HEXFRED® Ultrafast Diodes, 100 A (INT-A-PAK Power Modules)



INT-A-PAK

FEATURES

- Electrically isolated: DBC base plate
- Standard JEDEC® package
- Simplified mechanical designs, rapid assembly
- High surge capability
- Large creepage distances
- UL approved file E78996
- Case style INT-A-PAK
- Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

PRIMARY CHARACTERISTICS	
V_R	1200 V
V_F (typical)	2.5 V
t_{rr} (typical)	150 ns
$I_{F(DC)}$ at T_C	110 A at 100 °C
Package	INT-A-PAK
Circuit configuration	Two diodes doubler circuit

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Cathode to anode voltage	V_R		1200	V
Continuous forward current	I_F	T_C = 25 °C	205	A
		T_C = 100 °C	110	
Single pulse forward current	I_{FSM}	Limited by junction temperature	800	
Maximum power dissipation	P_D	T_C = 25 °C	695	W
		T_C = 100 °C	280	
RMS isolation voltage	V_{ISOL}	50 Hz, circuit to base, all terminal shorted, t = 1 s	3500	V
Operating junction and storage temperature range	T_J, T_{Stg}		-40 to +150	°C

ELECTRICAL SPECIFICATIONS PER LEG (T_J = 25 °C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Cathode to anode breakdown voltage	V_{BR}	I_R = 100 µA	1200	-	-	V
Maximum forward voltage	V_{FM}	I_F = 100 A	-	2.5	3.2	
		I_F = 160 A	-	2.9	3.9	
Maximum reverse leakage current	I_{RM}	T_J = 150 °C, V_R = 1200 V	-	18	30	mA

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

DYNAMIC RECOVERY CHARACTERISTICS (T_J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t_{rr}	T_J = 25 °C	I_F = 160 A dI_F/dt = 200 A/µs V_R = 200 V	-	150	200	ns
Reverse recovery current	I_{RRM}	T_J = 25 °C		-	20	22	A
Reverse recovery charge	Q_{rr}	T_J = 25 °C		-	2000	2400	nC
Peak rate of recovery current	$dI_{(rec)M}/dt$	T_J = 25 °C		-	-	300	A/µs

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Junction operating and storage temperature range	T_J, T_{Stg}		-40 to +150	°C
Maximum internal thermal resistance, junction to case per leg	R_{thJC}	DC operation	0.18	°C/W
Typical thermal resistance, case to heatsink per module	R_{thCS}	Mounting surface flat, smooth and greased	0.05	
Mounting torque ± 10 % to heatsink / busbar		A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound.	4 to 6	Nm
Approximate weight			200	g
			7.1	oz.
Case style			INT-A-PAK	

