

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t_{rr}	$I_F = 1\text{ A}$, $dI_F/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$	-	-	35	ns
		$I_F = 1\text{ A}$, $dI_F/dt = 100\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$	-	-	30	
		$T_J = 25^\circ\text{C}$	-	31	-	
		$T_J = 125^\circ\text{C}$	-	42	-	
Peak recovery current	I_{RRM}	$T_J = 25^\circ\text{C}$	-	2.4	-	A
		$T_J = 125^\circ\text{C}$	-	5.6	-	
Reverse recovery charge	Q_{rr}	$T_J = 25^\circ\text{C}$	-	36	-	nC
		$T_J = 125^\circ\text{C}$	-	120	-	

THERMAL - MECHANICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITONS	MIN.	TYP.	MAX.	UNITS
Maximum junction and storage temperature range	T _J , T _{Stg}		- 65	-	175	°C
Thermal resistance, _____ per diode junction to case (FULL-PAK) per diode	R _{thJC}	Mounting surface, flat, smooth and greased	-	-	1.5	°C/W
			-	-	3.9	
Marking device		Case style TO-220AB	20CTH03			
		Case style TO-220 FULL-PAK	20CTH03FP			

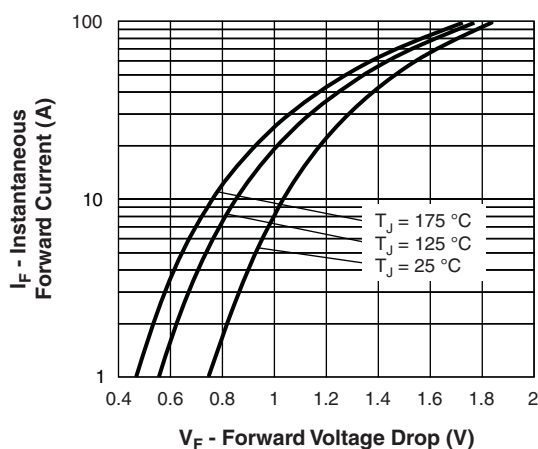


Fig. 1 - Typical Forward Voltage Drop Characteristics

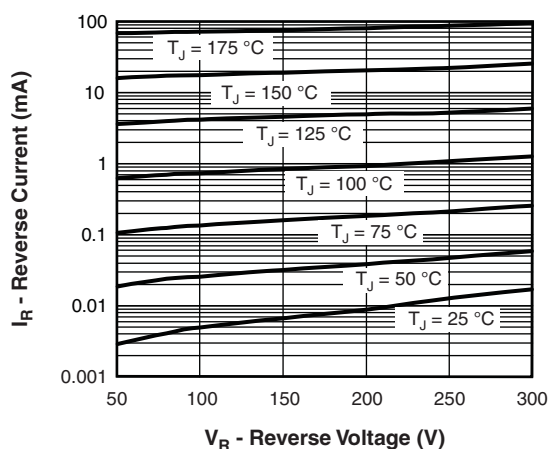


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

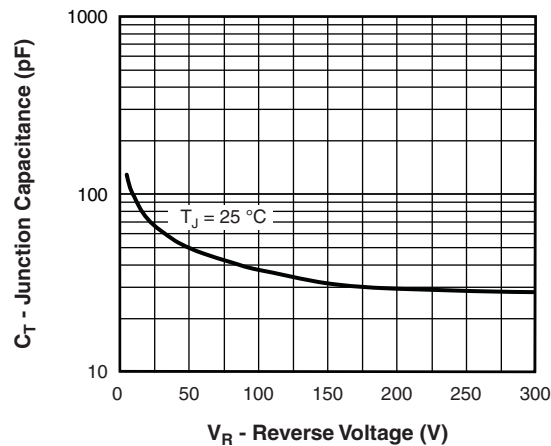


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

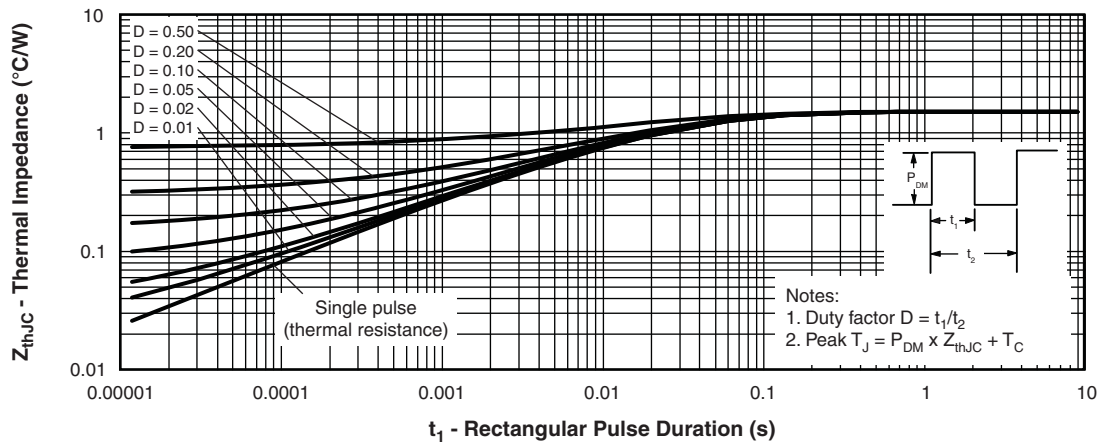


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

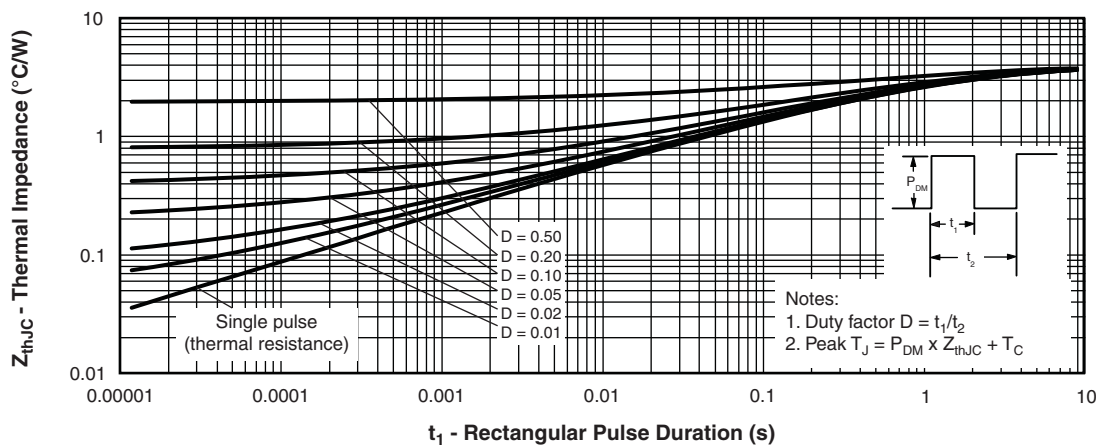


Fig. 5 - Maximum Thermal Impedance Z_{thJC} Characteristics (FULL-PAK)

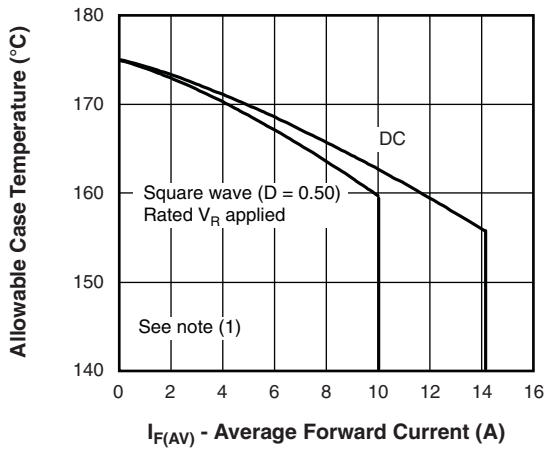


Fig. 6 - Maximum Allowable Case Temperature vs. Average Forward Current

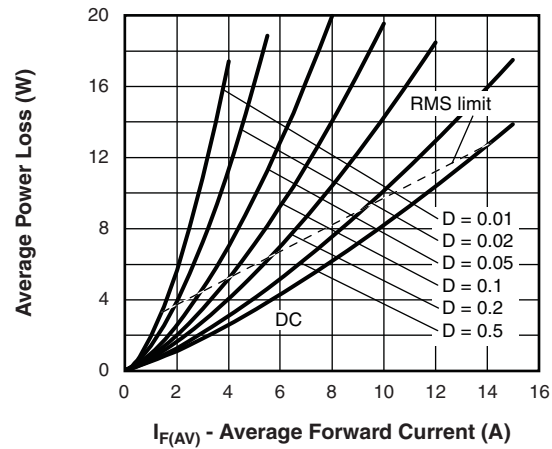


Fig. 8 - Forward Power Loss Characteristics

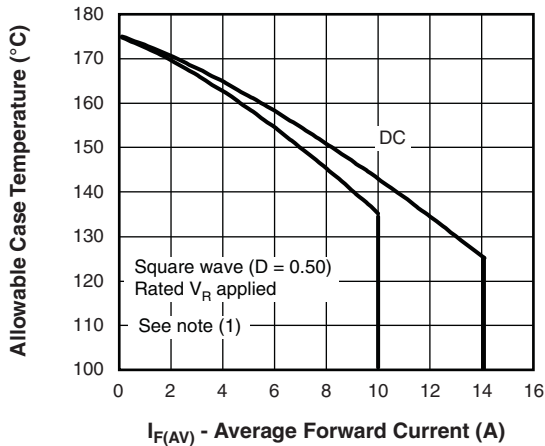


Fig. 7 - Maximum Allowable Case Temperature vs. Average Forward Current (FULL-PAK)

