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

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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	

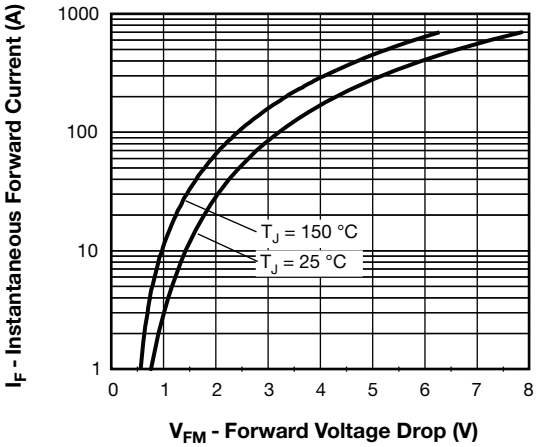

Fig. 1 - Maximum Forward Voltage Drop Characteristics

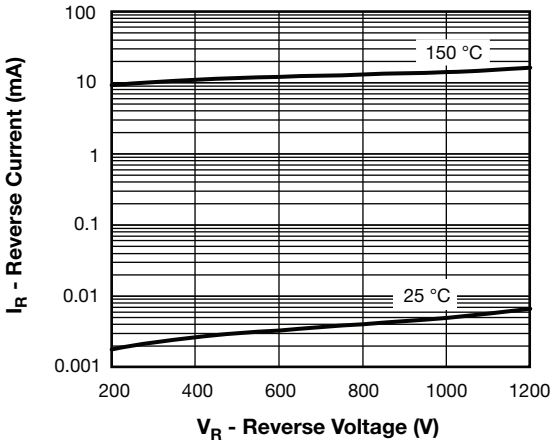

Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

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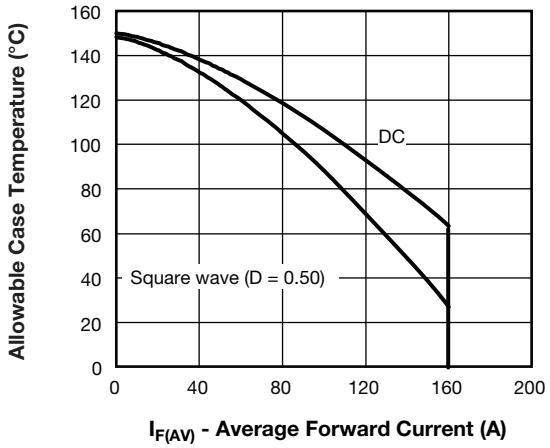

Fig. 3 - Maximum Allowable Case Temperature vs. Average Forward Current

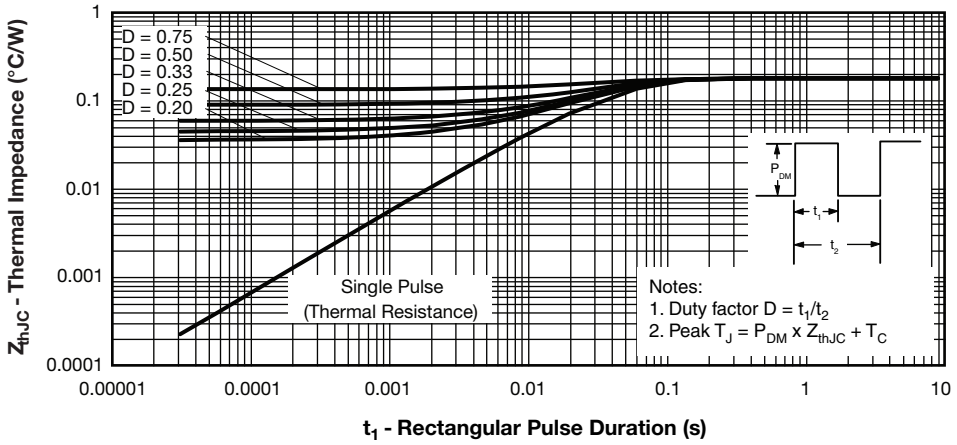

Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

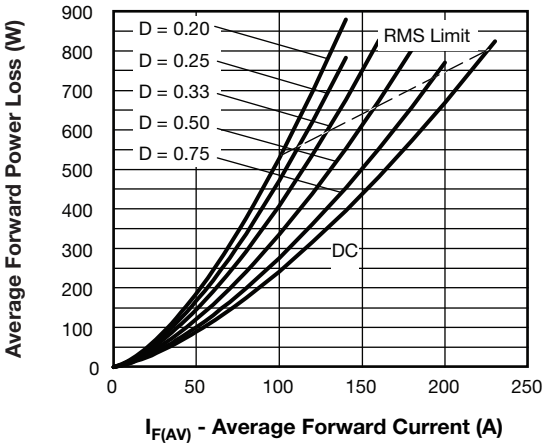

Fig. 5 - Forward Power Loss Characteristics

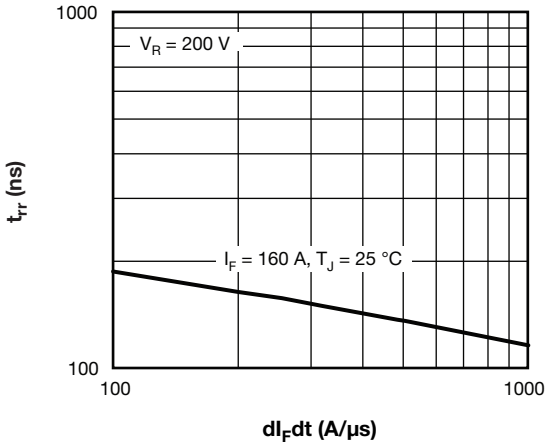

Fig. 6 - Typical Reverse Recovery Time vs. dI_F/dt (Per Leg)

