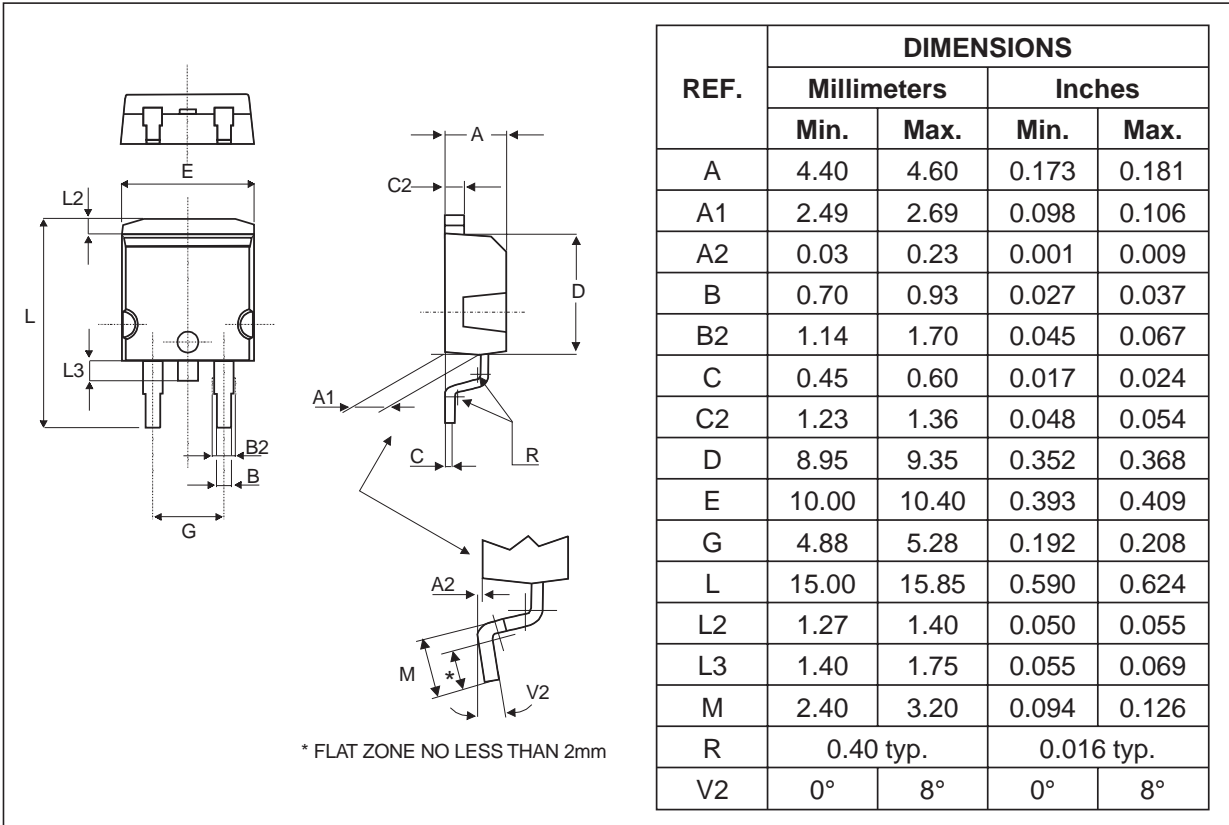
PACKAGE MECHANICAL DATA
TO-220AC



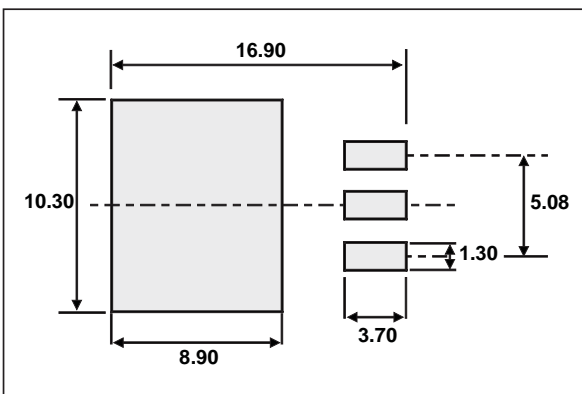
STTH8R06D/FP/G/R

PACKAGE MECHANICAL DATA

D²PAK



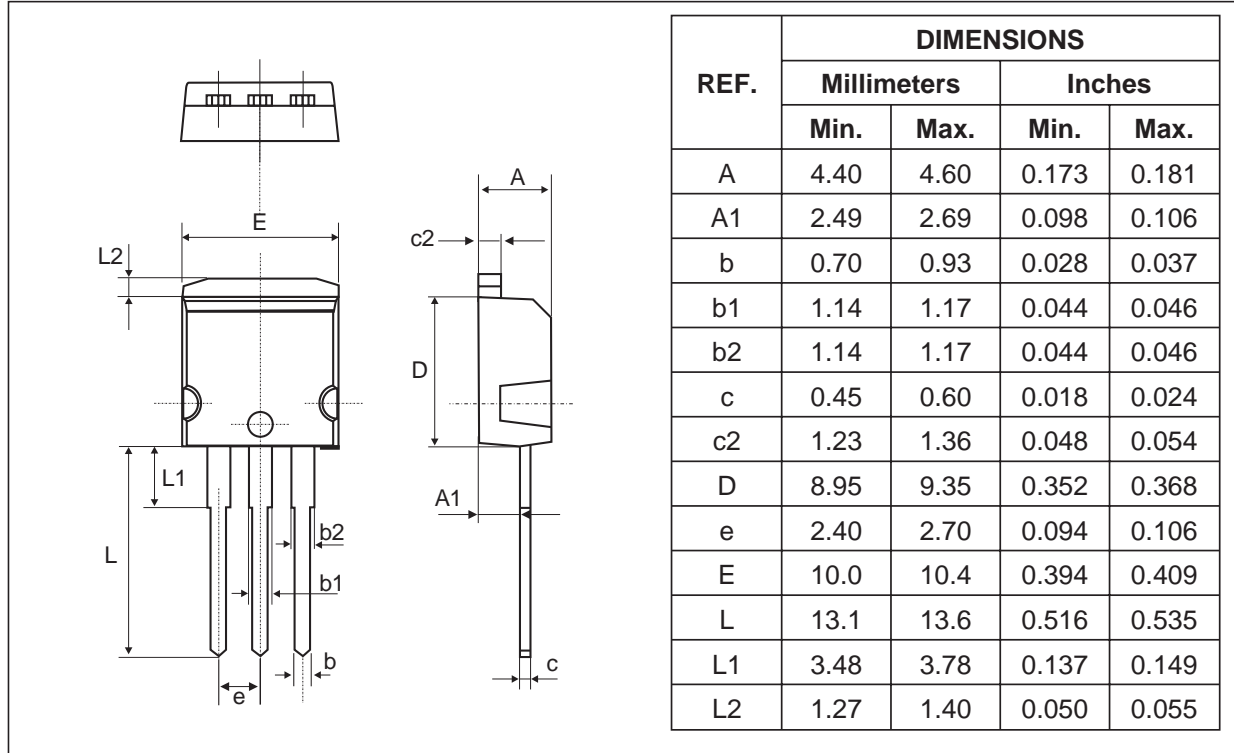
FOOTPRINT (in millimeters)



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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