



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

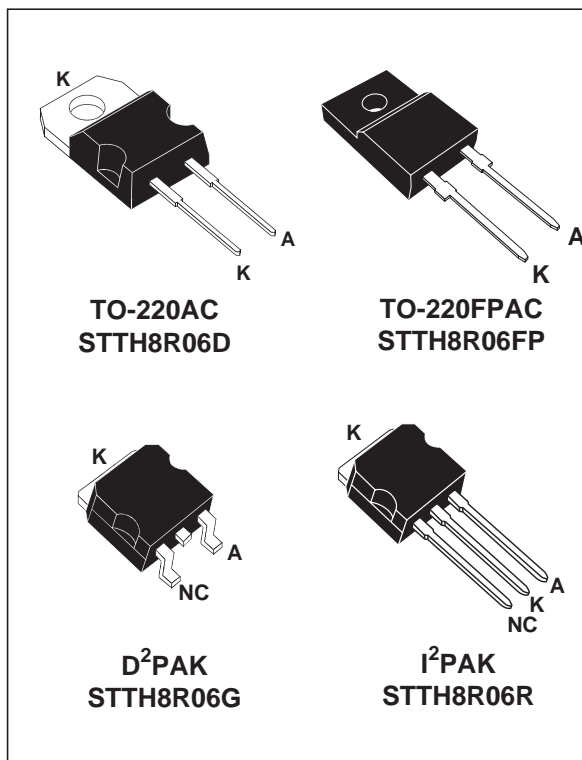
FEATURES AND BENEFITS

- 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 $T_c = 130^\circ\text{C}$ D²PAK / I²PAK $T_c = 130^\circ\text{C}$ 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

STTH8R06D/FP/G/R

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	$V_R = 600V$	$T_j = 25^{\circ}C$			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
trr	$I_F = 0.5 A$ $I_{rr} = 0.25 A$ $I_R = 1A$	$T_j = 25^{\circ}C$			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		
tfr	$I_F = 8 A$ $di_F/dt = 64 A/\mu s$ $V_{FR} = 1.1 \times V_{Fmax}$	$T_j = 25^{\circ}C$			150	ns
V _{FP}					5	V

