


## HEXFRED<sup>®</sup> Ultrafast Diodes, 100 A (INT-A-PAK Power Modules)


**INT-A-PAK**
**FEATURES**

- Electrically isolated: DBC base plate
- Standard JEDEC<sup>®</sup> 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](http://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 <sub>J</sub> = 25 °C unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t <sub>rr</sub>	T <sub>J</sub> = 25 °C	-	150	200	ns
Reverse recovery current	I <sub>R</sub> RRM	T <sub>J</sub> = 25 °C	-	20	22	A
Reverse recovery charge	Q <sub>rr</sub>	T <sub>J</sub> = 25 °C	-	2000	2400	nC
Peak rate of recovery current	di <sub>(rec)</sub> /dt	T <sub>J</sub> = 25 °C	-	-	300	A/μs

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Junction operating and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>		-40 to +150	°C
Maximum internal thermal resistance, junction to case per leg	R <sub>thJC</sub>	DC operation	0.18	°C/W
Typical thermal resistance, case to heatsink per module	R <sub>thCS</sub>	Mounting surface flat, smooth and greased	0.05	
Mounting torque ± 10 %		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	

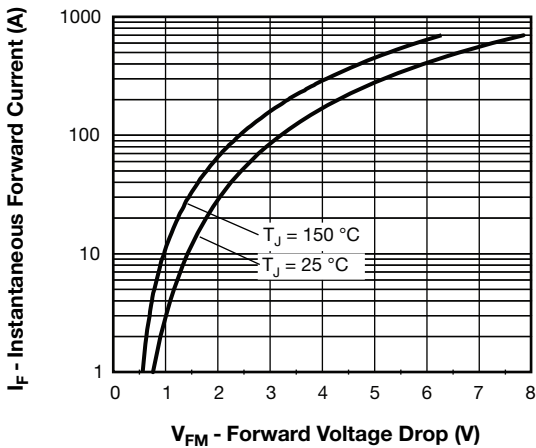


Fig. 1 - Maximum Forward Voltage Drop Characteristics

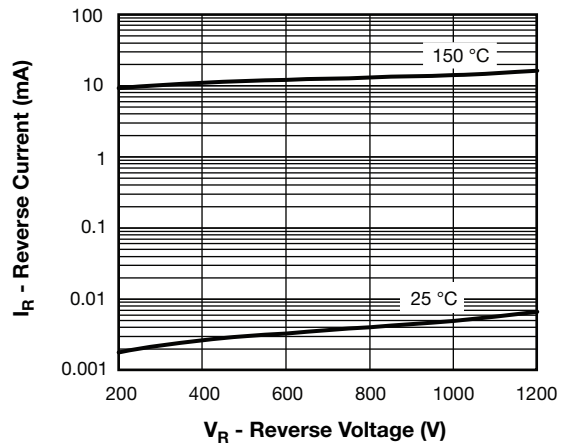


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

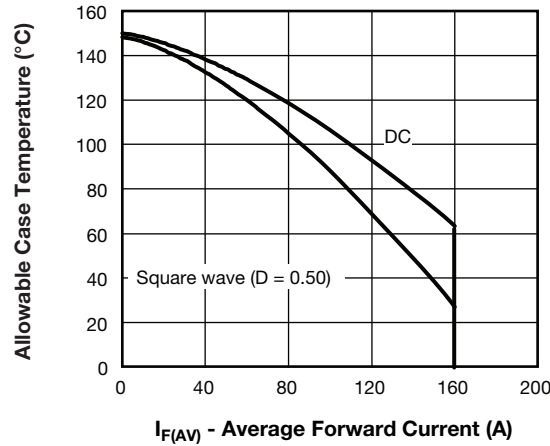


Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current

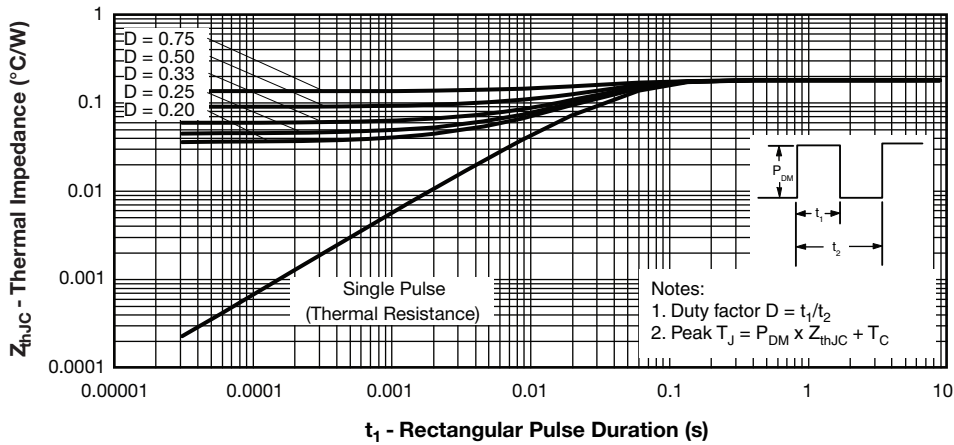


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

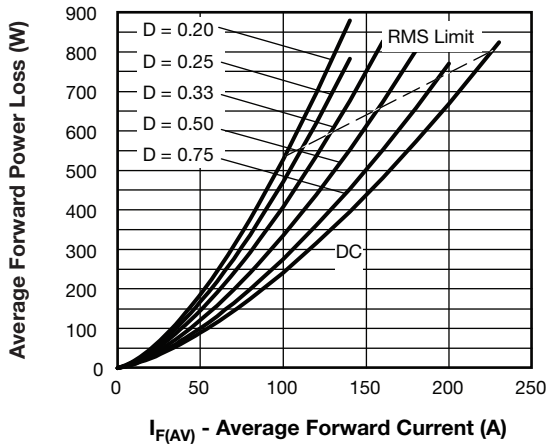


Fig. 5 - Forward Power Loss Characteristics

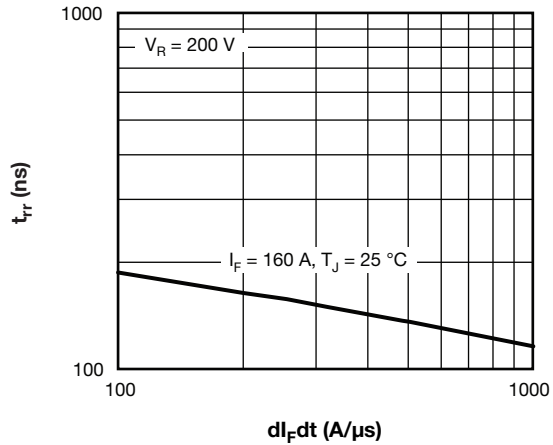


Fig. 6 - Typical Reverse Recovery Time vs.  $di/dt$  (Per Leg)

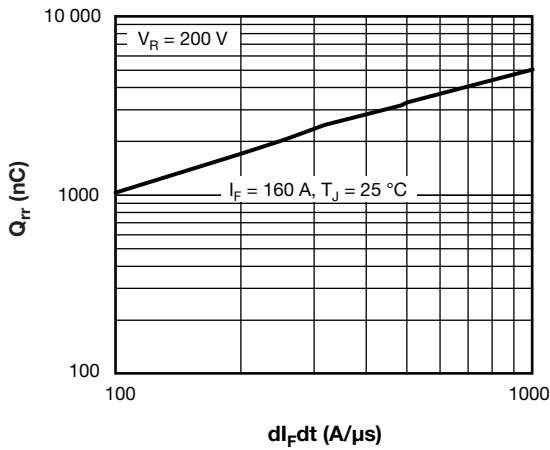


Fig. 7 - Typical Reverse Recovery Charge vs.  $di_F/dt$  (Per Leg)

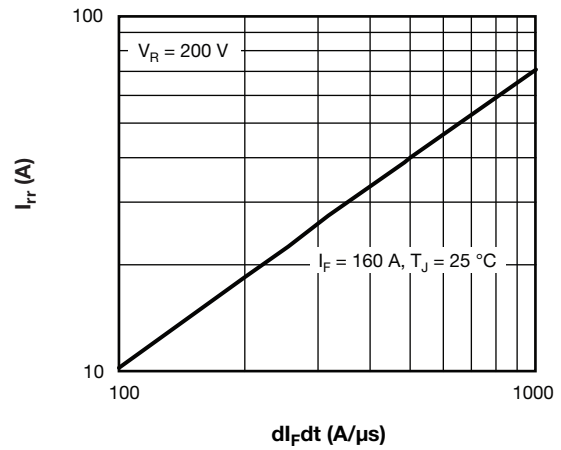
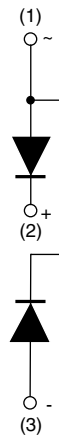


Fig. 8 - Typical Reverse Recovery Current vs.  $di_F/dt$  (Per Leg)

### ORDERING INFORMATION TABLE

Device code	<b>VS-VS</b>	<b>KD</b>	<b>U</b>	<b>162</b>	<b>12</b>	<b>PbF</b>
	(1)	(2)	(3)	(4)	(5)	(6)
	<b>1</b>	-	Vishay Semiconductors product			
	<b>2</b>	-	Circuit configuration			
	<b>3</b>	-	U = HEXFRED® ultrafast diode			
	<b>4</b>	-	Current rating			
	<b>5</b>	-	Voltage rating (12 = 1200 V)			
	<b>6</b>	-	PbF = Lead (Pb)-free			

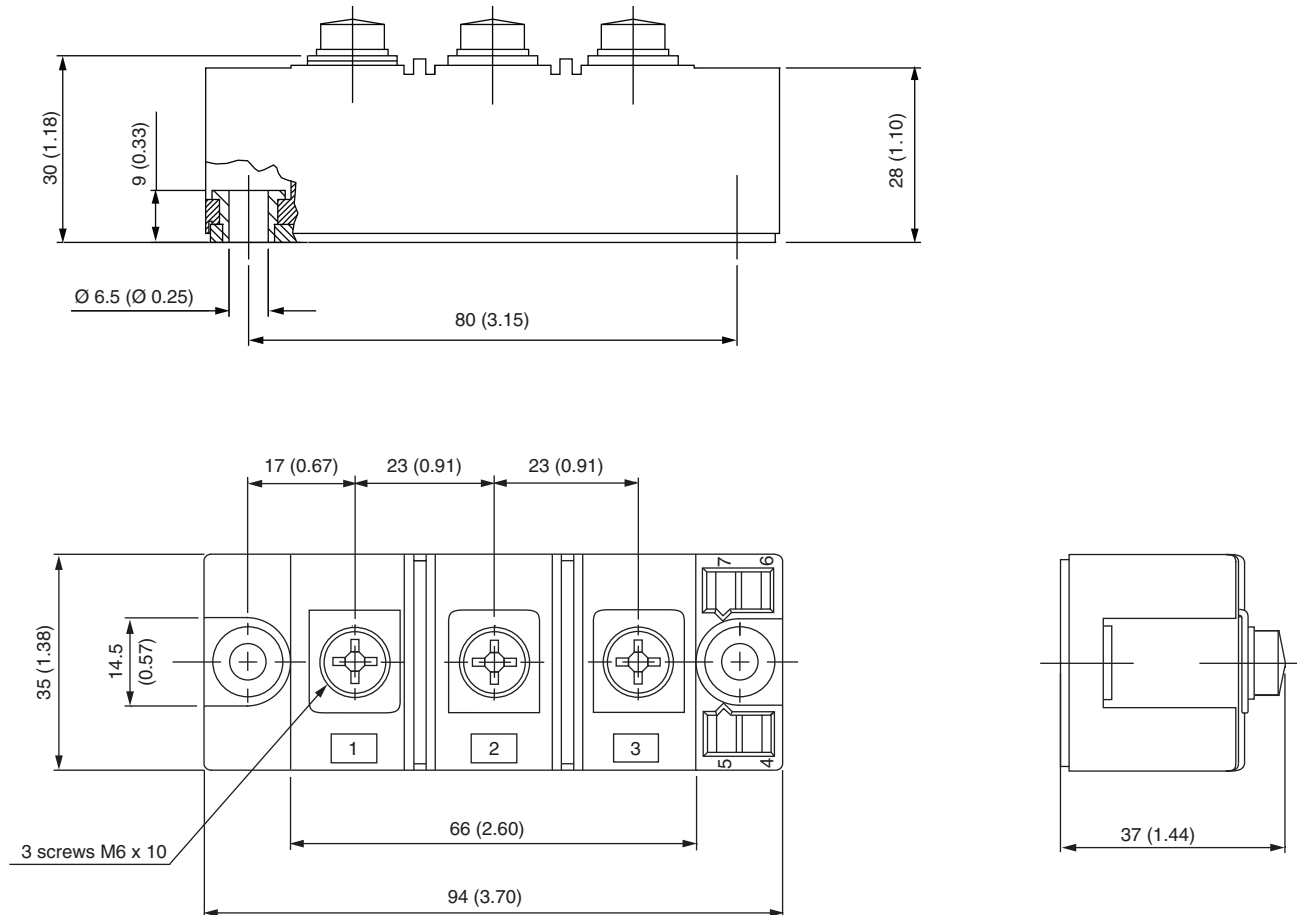
### CIRCUIT CONFIGURATION



LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95254">www.vishay.com/doc?95254</a>

## INT-A-PAK DBC

**DIMENSIONS** in millimeters (inches)





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