UFB200FA40P

Vishay Semiconductors

Insulated Ultrafast
Rectifier Module, 200 A

ELECTRICAL SPECIFICATIONS PER DIODE (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	400	-	-	V
Forward voltage	V_{FM}	I_F = 100 A	-	1.04	1.24	
		I_F = 100 A, T_J = 150 °C	-	0.94	1.00	
Reverse leakage current	I_{RM}	V_R = V_R rated	-	-	50	µA
		T_J = 150 °C, V_R = V_R rated	-	-	4	mA
Junction capacitance	C_T	V_R = 400 V	-	100	-	pF

DYNAMIC RECOVERY CHARACTERISTICS PER DIODE (T_J = 25 °C unless otherwise specified)							
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**MIN.**	**TYP.**	**MAX.**	**UNITS**
Reverse recovery time	t_{rr}	I_F = 1.0 A, dI_F/dt = 200 A/µs, V_R = 30 V		-	-	60	ns
		T_J = 25 °C	I_F = 150 A dI_F/dt = 200 A/µs V_R = 200 V	-	93	-	
		T_J = 125 °C		-	172	-	
Peak recovery current	I_{RRM}	T_J = 25 °C		-	10.5	-	A
		T_J = 125 °C		-	20.2	-	
Reverse recovery charge	Q_{rr}	T_J = 25 °C		-	490	-	nC
		T_J = 125 °C		-	1740	-	

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNITS**
Junction to case, single leg conducting	R_{thJC}		-	-	0.5	°C/W
Junction to case, both leg conducting			-	-	0.25	
Case to heatsink	R_{thCS}	Flat, greased surface	-	0.05	-	
Weight			-	30	-	g
Mounting torque			-	1.3	-	Nm

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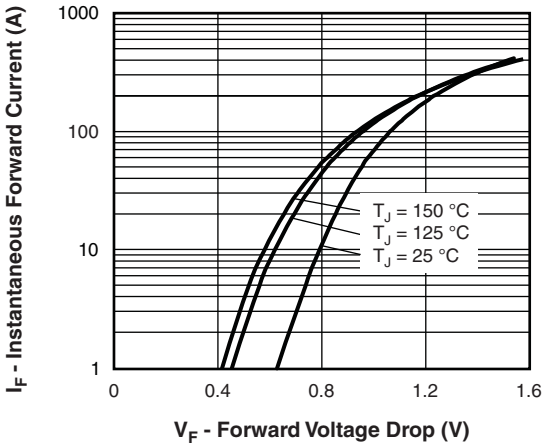

Fig. 1 - Typical Forward Voltage Drop Characteristics
(Per Diode)