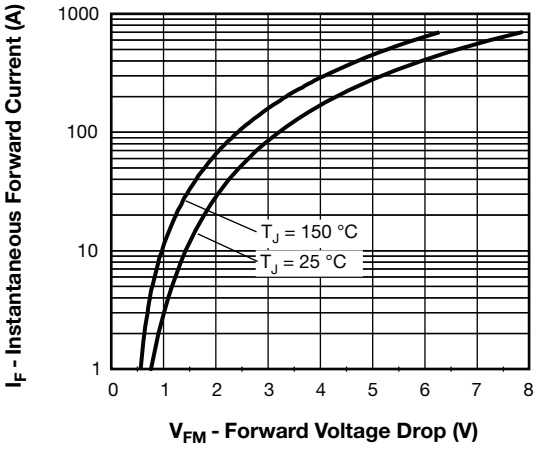


Fig. 1 - Maximum Forward Voltage Drop Characteristics

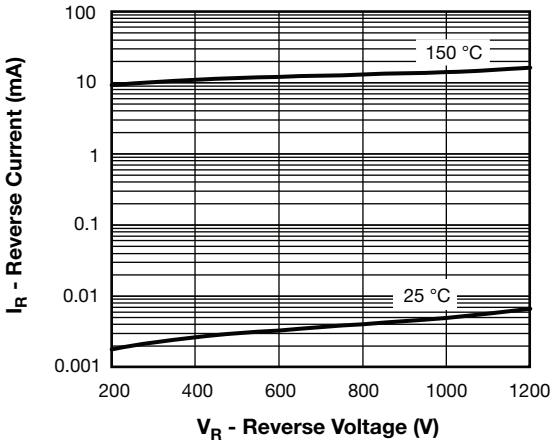


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

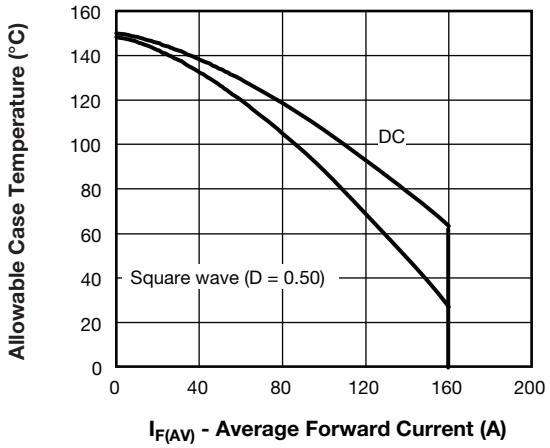


Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current

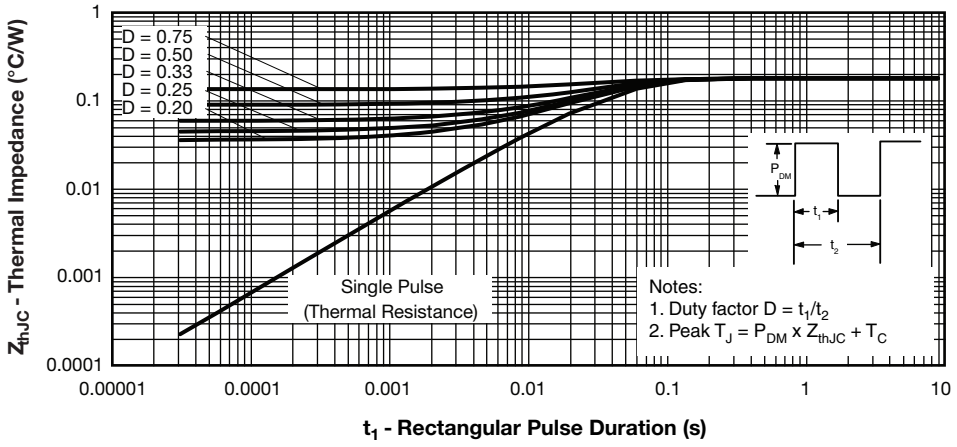


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

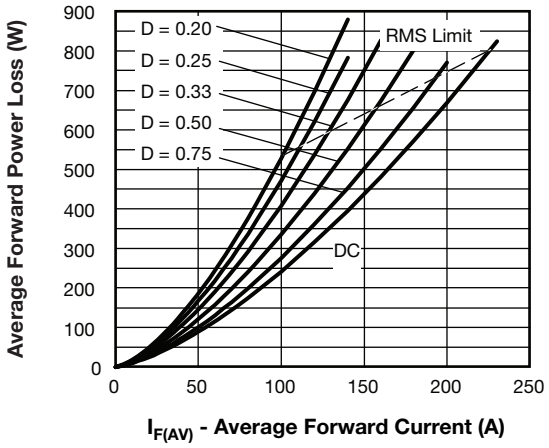


Fig. 5 - Forward Power Loss Characteristics

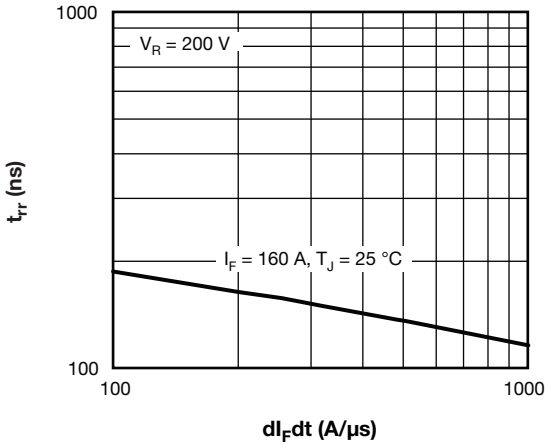


Fig. 6 - Typical Reverse Recovery Time vs. dI_F/dt (Per Leg)

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

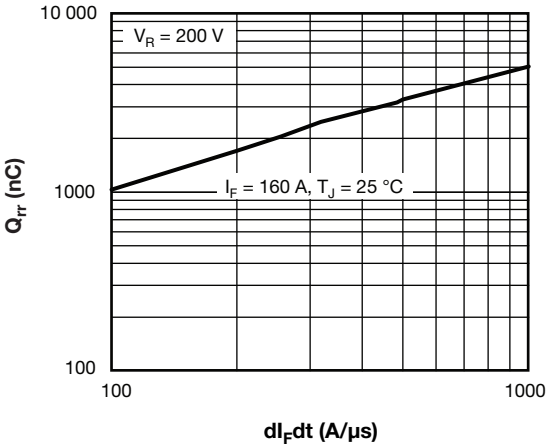


Fig. 7 - Typical Reverse Recovery Charge vs. dI_F/dt (Per Leg)

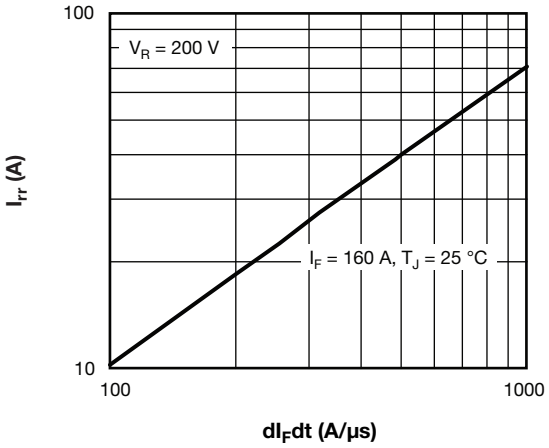


Fig. 8 - Typical Reverse Recovery Current vs. dI_F/dt (Per Leg)