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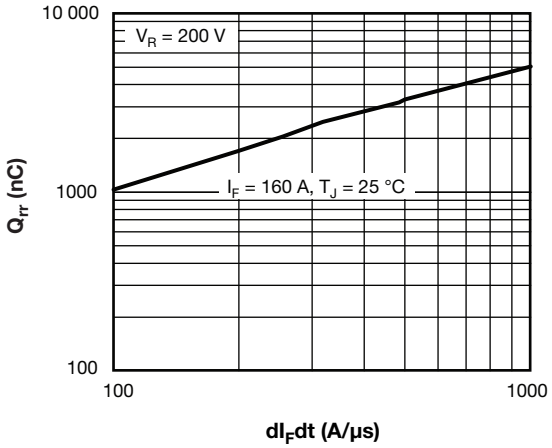


Fig. 7 - Typical Reverse Recovery Charge vs. dI_F/dt (Per Leg)

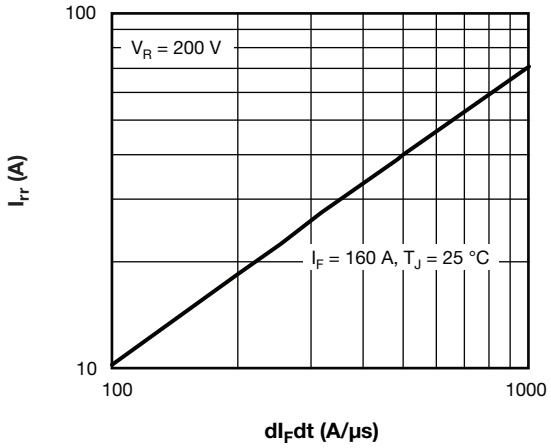


Fig. 8 - Typical Reverse Recovery Current vs. dI_F/dt (Per Leg)

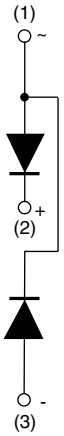
ORDERING INFORMATION TABLE

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

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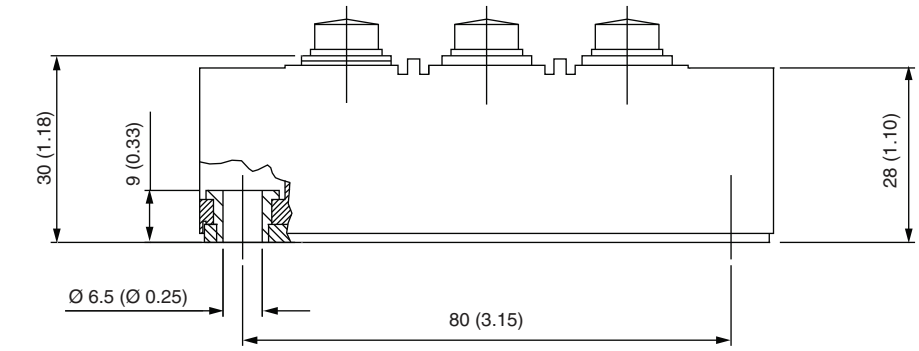
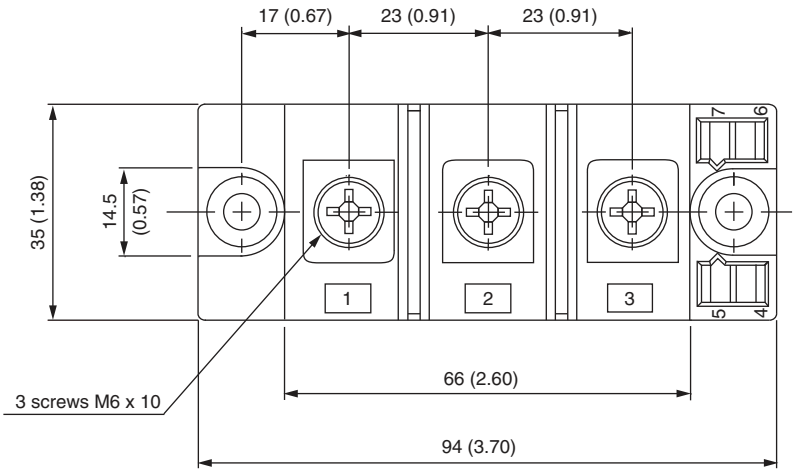
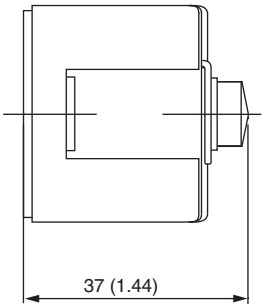
INT-A-PAK DBC

DIMENSIONS in millimeters (inches)







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