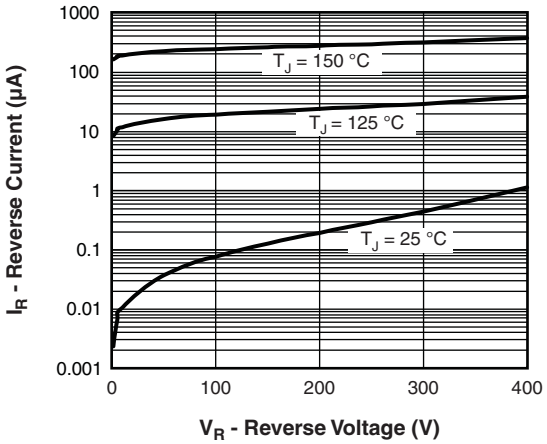

Fig. 2 - Typical Values of Reverse Current vs.
Reverse Voltage

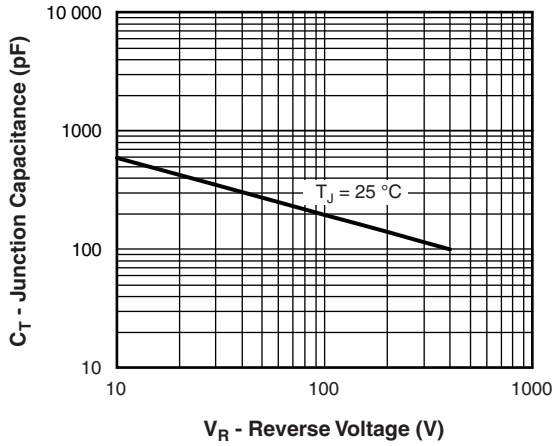

Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

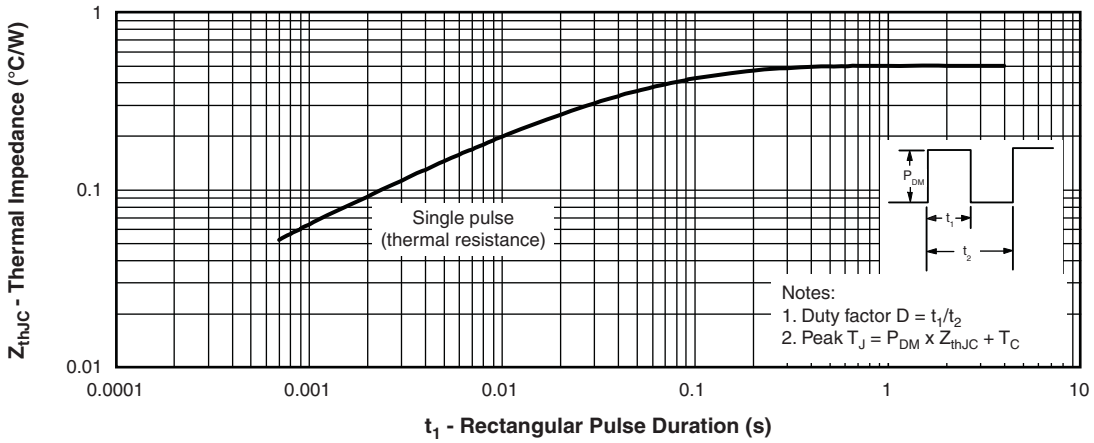

Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Diode)

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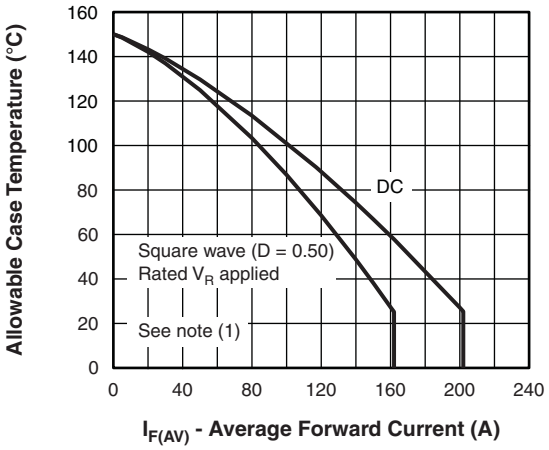

Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current (Per Leg)

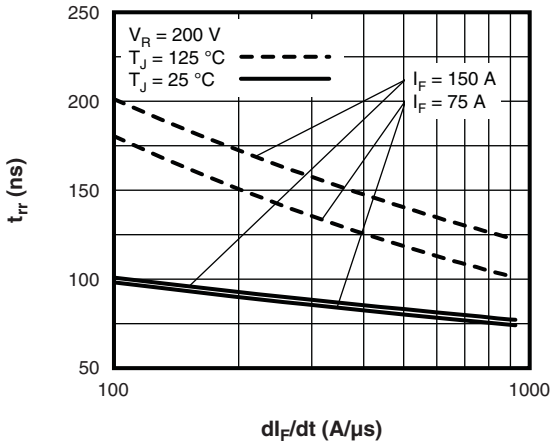

Fig. 7 - Typical Reverse Recovery Time vs. dI_F/dt

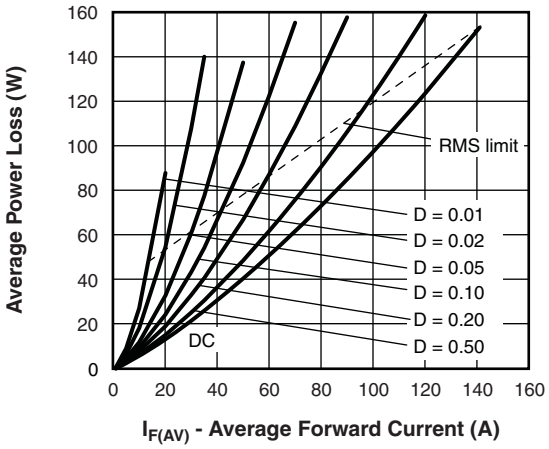

Fig. 6 - Forward Power Loss Characteristics (Per Leg)

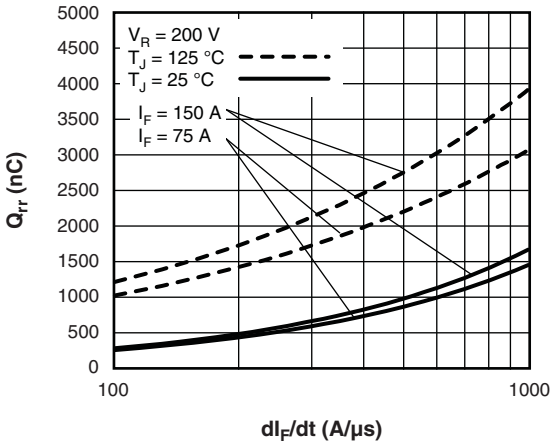

Fig. 8 - Typical Stored Charge vs. dI_F/dt

Note

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at ($I_{F(AV)}$/D) (see fig. 6);
Pd_{REV} = Inverse power loss = $V_{R1} \times I_R$ (1 - D); I_R at V_{R1} = 80 % rated V_R