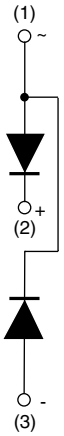
ORDERING INFORMATION TABLE

Device code

VS-VS	KD	U	162	12	PbF
1	2	3	4	5	6

1	-	Vishay Semiconductors product
2	-	Circuit configuration
3	-	U = HEXFRED® ultrafast diode
4	-	Current rating
5	-	Voltage rating (12 = 1200 V)
6	-	PbF = Lead (Pb)-free

CIRCUIT CONFIGURATION

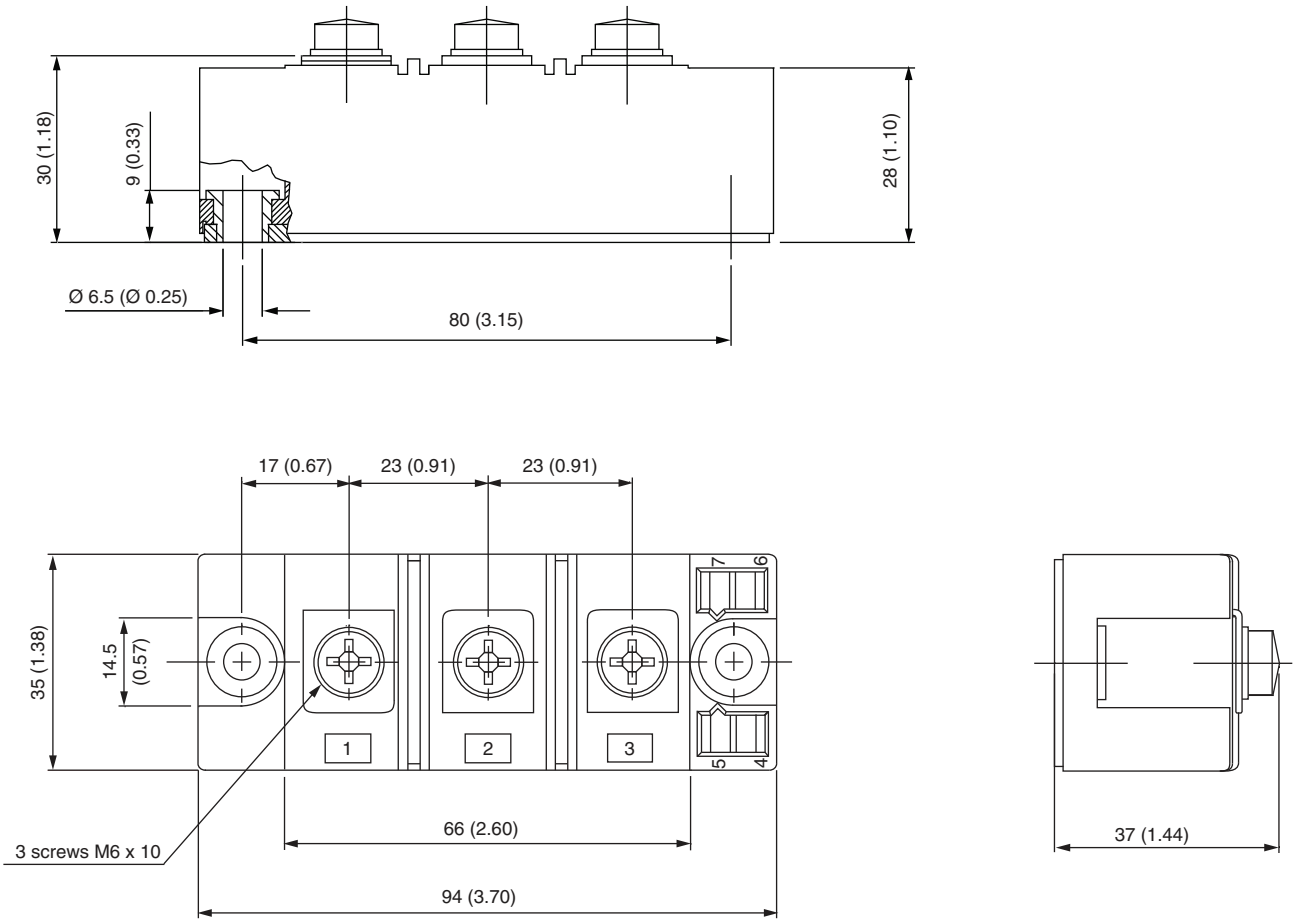


LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95254

For technical questions within your region: DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com
THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

INT-A-PAK DBC

DIMENSIONS in millimeters (inches)



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

© 2022 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED