





1.0 Amp. Surface Mount Top Glass Passivated Ultrafast Very Soft Recovery Rectifier

<p>DO-214AC (SMA)</p> 	Voltage 200 V	Current 1.0 A	
	FEATURES <ul style="list-style-type: none"> • Top-Glass Technology • Low profile package • Ideal for automated placement • Low power losses, high efficiency • High surge current capability • Cavity-free glass-passivated junction • Low forward voltage drop • Solder dip 260°C, 10s • AEC-Q101 qualified • Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC • Meets MSL level 1, per J-STD-020, LF maximum peak of 260° C • Very soft recovery characteristics • Significantly reduced EMI. Very low Noise. 		   RoHS COMPLIANT
	MECHANICAL DATA <ul style="list-style-type: none"> • Case: DO-214AC (SMA). Epoxy meets UL 94V-0 flammability rating. • Polarity: Color band denotes cathode end. • Terminals: Matte tin plated leads, solderable per MIL-STD-750 Method 2026, J-STD-002 and JESD22-B102. Consumer grade, meets JESD 201 class 1A whisker test. HE3 suffix for high reliability grade, meets JESD 201 class 2 whisker test. 		
	TYPICAL APPLICATIONS Used in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.		

Maximum Ratings and Electrical Characteristics at 25 °C

		FES1DSR TG
Marking Code		VI
V_{RRM}	Maximum Recurrent Peak Reverse Voltage (V)	200
V_{RMS}	Maximum RMS Voltage (V)	140
V_{DC}	Maximum DC Blocking Voltage (V)	200
$I_{F(AV)}$	Maximum Average Forward Rectified Current @ $T_C = 110\text{ °C}$	1.0 A
I_{FSM}	Peak Forward Surge Current, 8.3 ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method)	50 A
C_j	Typical Junction Capacitance (1MHz; -4V)	15 pF
$R_{th(j-c)}$ $R_{th(j-a)}$	Typical Thermal Resistance (5x5 mm ² x 130 μ Copper Area)	27 °C/W 75 °C/W
$T_j - T_{stg}$	Operating Junction and Storage Temperature Range	-65 to + 175 °C

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Static Electrical Characteristics

Symbol	Parameter	Test Conditions	Max.	Unit
V_F	Max. Instantaneous Forward Voltage	$T_j = 25\text{ }^\circ\text{C}$ $I_F = 1.0\text{ A}$	0.90	V
		$T_j = 100\text{ }^\circ\text{C}$ $I_F = 1.0\text{ A}$	0.75	
I_R	Max. DC Reverse Leakage Current	$T_j = 25\text{ }^\circ\text{C}$ $V_R = V_{RRM}$	5	μA
		$T_j = 100\text{ }^\circ\text{C}$ $V_R = V_{RRM}$	10	
		$T_j = 175\text{ }^\circ\text{C}$ $V_R = V_{RRM}$	100	

Recovery Characteristics ($T_j = 25\text{ }^\circ\text{C}$)

