

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	$T_C = 25\text{ °C}$	205	A
		$T_C = 100\text{ °C}$	110	
Single pulse forward current	I_{FSM}	Limited by junction temperature	800	
Maximum power dissipation	P_D	$T_C = 25\text{ °C}$	695	W
		$T_C = 100\text{ °C}$	280	
RMS isolation voltage	V_{ISOL}	50 Hz, circuit to base, all terminal shorted, $t = 1\text{ s}$	3500	V
Operating junction and storage temperature range	T_J, T_{Stg}		-40 to +150	°C

ELECTRICAL SPECIFICATIONS PER LEG ($T_J = 25\text{ °C}$ unless otherwise specified)

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

**DYNAMIC RECOVERY CHARACTERISTICS** ($T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t_{rr}	$T_J = 25\text{ }^{\circ}\text{C}$	-	150	200	ns
Reverse recovery current	I_{RRM}	$T_J = 25\text{ }^{\circ}\text{C}$	-	20	22	A
Reverse recovery charge	Q_{rr}	$T_J = 25\text{ }^{\circ}\text{C}$	-	2000	2400	nC
Peak rate of recovery current	$di_{(rec)M}/dt$	$T_J = 25\text{ }^{\circ}\text{C}$	-	-	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	$^{\circ}\text{C}$
Maximum internal thermal resistance, junction to case per leg	R_{thJC}	DC operation	0.18	$^{\circ}\text{C/W}$
Typical thermal resistance, case to heatsink per module	R_{thCS}	Mounting surface flat, smooth and greased	0.05	
Mounting torque $\pm 10\%$ 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	

