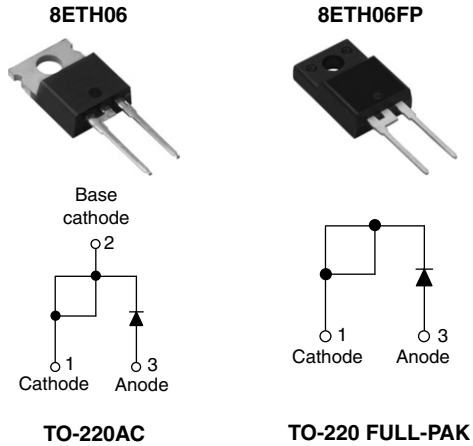


## Hyperfast Rectifier, 8 A FRED P<sub>t</sub><sup>TM</sup>



### FEATURES

- Hyperfast recovery time
- Low forward voltage drop
- Low leakage current
- 175 °C operating junction temperature
- Fully isolated package ( $V_{INS} = 2500 V_{RMS}$ )
- UL E78996 approved
- Designed and qualified for industrial level

### DESCRIPTION/APPLICATIONS

State of the art hyperfast recovery rectifiers designed with optimized performance of forward voltage drop, hyperfast recovery time, and soft recovery.

The planar structure and the platinum doped life time control guarantee the best overall performance, ruggedness and reliability characteristics.

These devices are intended for use in PFC boost stage in the AC-DC section of SMPS, inverters or as freewheeling diodes.

Their extremely optimized stored charge and low recovery current minimize the switching losses and reduce over dissipation in the switching element and snubbers.

PRODUCT SUMMARY	
$t_{rr}$ (typical)	18 ns
$I_{F(AV)}$	8 A
$V_R$	600 V

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Repetitive peak reverse voltage	$V_{RRM}$		600	V
Average rectified forward current	$I_{F(AV)}$	$T_C = 144\text{ °C}$	8	A
FULL-PAK		$T_C = 108\text{ °C}$		
Non-repetitive peak surge current	$I_{FSM}$	$T_J = 25\text{ °C}$	90	
FULL-PAK			100	
Repetitive peak forward current	$I_{FM}$		16	
Operating junction and storage temperatures	$T_J, T_{Stg}$		- 65 to 175	°C

ELECTRICAL SPECIFICATIONS ( $T_J = 25\text{ °C}$ unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Breakdown voltage, blocking voltage	$V_{BR}, V_R$	$I_R = 100\ \mu A$	600	-	-	V
Forward voltage	$V_F$	$I_F = 8\text{ A}$ $I_F = 8\text{ A}, T_J = 150\text{ °C}$	-	2.0 1.3	2.4 1.8	
Reverse leakage current	$I_R$	$V_R = V_R$ rated $T_J = 150\text{ °C}, V_R = V_R$ rated	-	0.3 55	50 500	$\mu A$
Junction capacitance	$C_T$	$V_R = 600\text{ V}$	-	17	-	pF
Series inductance	$L_S$	Measured lead to lead 5 mm from package body	-	8.0	-	nH

<b>DYNAMIC RECOVERY CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Reverse recovery time	$t_{rr}$	$I_F = 1\text{ A}$ , $di_F/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$	-	18	22	ns
		$I_F = 8\text{ A}$ , $di_F/dt = 100\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$	-	20	25	
		$T_J = 25\text{ }^\circ\text{C}$	-	25	-	
		$T_J = 125\text{ }^\circ\text{C}$	-	40	-	
Peak recovery current	$I_{RRM}$	$T_J = 25\text{ }^\circ\text{C}$	-	2.4	-	A
		$T_J = 125\text{ }^\circ\text{C}$	-	4.8	-	
Reverse recovery charge	$Q_{rr}$	$T_J = 25\text{ }^\circ\text{C}$	-	25	-	nC
		$T_J = 125\text{ }^\circ\text{C}$	-	120	-	
Reverse recovery time	$t_{rr}$	$T_J = 125\text{ }^\circ\text{C}$	-	33	-	ns
Peak recovery current	$I_{RRM}$		-	12	-	A
Reverse recovery charge	$Q_{rr}$		-	220	-	nC

<b>THERMAL - MECHANICAL SPECIFICATIONS</b>						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Maximum junction and storage temperature range	$T_J$ , $T_{Stg}$		- 65	-	175	$^\circ\text{C}$
Thermal resistance, junction to case (FULL-PAK)	$R_{thJC}$		-	1.4	2	$^\circ\text{C}/\text{W}$
			-	3.4	4.3	
Thermal resistance, junction to ambient per leg	$R_{thJA}$	Typical socket mount	-	-	70	
Thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, flat, smooth and greased	-	0.5	-	
Weight			-	2.0	-	g
			-	0.07	-	oz.
Mounting torque			6.0 (5.0)	-	12 (10)	kgf · cm (lbf · in)
Marking device		Case style TO-220AC	8ETH06			
		Case style TO-220 FULL-PAK	8ETH06FP			