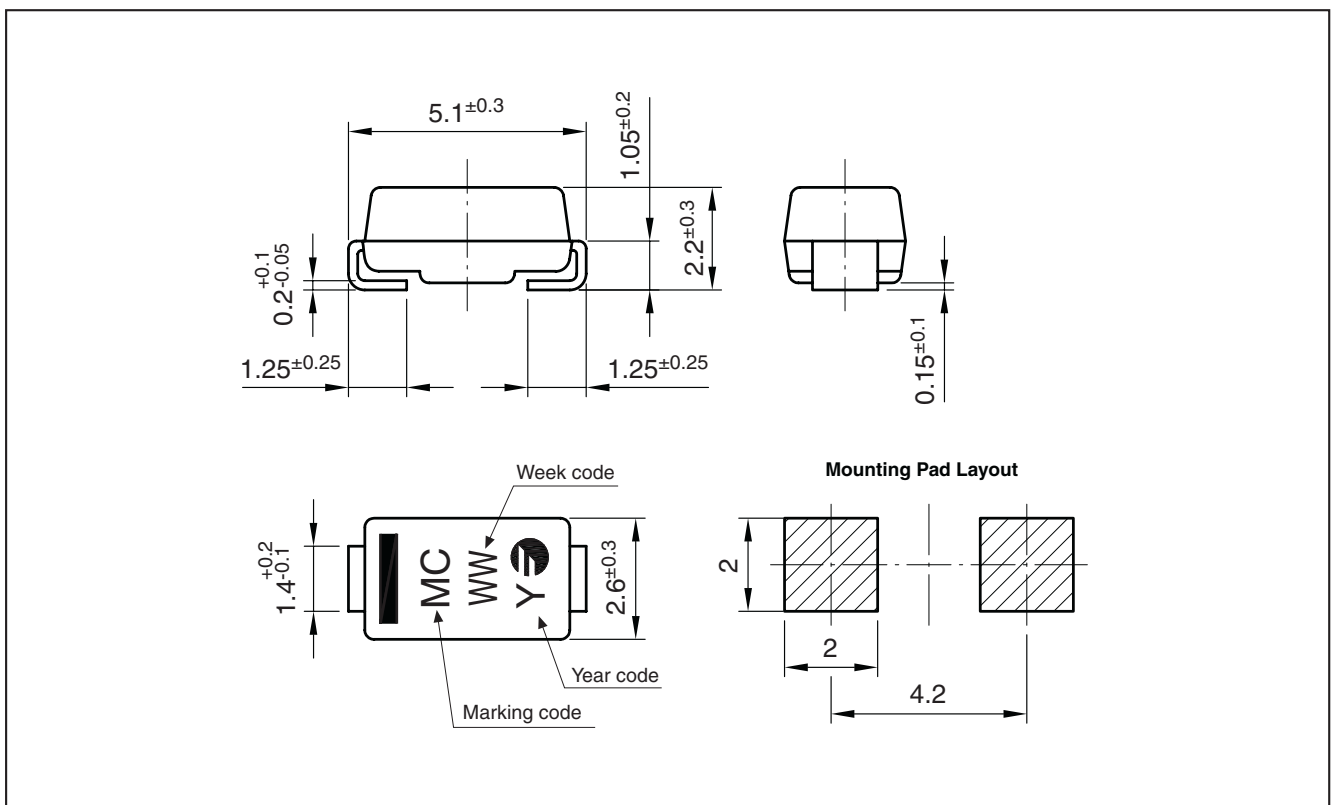
Symbol	Test Conditions	Min.	Max.	Typ.	Unit
t_{rr}	$I_F = 0.5\text{ A}$, $di_F/dt = 100\text{ A}/\mu\text{s}$, $I_{RR} = 1000\text{ mA}$		25		ns
t_a				15	
t_b				6	
t_b/t_a	Softness	0.45			
Q_{rr}	$V_R = 30\text{V}$, $di_F/dt = 50\text{A}/\mu\text{s}$, $I_F = 1\text{A}$			7	nC
	$V_R = 30\text{V}$, $di_F/dt = 50\text{A}/\mu\text{s}$, $I_F = 2\text{A}$			8.5	
	$V_R = 30\text{V}$, $di_F/dt = 50\text{A}/\mu\text{s}$, $I_F = 5\text{A}$			9.5	
	$V_R = 30\text{V}$, $di_F/dt = 50\text{A}/\mu\text{s}$, $I_F = 15\text{A}$			10	
Q_{rr}	$V_R = 30\text{V}$, $di_F/dt = 150\text{A}/\mu\text{s}$, $I_F = 1\text{A}$			9	nC
	$V_R = 30\text{V}$, $di_F/dt = 150\text{A}/\mu\text{s}$, $I_F = 2\text{A}$			15	
	$V_R = 30\text{V}$, $di_F/dt = 150\text{A}/\mu\text{s}$, $I_F = 5\text{A}$			25	
	$V_R = 30\text{V}$, $di_F/dt = 150\text{A}/\mu\text{s}$, $I_F = 15\text{A}$			30	