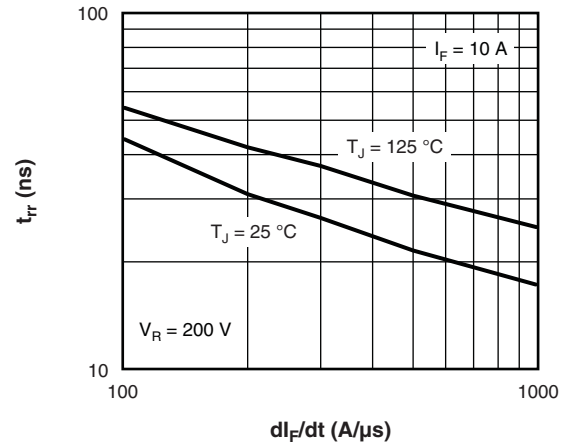


Fig. 9 - Typical Reverse Recovery Time vs. dI_F/dt

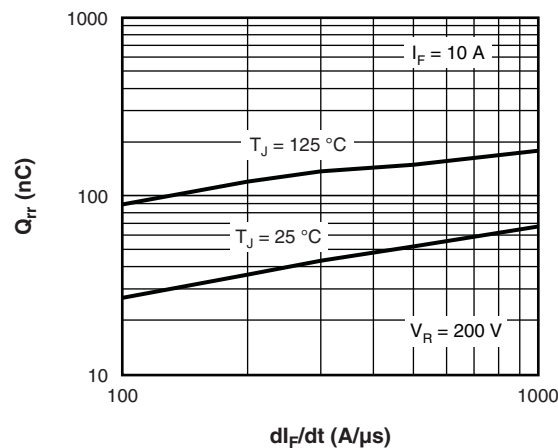


Fig. 10 - Typical Stored Charge vs. dI_F/dt

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 8);
 P_{dREV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at V_{R1} = Rated V_R

