

# HFA08TB120SPbF

Ultrafast, Soft Recovery Diode

HEXFRED™

### Features

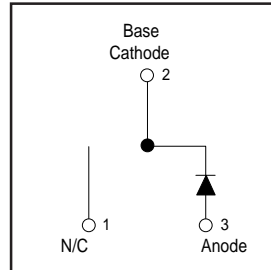
- Ultrafast Recovery
- Ultrasoft Recovery
- Very Low  $I_{RRM}$
- Very Low  $Q_{rr}$
- Specified at Operating Conditions
- Lead-Free

### Benefits

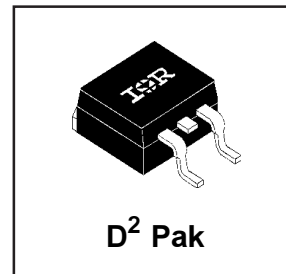
- Reduced RFI and EMI
- Reduced Power Loss in Diode and Switching Transistor
- Higher Frequency Operation
- Reduced Snubbing
- Reduced Parts Count

### Description

International Rectifier's HFA08TB120S is a state of the art ultra fast recovery diode. Employing the latest in epitaxial construction and advanced processing techniques it features a superb combination of characteristics which result in performance which is unsurpassed by any rectifier previously available. With basic ratings of 1200 volts and 8 amps continuous current, the HFA08TB120S is especially well suited for use as the companion diode for IGBTs and MOSFETs. In addition to ultra fast recovery time, the HEXFRED product line features extremely low values of peak recovery current ( $I_{RRM}$ ) and does not exhibit any tendency to "snap-off" during the  $t_b$  portion of recovery. The HEXFRED features combine to offer designers a rectifier with lower noise and significantly lower switching losses in both the diode and the switching transistor. These HEXFRED advantages can help to significantly reduce snubbing, component count and heatsink sizes. The HEXFRED HFA08TB120S is ideally suited for applications in power supplies and power conversion systems (such as inverters), motor drives, and many other similar applications where high speed, high efficiency is needed.



$V_R = 1200V$
$V_F(\text{typ.})^* = 2.4V$
$I_{F(AV)} = 8.0A$
$Q_{rr}(\text{typ.}) = 140nC$
$I_{RRM}(\text{typ.}) = 4.5A$
$t_{rr}(\text{typ.}) = 28ns$
$di_{(rec)M}/dt(\text{typ.})^* = 85A/\mu s$



### Absolute Maximum Ratings

	Parameter	Max.	Units
$V_R$	Cathode-to-Anode Voltage	1200	V
$I_F @ T_C = 100^\circ C$	Continuous Forward Current	8.0	A
$I_{FSM}$	Single Pulse Forward Current	130	
$I_{FRM}$	Maximum Repetitive Forward Current	32	
$P_D @ T_C = 25^\circ C$	Maximum Power Dissipation	73.5	W
$P_D @ T_C = 100^\circ C$	Maximum Power Dissipation	29	
$T_J$	Operating Junction and	-55 to +150	$^\circ C$
$T_{STG}$	Storage Temperature Range		

\* 125°C

**Electrical Characteristics @  $T_J = 25^\circ\text{C}$  (unless otherwise specified)**

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$V_{BR}$	Cathode Anode Breakdown Voltage	1200	—	—	V	$I_R = 100\mu\text{A}$
$V_{FM}$	Max Forward Voltage	—	2.6	3.3	V	$I_F = 8.0\text{A}$
		—	3.4	4.3		$I_F = 16\text{A}$
		—	2.4	3.1		$I_F = 8.0\text{A}, T_J = 125^\circ\text{C}$
$I_{RM}$	Max Reverse Leakage Current	—	0.31	10	$\mu\text{A}$	$V_R = V_R$ Rated
		—	135	1000		$T_J = 125^\circ\text{C}, V_R = 0.8 \times V_R$ Rated
$C_T$	Junction Capacitance	—	11	20	pF	$V_R = 200\text{V}$
$L_S$	Series Inductance	—	8.0	—	nH	Measured lead to lead 5mm from package body

**Dynamic Recovery Characteristics @  $T_J = 25^\circ\text{C}$  (unless otherwise specified)**

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$t_{rr}$	Reverse Recovery Time	—	28	—	ns	$I_F = 1.0\text{A}, di/dt = 200\text{A}/\mu\text{s}, V_R = 30\text{V}$
$t_{rr1}$	See Fig. 5	—	63	95		$T_J = 25^\circ\text{C}$
$t_{rr2}$		—	106	160		$T_J = 125^\circ\text{C}$
$I_{RRM1}$	Peak Recovery Current	—	4.5	8.0	A	$T_J = 25^\circ\text{C}$
						$T_J = 125^\circ\text{C}$
$I_{RRM2}$	See Fig. 6	—	6.2	11	nC	$V_R = 200\text{V}$
$Q_{rr1}$	Reverse Recovery Charge	—	140	380		$T_J = 25^\circ\text{C}$
$Q_{rr2}$						$T_J = 125^\circ\text{C}$
$di_{(rec)M}/dt1$	Peak Rate of Fall of Recovery Current During $t_b$ See Fig. 8	—	133	—	$\text{A}/\mu\text{s}$	$T_J = 25^\circ\text{C}$
$di_{(rec)M}/dt2$						$T_J = 125^\circ\text{C}$

**Thermal - Mechanical Characteristics**

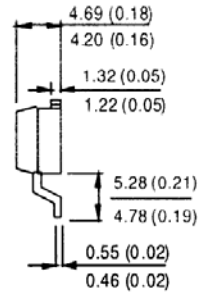
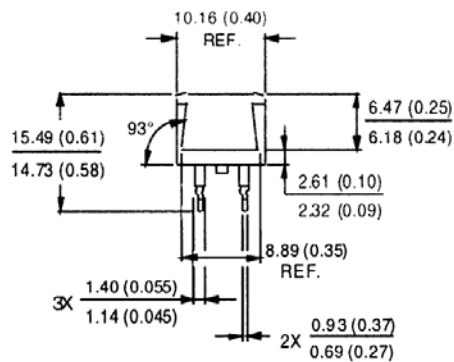
	Parameter	Min.	Typ.	Max.	Units
$T_{lead}$ ①	Lead Temperature	—	—	300	$^\circ\text{C}$
$R_{thJC}$	Thermal Resistance, Junction to Case	—	—	1.7	K/W
$R_{thJA}$ ②	Thermal Resistance, Junction to Ambient	—	—	40	
$Wt$	Weight	—	2.0	—	g
		—	0.07	—	(oz)

① 0.063 in. from Case (1.6mm) for 10 sec

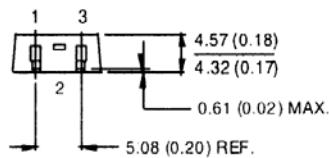
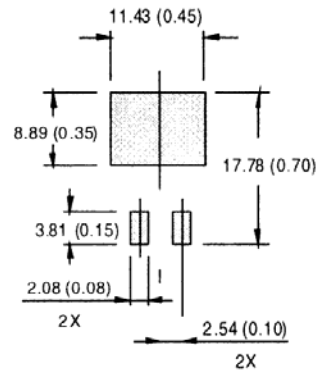
② Typical Socket Mount

### D<sup>2</sup>PAK Package Outline

Dimensions are shown in millimeters (inches)



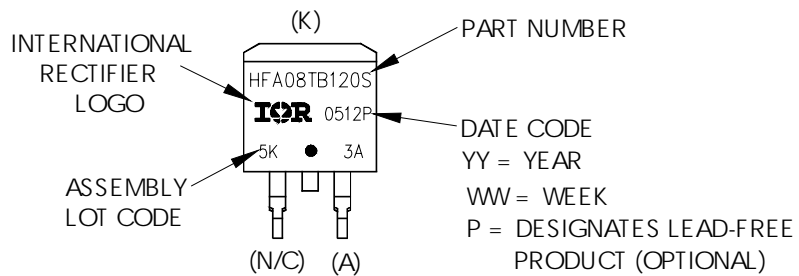
#### MINIMUM RECOMMENDED FOOTPRINT



Conforms to JEDEC Outline D<sup>2</sup>PAK  
 Dimensions in millimeters and inches

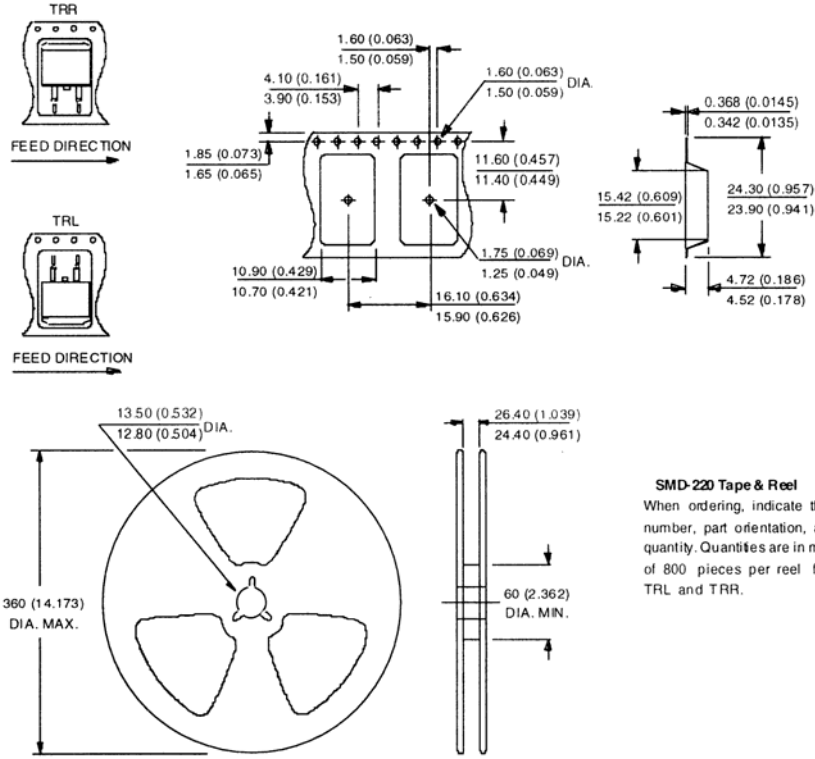
### D<sup>2</sup>PAK Part Marking Information

EXAMPLE: THIS IS A HFA08TB120S



### D<sup>2</sup>PAK Tape & Reel Information

Dimensions are shown in millimeters (inches)



**SMD-220 Tape & Reel**  
 When ordering, indicate the part number, part orientation, and the quantity. Quantities are in multiples of 800 pieces per reel for both TRL and TRR.

Data and specifications subject to change without notice.  
 This product has been designed and qualified for the Consumer market.  
 Qualifications Standards can be found on IR's Web site.