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Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FES1DSR TG TRTB	TRTB	13" diameter tape and reel	7,500	0.060
FES1DSR TG HE3 TRTB	TRTB	13" diameter tape and reel	7,500	0.060

Package Outline Dimensions: (mm) DO-214AC (SMA)



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Fig. 1 REVERSE CURRENT vs REVERSE VOLTAGE

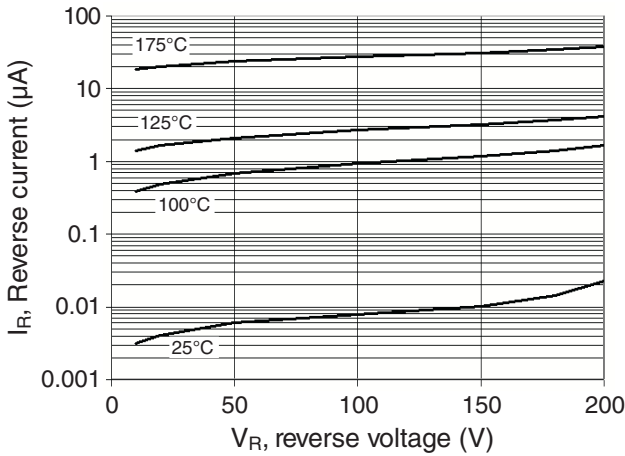


Fig. 2 FORWARD VOLTAGE vs FORWARD CURRENT

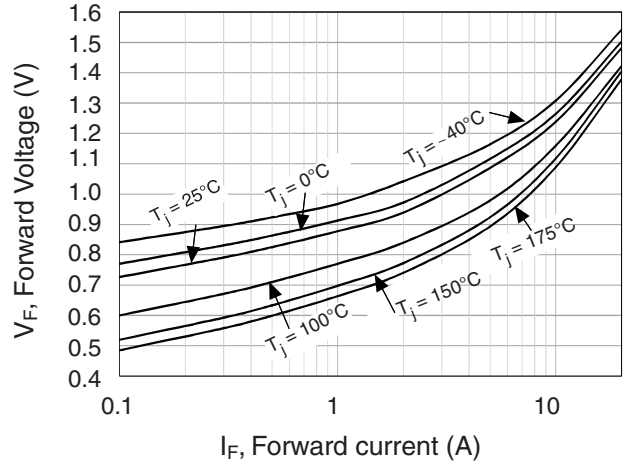


Fig. 3 AVERAGE POWER LOSSES vs. AVERAGE CURRENT

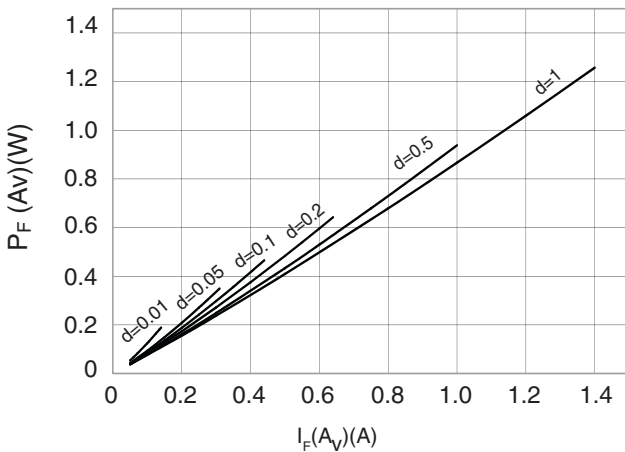


Fig. 4 PEAK CURRENT vs. FORM FACTOR

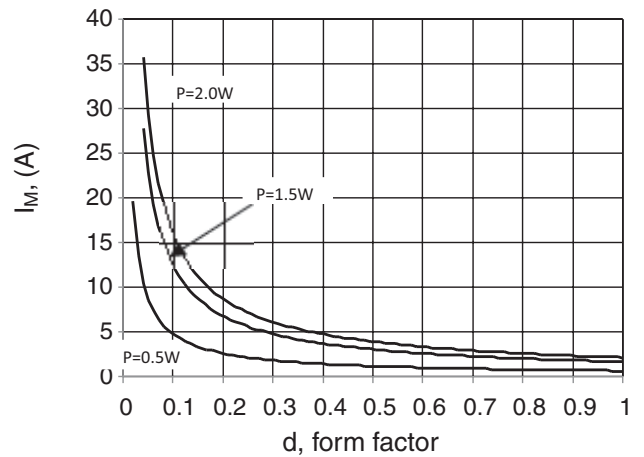
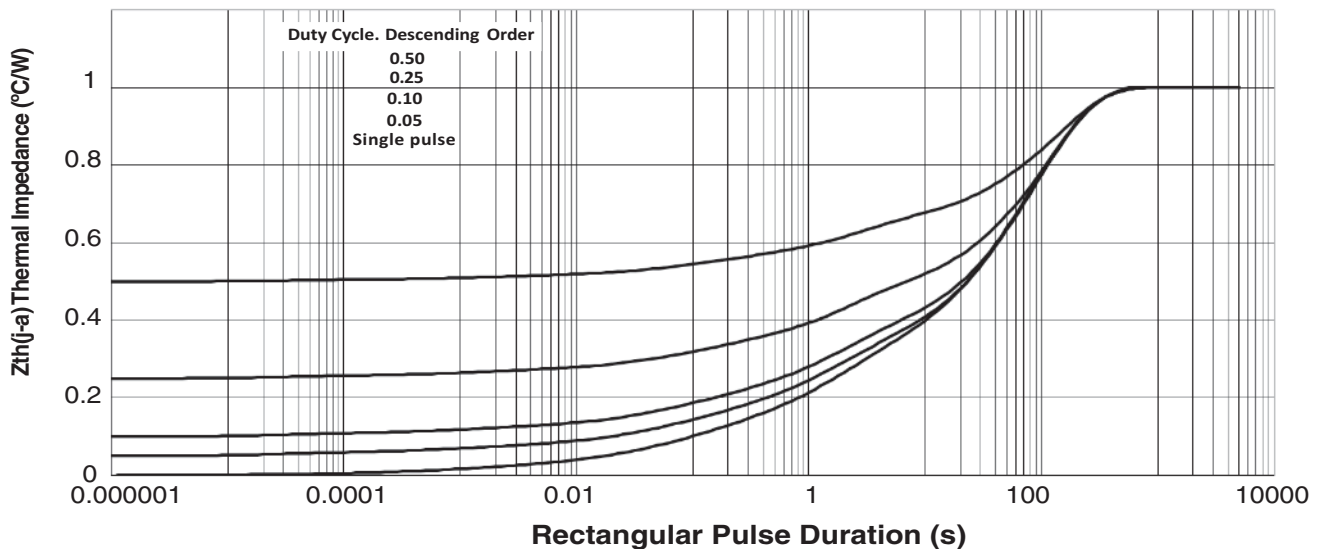