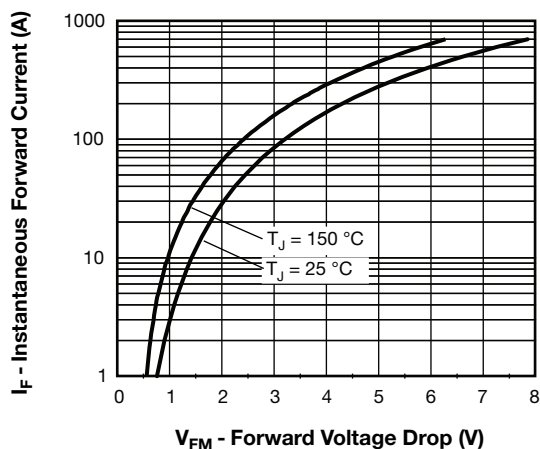


Fig. 1 - Maximum Forward Voltage Drop Characteristics

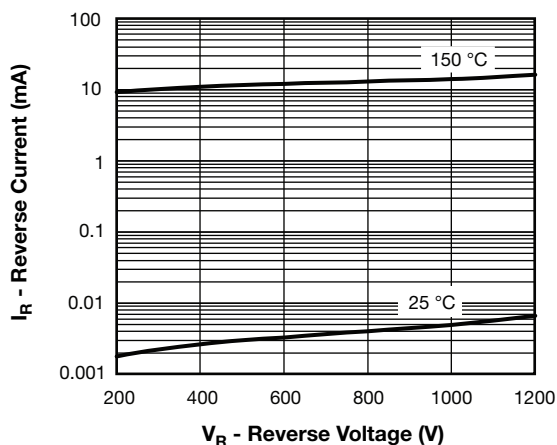


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

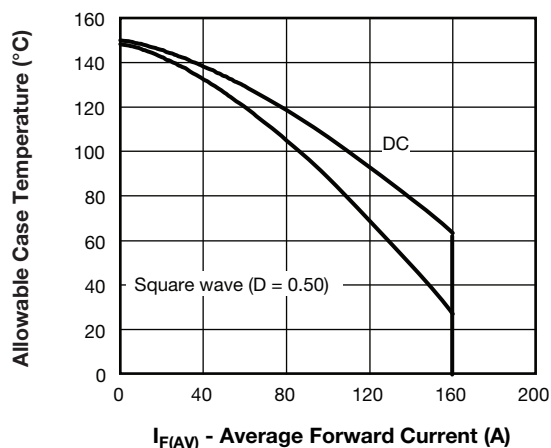


Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current

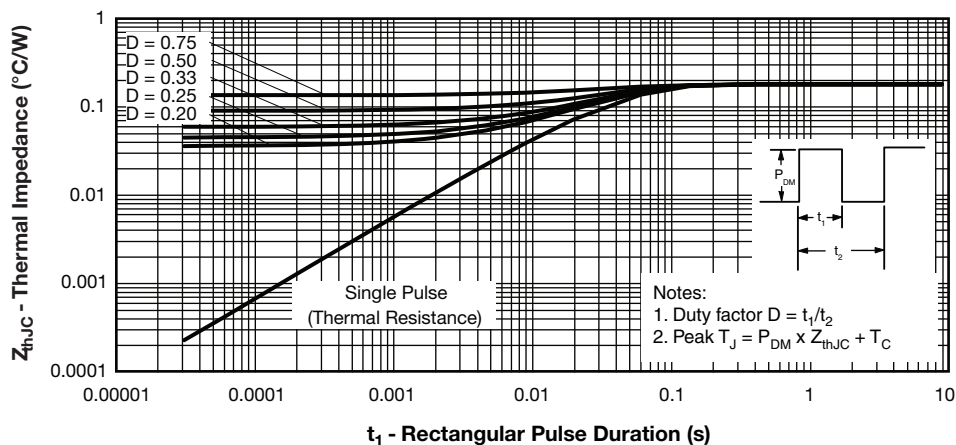
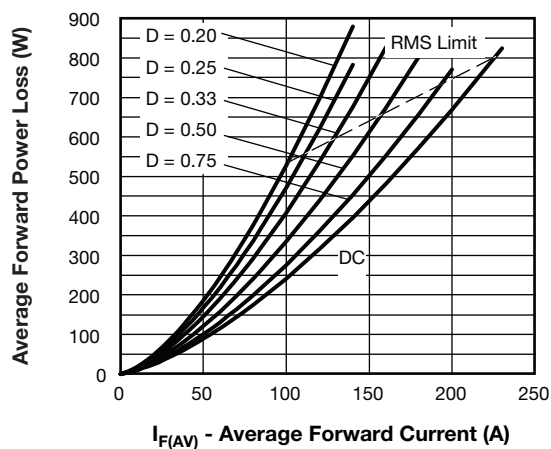
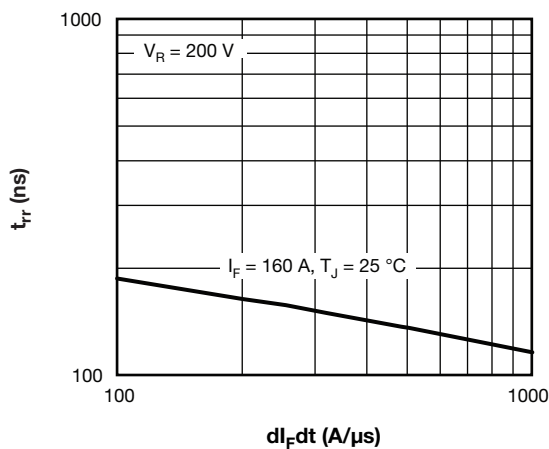

Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics


Fig. 5 - Forward Power Loss Characteristics


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

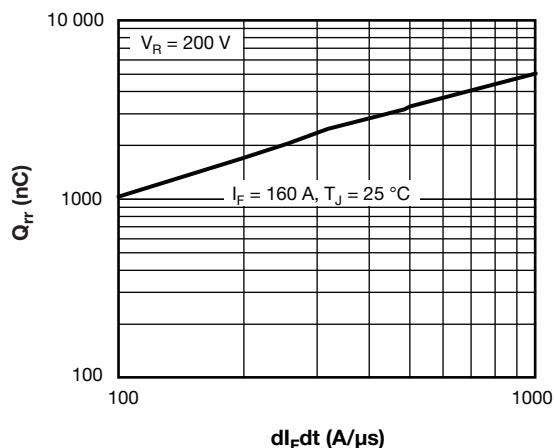


Fig. 7 - Typical Reverse Recovery Charge vs. dI_F/dt
(Per Leg)

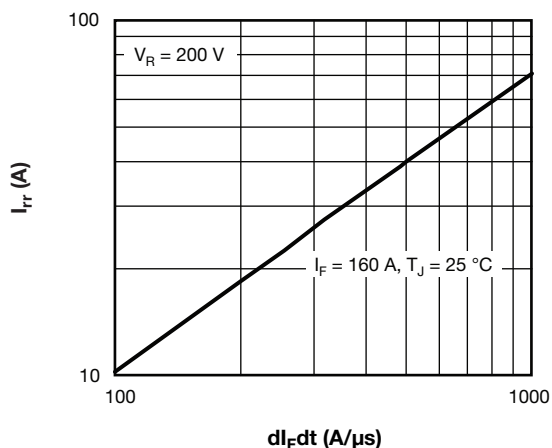


Fig. 8 - Typical Reverse Recovery Current vs. dI_F/dt
(Per Leg)

