International
IOR Rectifier

Preliminary Data Sheet PD-20605 rev. A 01/99

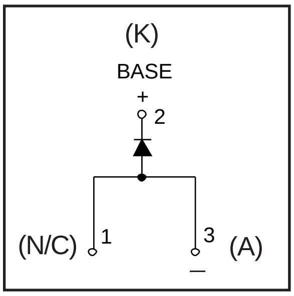
HFA16TB120S

HEXFRED™

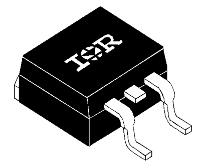
Ultrafast, Soft Recovery Diode

Features
- Ultrafast Recovery
- Ultrasoft Recovery
- Very Low I_{RRM}
- Very Low Q_{rr}
- Guaranteed Avalanche
- Specified at Operating Conditions

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



V_R = 1200V
V_F(typ.)* = 2.3V
$I_{F(AV)}$ = 16A
Q_{rr} (typ.)= 260nC
I_{RRM}(typ.) = 5.8A
t_{rr}(typ.) = 30ns
$di_{(rec)M}/dt$ (typ.)* = 76A/μs



D^2 Pak

Description
International Rectifier's HFA16TB120S 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 16 amps continuous current, the HFA16TB120S 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 HFA16TB120S 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.

Absolute Maximum Ratings

	Parameter	Max.	Units
V_R	Cathode-to-Anode Voltage	1200	V
I_F @ T_C = 100°C	Continuous Forward Current	16	A
I_{FSM}	Single Pulse Forward Current	190	
I_{FRM}	Maximum Repetitive Forward Current	64	
P_D @ T_C = 25°C	Maximum Power Dissipation	151	W
P_D @ T_C = 100°C	Maximum Power Dissipation	60	
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

* 125°C

Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V_{BR}	Cathode Anode Breakdown Voltage	1200	——	——	V	I_R = 100μA
V_{FM}	Max Forward Voltage	——	2.5	3.0	V	I_F = 16A
		——	3.2	3.93		I_F = 32A
		——	2.3	2.7		I_F = 16A, T_J = 125°C
I_{RM}	Max Reverse Leakage Current	——	0.75	20	μA	V_R = V_R Rated
		——	375	2000		T_J = 125°C, V_R = 0.8 x V_R Rated
C_T	Junction Capacitance	——	27	40	pF	V_R = 200V
L_S	Series Inductance	——	8.0	——	nH	Measured lead to lead 5mm from package body

Dynamic Recovery Characteristics @ T_J = 25°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Test Conditions	
t_{rr}	Reverse Recovery Time	——	30	——	ns	I_F = 1.0A, di_f/dt = 200A/μs, V_R = 30V	
t_{rr1}		——	90	135		T_J = 25°C	I_F = 16A V_R = 200V di_f/dt = 200A/μs
t_{rr2}		——	164	245		T_J = 125°C	
I_{RRM1}	Peak Recovery Current	——	5.8	10	A	T_J = 25°C	
I_{RRM2}		——	8.3	15		T_J = 125°C	
Q_{rr1}	Reverse Recovery Charge	——	260	675	nC	T_J = 25°C	
Q_{rr2}		——	680	1838		T_J = 125°C	
$di_{(rec)M}/dt1$	Peak Rate of Fall of Recovery Current	——	120	——	A/μs	T_J = 25°C	
$di_{(rec)M}/dt2$	During t_b	——	76	——		T_J = 125°C	