Fig. 5 RELATIVE VARIATION OF THERMAL IMPEDANCE TO AMBIENT vs. PULSE



1.0 Amp. Surface Mount Top Glass Passivated Ultrafast Very Soft Recovery Rectifier

Fig. 6 FORWARD CURRENT DERATING CURVE

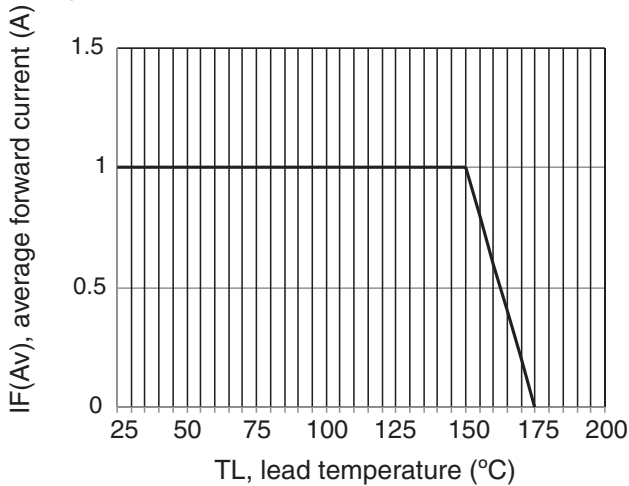


Fig. 7 t_b/t_a CURVES vs. FORWARD CURRENT

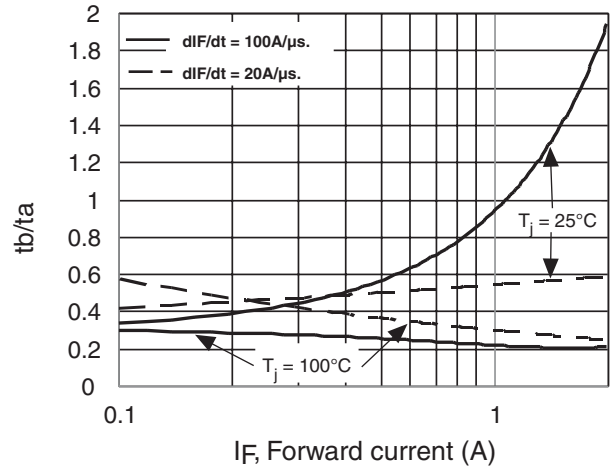


Fig. 8 t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT. $T_c = 25^\circ\text{C}$