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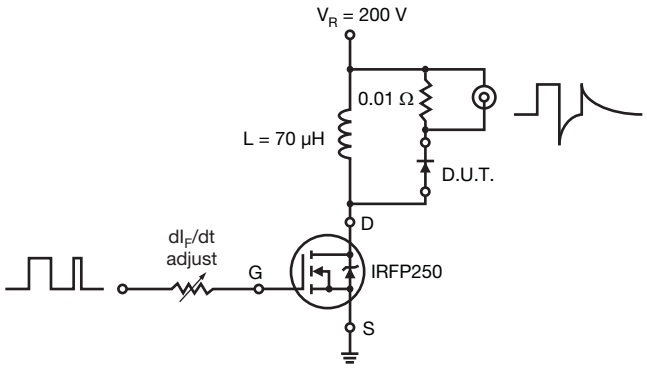
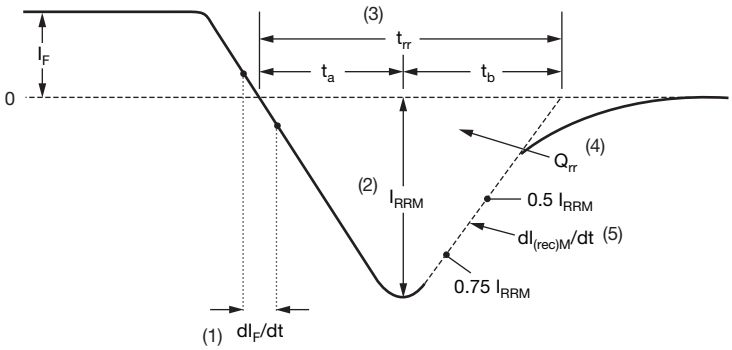


Fig. 9 - Reverse Recovery Parameter Test Circuit



(1) dI_F/dt - rate of change of current through zero crossing

(2) I_{RRM} - peak reverse recovery current

(3) t_{rr} - reverse recovery time measured from zero crossing point of negative going I_F to point where a line passing through 0.75 I_{RRM} and 0.50 I_{RRM} extrapolated to zero current.

(4) Q_{rr} - area under curve defined by t_{rr} and I_{RRM}

$$Q_{rr} = \frac{t_{rr} \times I_{RRM}}{2}$$

(5) $dI_{(rec)M}/dt$ - peak rate of change of current during t_b portion of t_{rr}

Fig. 10 - Reverse Recovery Waveform and Definitions

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ORDERING INFORMATION TABLE

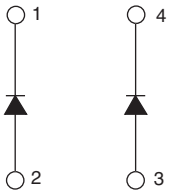
Device code

1	2	3	4	5	6	7
UF	B	200	F	A	40	P

1	-	Ultrafast rectifier
2	-	Ultrafast Pt diffused
3	-	Current rating (200 = 200 A)
4	-	Circuit configuration (2 separate diodes, parallel pin-out)
5	-	Package indicator (SOT-227 standard isolated base)
6	-	Voltage rating (40 = 400 V)
7	-	• None = Standard production • P = Lead (Pb)-free

Quantity per tube is 10, M4 screw and washer included

CIRCUIT CONFIGURATION



LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95036
Packaging information	www.vishay.com/doc?95037

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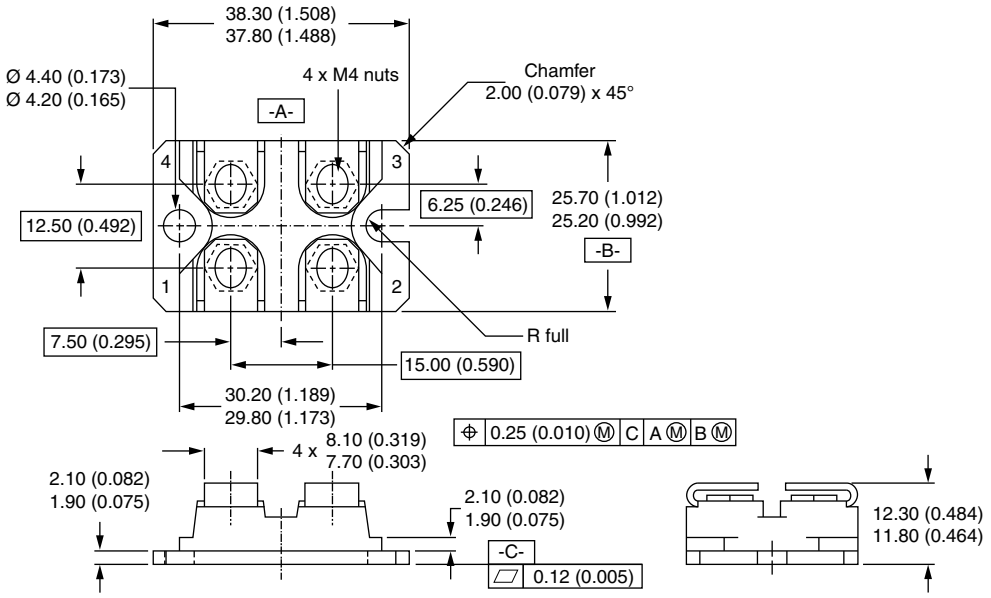
SOT-227

DIMENSIONS in millimeters (inches)



Notes

- Dimensioning and tolerancing per ANSI Y14.5M-1982
- Controlling dimension: millimeter

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