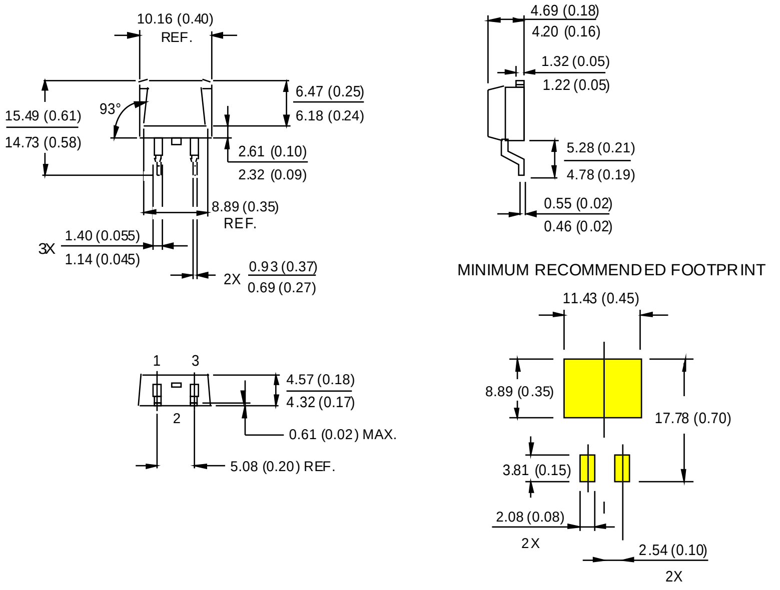
Thermal - Mechanical Characteristics

	Parameter	Min.	Typ.	Max.	Units
T_{lead} ①	Lead Temperature	——	——	300	°C
R_{thJC}	Thermal Resistance, Junction to Case	——	——	0.83	K/W
R_{thJA} ②	Thermal Resistance, Junction to Ambient	——	——	80	
Wt	Weight	——	2.0	——	g
		——	0.07	——	(oz)

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

② Typical Socket Mount

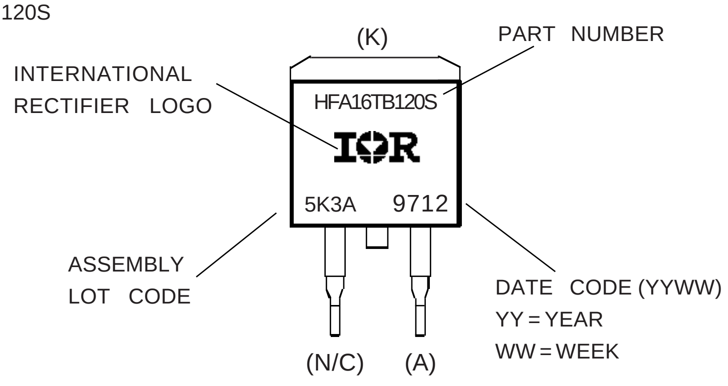
Outline Table



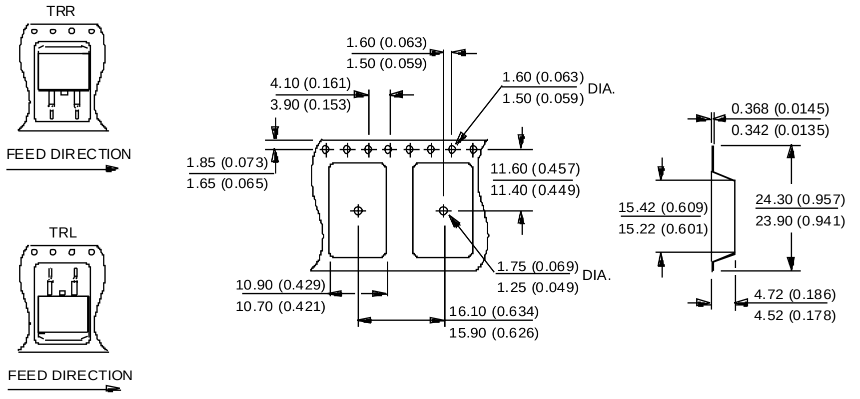
Conforms to JEDEC Outline D^{2}PAK
Dimensions in millimeters and inches

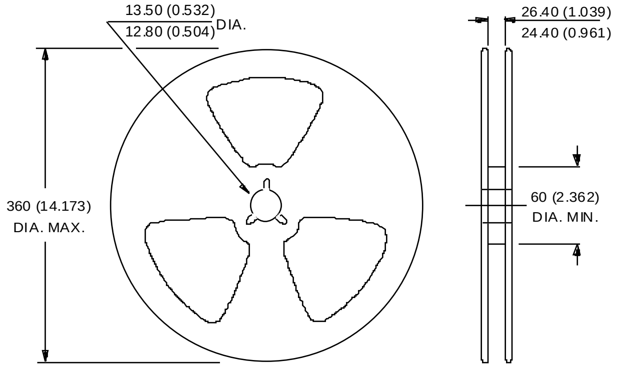
Part Marking Information

EXAMPLE: THIS IS AN HFA16TB120S



Tape & Reel Information





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.

International
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IR FAR EAST: K&H Bldg., 2F, 30-4 Nishi-Ikebukuro 3-Chome, Toshima-Ku, Tokyo, Japan 171. Tel: 81 3 3983 0086.
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