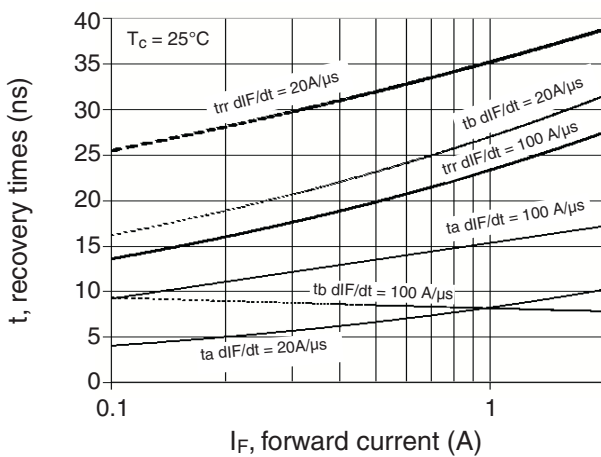


Fig. 9 t_{rr} , t_a AND t_b CURVES vs FORWARD CURRENT. $T_c = 100^\circ\text{C}$

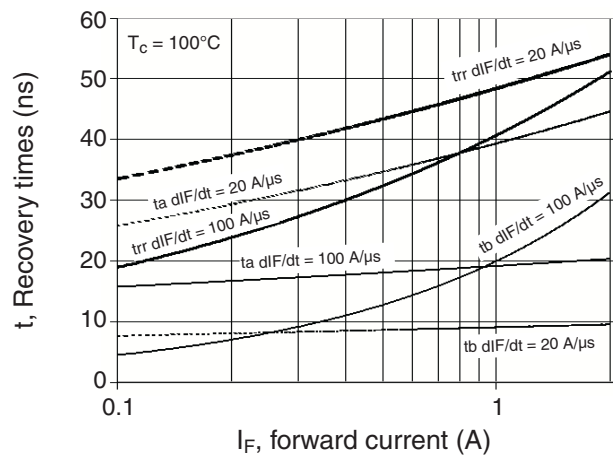


Fig. 10 RECOVERY TIME vs di_F/dt

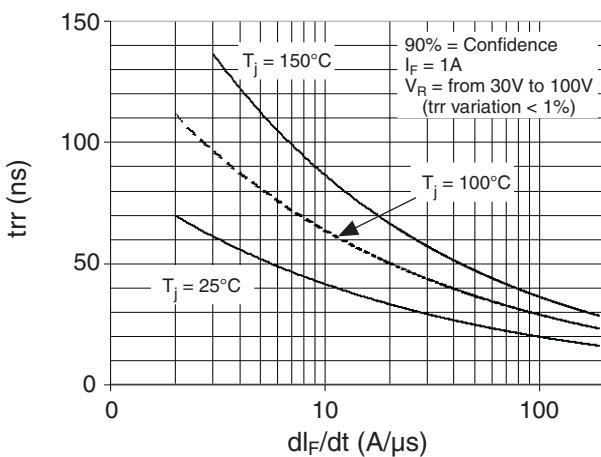
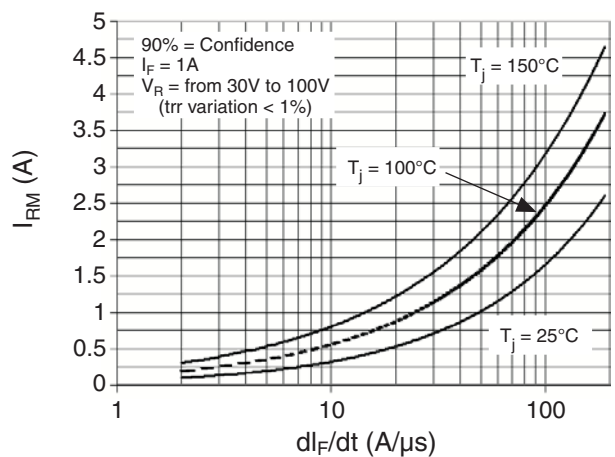