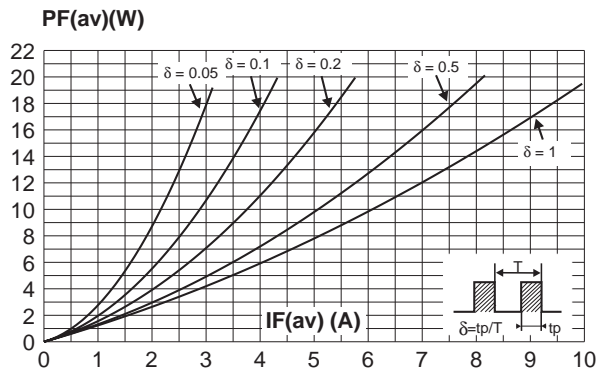
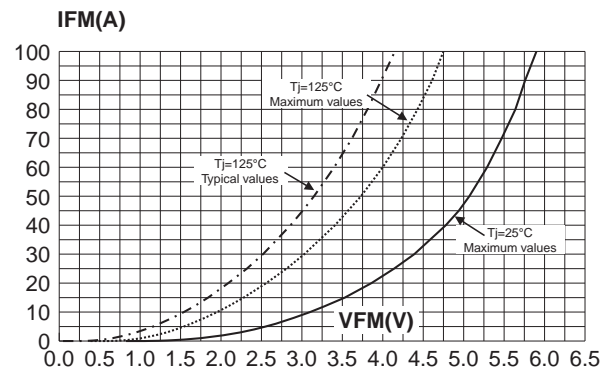
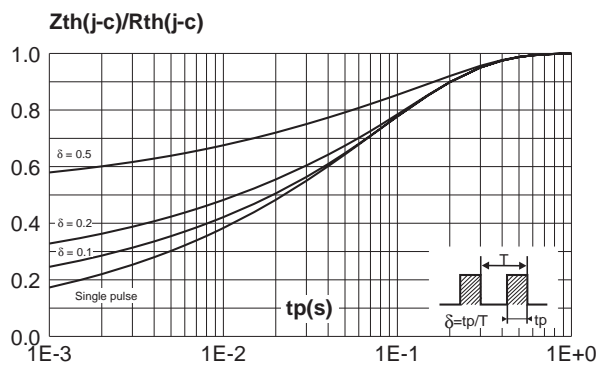
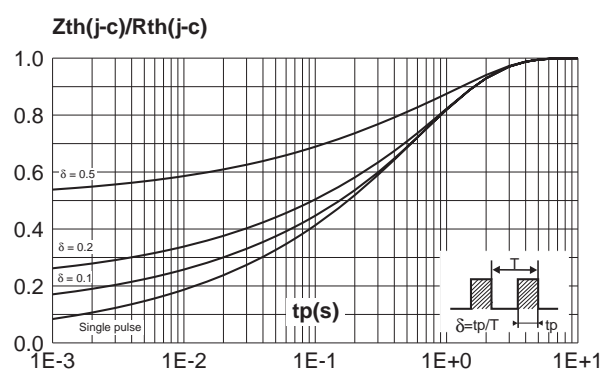
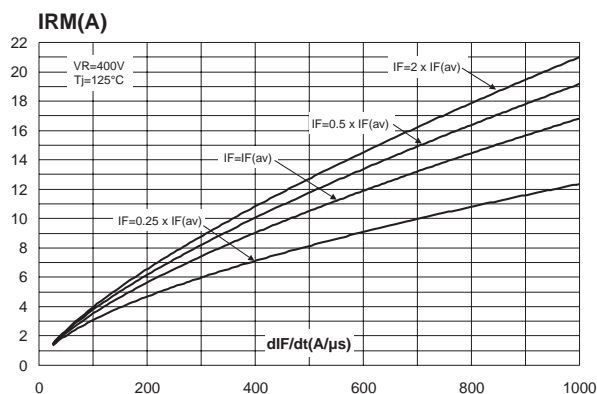
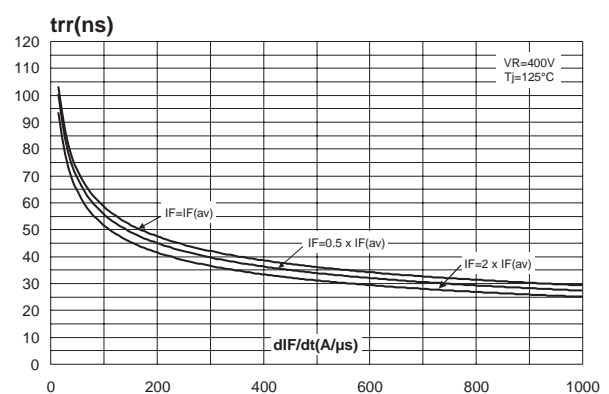
Fig. 1: Conduction losses versus average current.**Fig. 2:** Forward voltage drop versus forward current.**Fig. 3-1:** Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC, I²PAK, D²PAK).**Fig. 3-2:** Relative variation of thermal impedance junction to case versus 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).

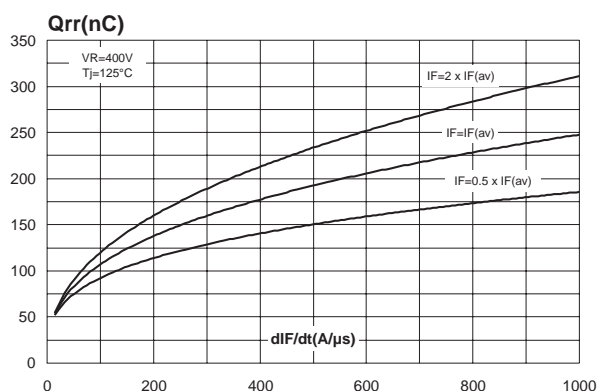


Fig. 7: Softness factor (t_b/t_a) versus dI_F/dt (typical values).

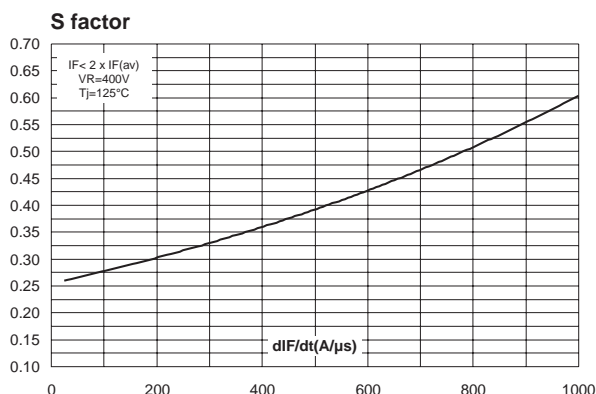


Fig. 8: Relative variation of dynamic parameters versus junction temperature (Reference: $T_j = 125^\circ C$).

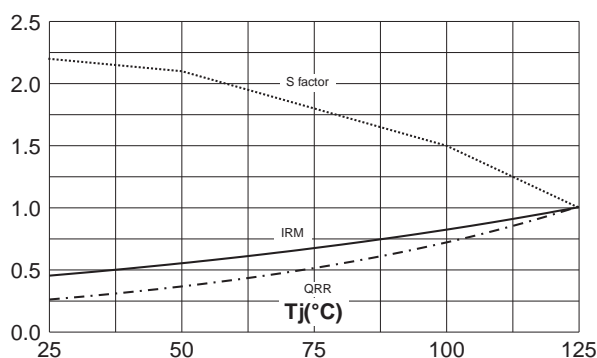


Fig. 9: Transient peak forward voltage versus dI_F/dt (90% confidence).

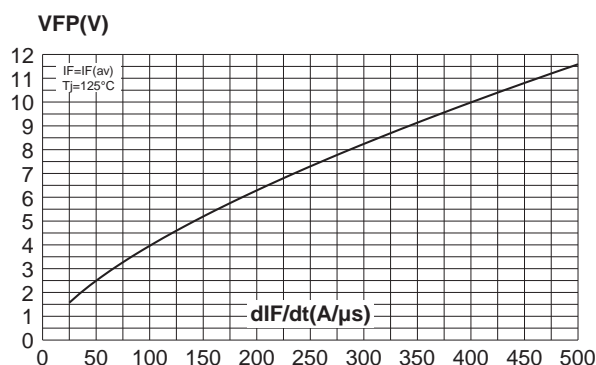


Fig. 10: Forward recovery time versus dI_F/dt (90% confidence).

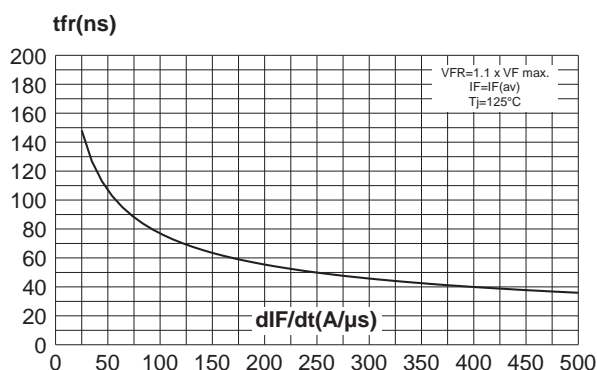
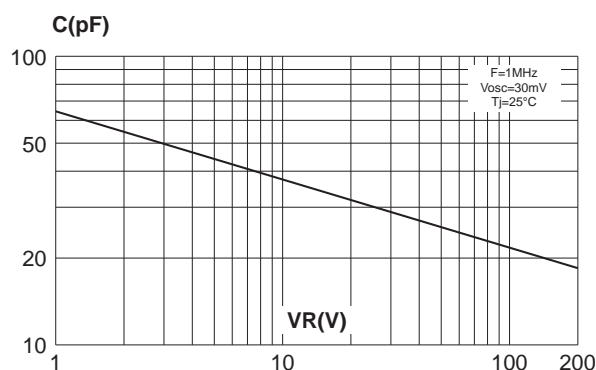
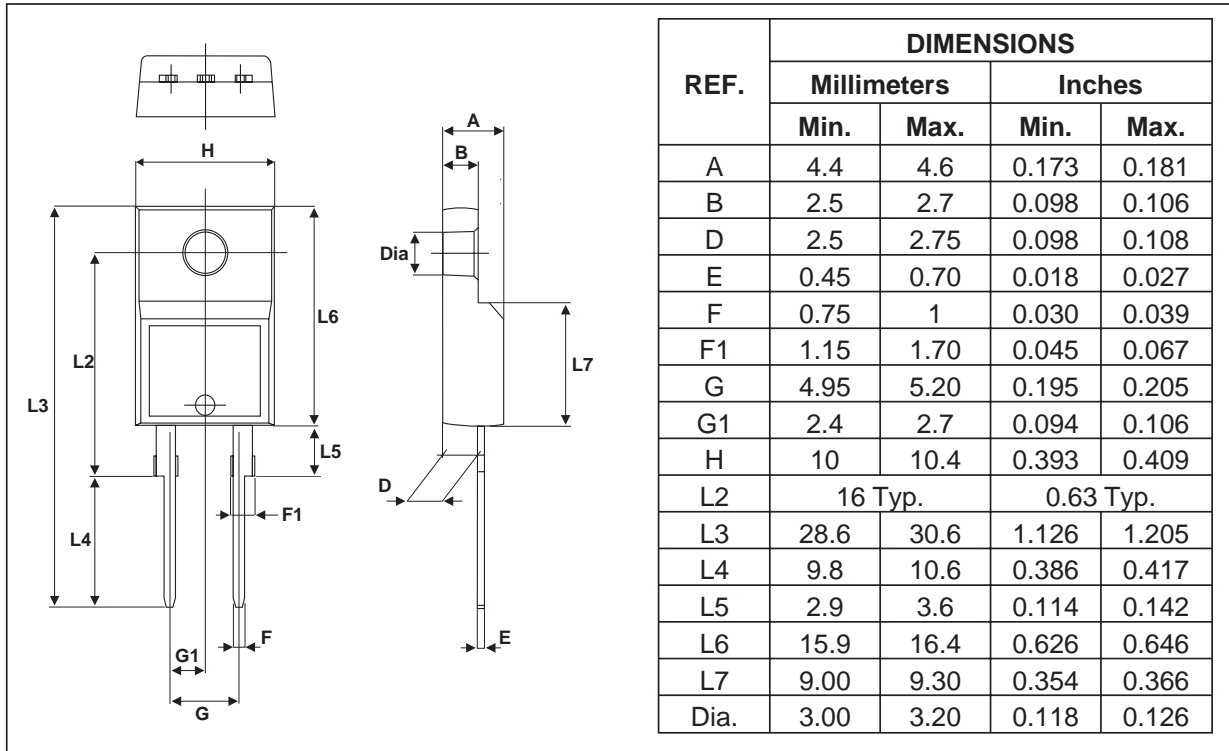
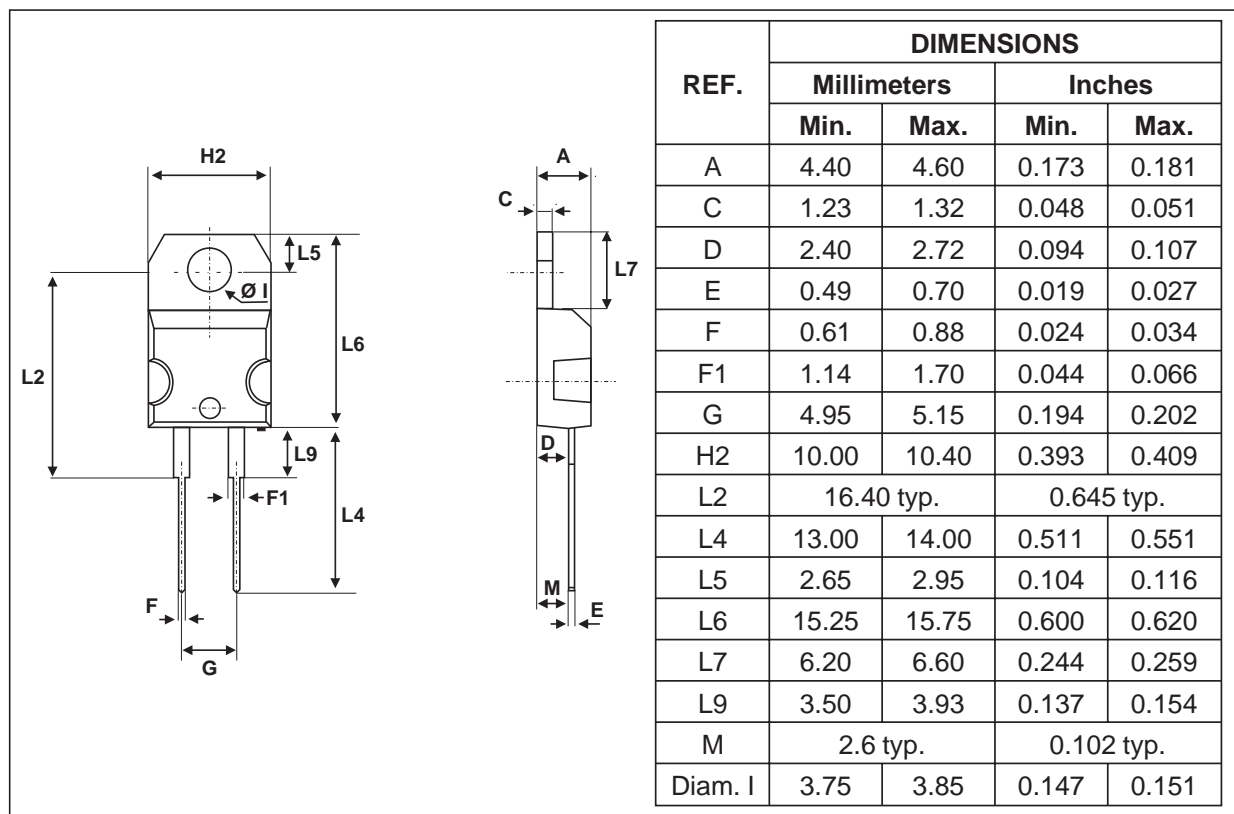
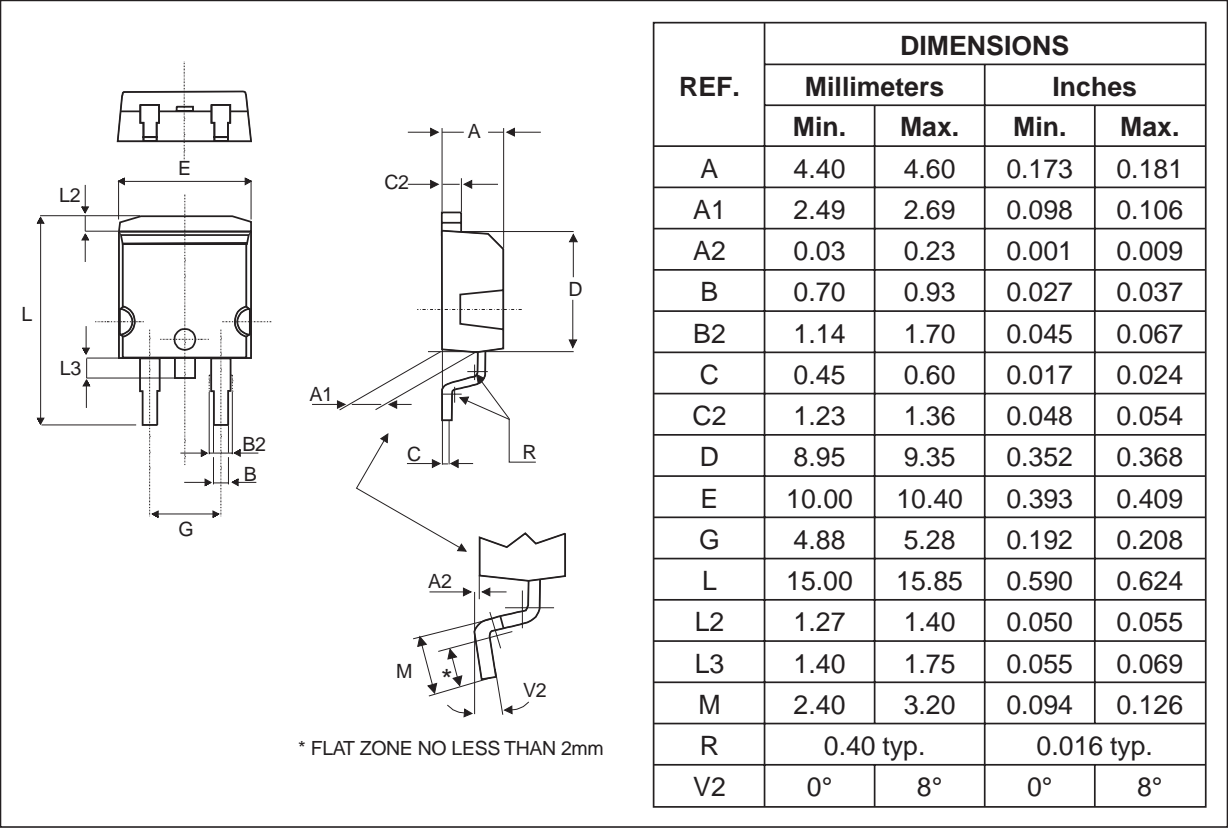


Fig. 11: Junction capacitance versus reverse voltage applied (typical values).

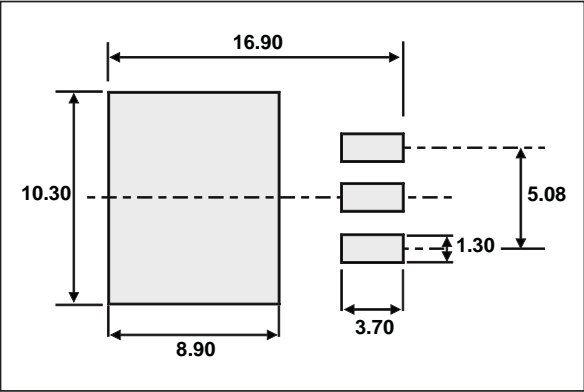


PACKAGE MECHANICAL DATA
TO-220FPAC

PACKAGE MECHANICAL DATA
TO-220AC


PACKAGE MECHANICAL DATA
D²PAK



FOOTPRINT (in millimeters)



PACKAGE MECHANICAL DATA

I²PAK

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
b	0.70	0.93	0.028	0.037
b1	1.14	1.17	0.044	0.046
b2	1.14	1.17	0.044	0.046
c	0.45	0.60	0.018	0.024
c2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
e	2.40	2.70	0.094	0.106
E	10.0	10.4	0.394	0.409
L	13.1	13.6	0.516	0.535
L1	3.48	3.78	0.137	0.149
L2	1.27	1.40	0.050	0.055

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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