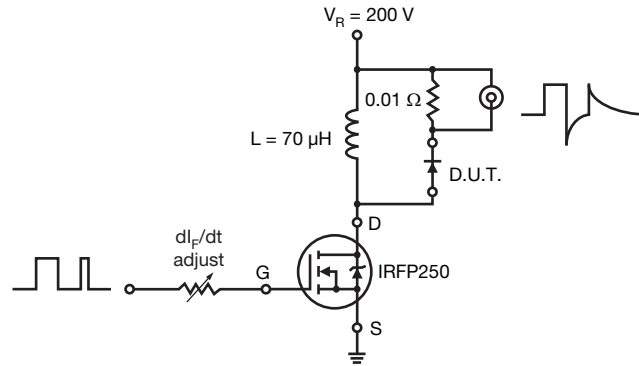


Fig. 11 - Reverse Recovery Parameter Test Circuit

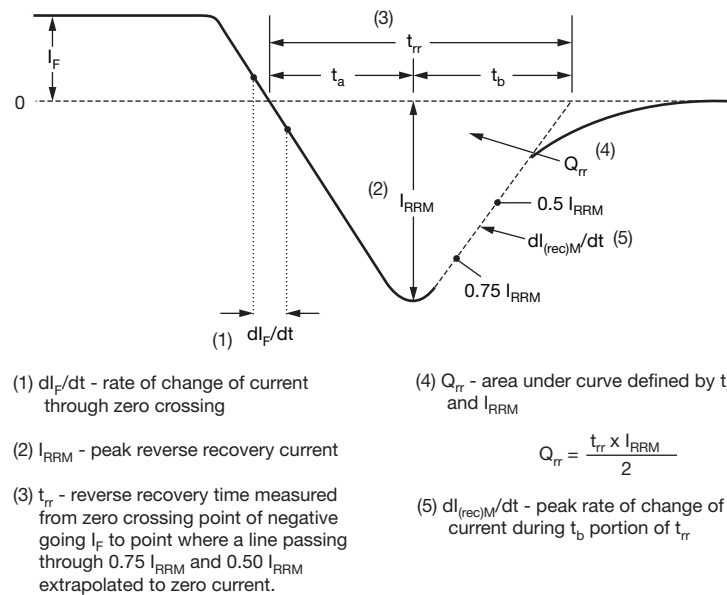


Fig. 12 - Reverse Recovery Waveform and Definitions

**ORDERING INFORMATION TABLE**

Device code	VS-	20	C	T	H	03	FP	PbF
	1	2	3	4	5	6	7	8

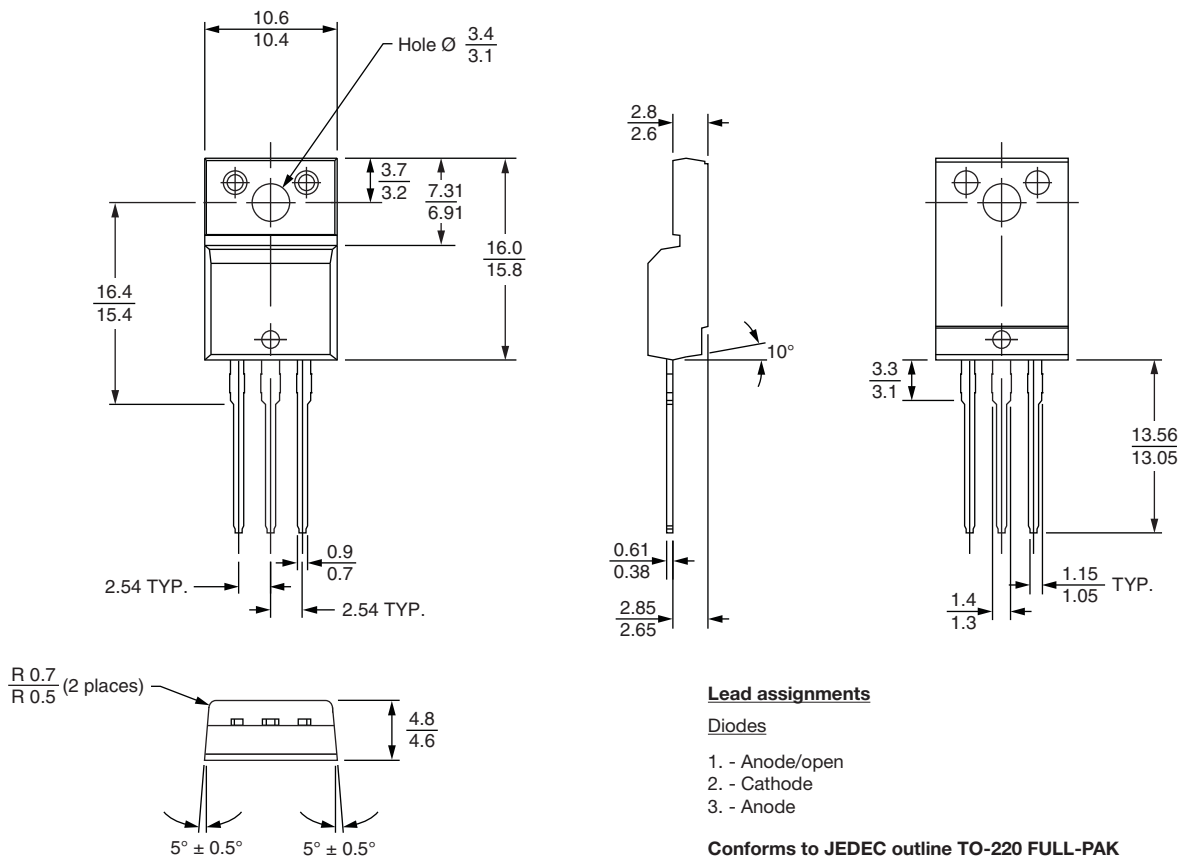
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|----------|--|
| 1 | - Vishay Semiconductors product |
| 2 | - Current rating (20 = 20 A) |
| 3 | - C = Common cathode |
| 4 | - T = TO-220, D ² PAK |
| 5 | - H = Hyperfast recovery |
| 6 | - Voltage rating (03 = 300 V) |
| 7 | - <ul style="list-style-type: none">• None = TO-220AB• FP = TO-220 FULL-PAK |
| 8 | - Environmental digit:
PbF = Lead (Pb)-free and RoHS compliant
-N3 = Halogen-free, RoHS compliant and totally lead (Pb)-free |

ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-20CTH03PbF	50	1000	Antistatic plastic tube
VS-20CTH03-N3	50	1000	Antistatic plastic tube
VS-20CTH03FPPbF	50	1000	Antistatic plastic tube
VS-20CTH03FP-N3	50	1000	Antistatic plastic tube

LINKS TO RELATED DOCUMENTS		
Dimensions	TO-220AB	www.vishay.com/doc?95222
	TO-220FP	www.vishay.com/doc?95072
Part marking information	TO-220ABPbF	www.vishay.com/doc?95225
	TO-220AB-N3	www.vishay.com/doc?95028
	TO-220FPPbF	www.vishay.com/doc?95069
	TO-220FP-N3	www.vishay.com/doc?95456



DIMENSIONS in millimeters



Lead assignments

Diodes

1. - Anode/open
2. - Cathode
3. - Anode

Conforms to JEDEC outline TO-220 FULL-PAK



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