ORDERING INFORMATION TABLE

Device code

VS-VS	KD	U	162	12	PbF
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(1)

(2)

(3)

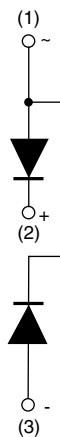
(4)

(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

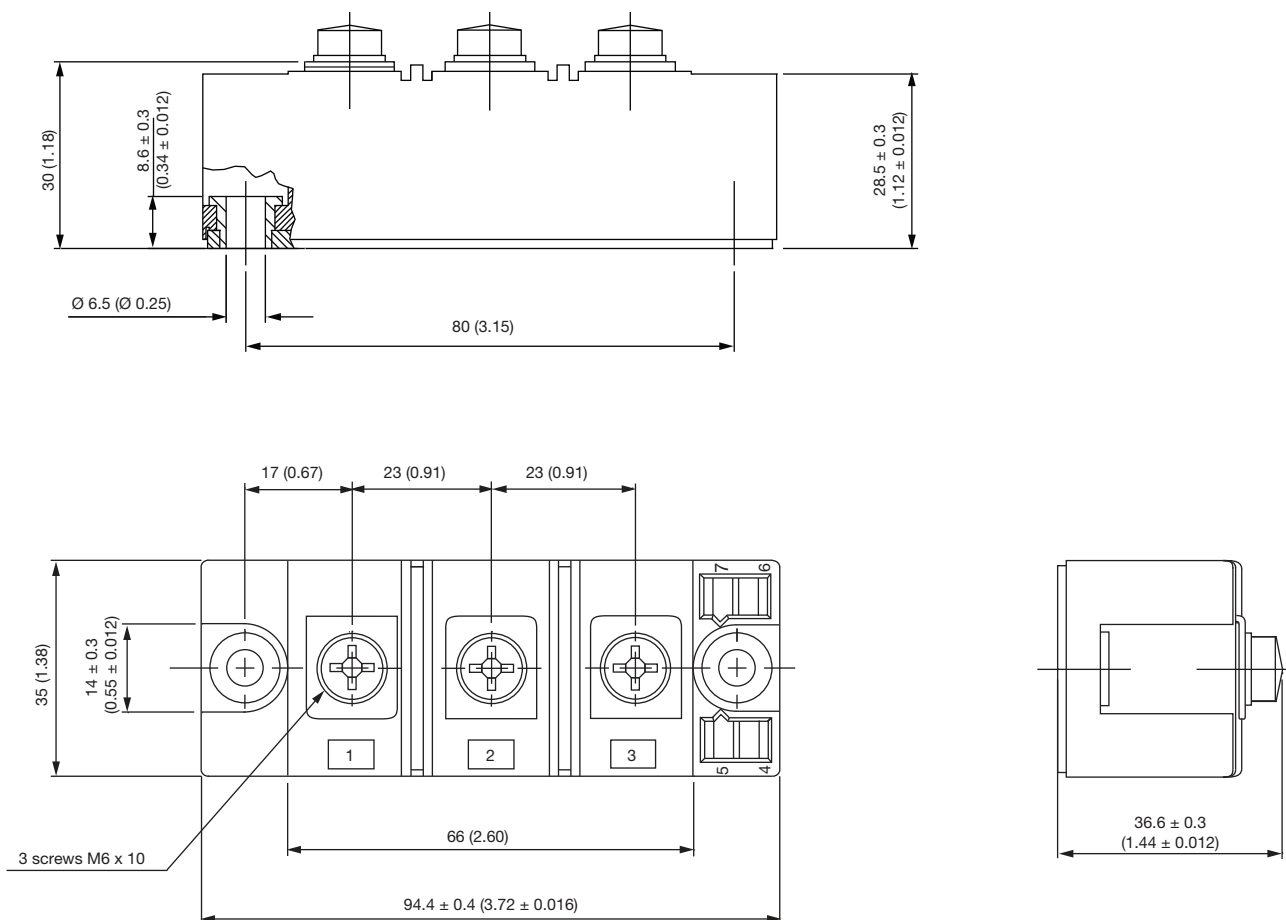
Dimensions

www.vishay.com/doc?95254



INT-A-PAK DBC

DIMENSIONS in millimeters (inches)





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