# 8ETH06, 8ETH06FP

Vishay High Power Products

Hyperfast Rectifier,  
8 A FRED Pt™



## ORDERING INFORMATION TABLE

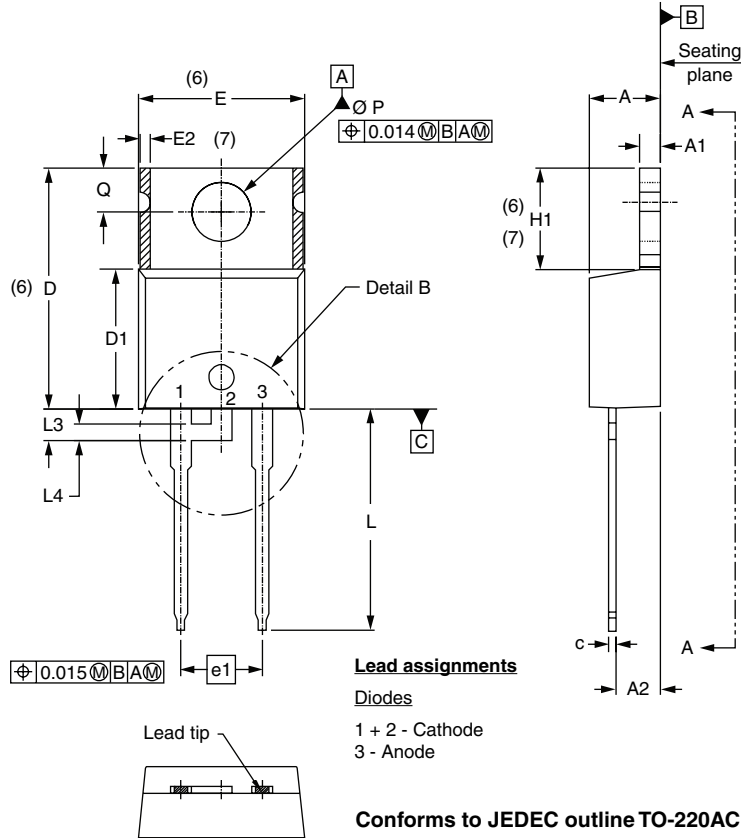
Device code	8	E	T	H	06	FP	-
	①	②	③	④	⑤	⑥	⑦

- 1** - Current rating (8 = 8A)
- 2** - E = Single diode
- 3** - T = TO-220, D<sup>2</sup>PAK
- 4** - H = Hyperfast recovery
- 5** - Voltage rating (06 = 600 V)
- 6** -
  - None = TO-220AC
  - FP = TO-220 FULL-PAK
- 7** -
  - None = Standard production
  - PbF = Lead (Pb)-free

Tube standard pack quantity: 50 pieces

## TO-220AC, TO-220AC FULL-PAK

**DIMENSIONS FOR TO-220AC** in millimeters and inches



SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	3.56	4.83	0.140	0.190	
A1	0.51	1.40	0.020	0.055	
A2	2.03	2.92	0.080	0.115	
b	0.38	1.01	0.015	0.040	
b1	0.38	0.97	0.015	0.038	4
b2	1.14	1.78	0.045	0.070	
b3	1.14	1.73	0.045	0.068	4
c	0.36	0.61	0.014	0.024	
c1	0.36	0.56	0.014	0.022	4
D	14.22	16.51	0.560	0.650	3
D1	8.38	9.02	0.330	0.355	
D2	11.68	12.88	0.460	0.507	6
E	9.65	10.67	0.380	0.420	3, 6
E1	6.86	8.89	0.270	0.350	6
E2	-	0.76	-	0.030	7
e	2.54 BSC		0.100 BSC		
e1	5.08 BSC		0.200 BSC		
H1	5.84	6.86	0.230	0.270	6, 7
L	12.70	14.73	0.500	0.580	
L1	-	6.35	-	0.250	2
L3	1.78	2.13	0.070	0.084	
L4	0.76	1.27	0.030	0.050	2
Ø P	3.53	3.73	0.139	0.147	
Q	2.54	3.05	0.100	0.120	

**Notes**

- (1) Dimensioning and tolerancing as per ASME Y14.5M-1994
- (2) Lead dimension and finish uncontrolled in L1
- (3) Dimension D, D1 and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body
- (4) Dimension b1, b3 and c1 apply to base metal only
- (5) Controlling dimension: inches
- (6) Thermal pad contour optional within dimensions E, H1, D2 and E1
- (7) Dimension E2 x H1 define a zone where stamping and singulation irregularities are allowed
- (8) Outline conforms to JEDEC TO-220, D2 (minimum) where dimensions are derived from the actual package outline

# Outline Dimensions

Vishay High Power Products

TO-220AC,  
TO-220AC FULL-PAK



## DIMENSIONS FOR TO-220AC FULL-PAK in millimeters