Fig. 11 PEAK REVERSE CURRENT vs di_F/dt



1.0 Amp. Surface Mount Top Glass Passivated Ultrafast Very Soft Recovery Rectifier

Fig. 12 trr vs di_F/dt . $I_F = 2 A$

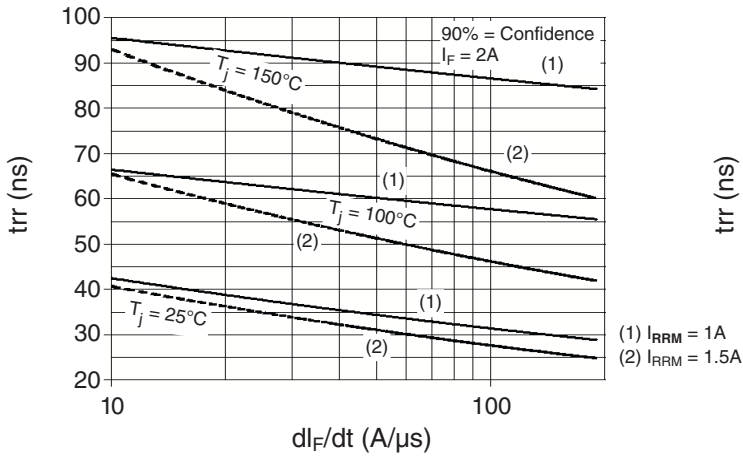


Fig. 13 trr vs di_F/dt . $I_F = 0.1 A$

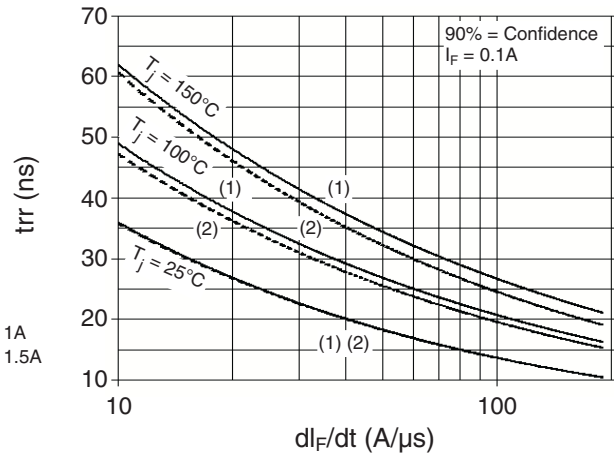


Fig. 14 trr vs di_F/dt . $I_F = 0.5 A$

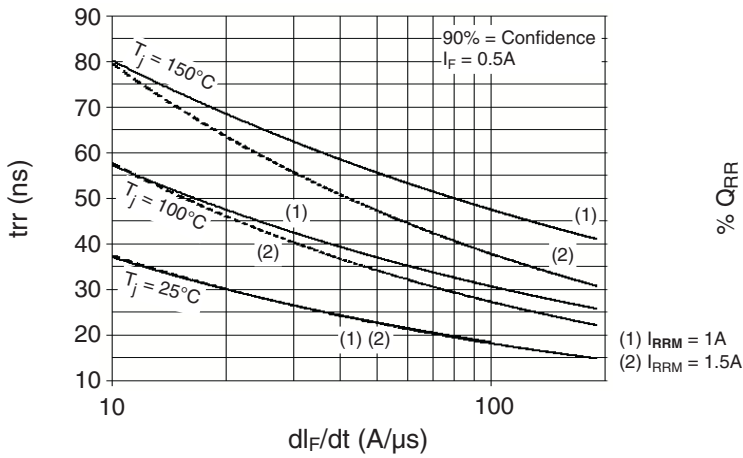


Fig. 15 QRR vs JUNCTION TEMPERATURE

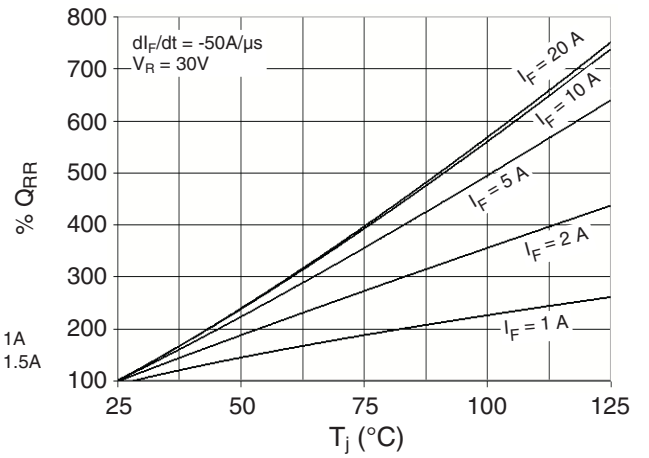


Fig. 16 IRM vs JUNCTION TEMPERATURE

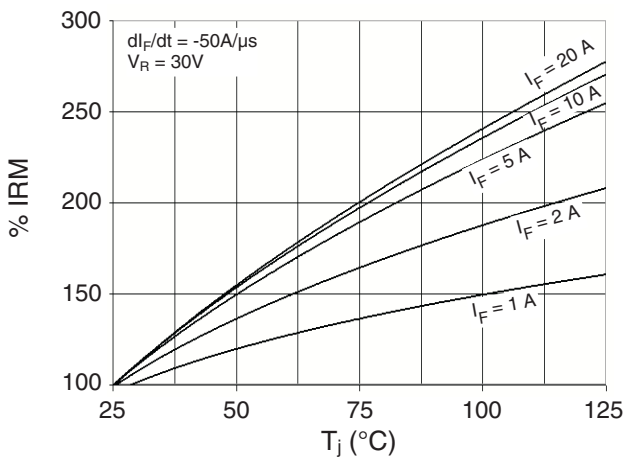
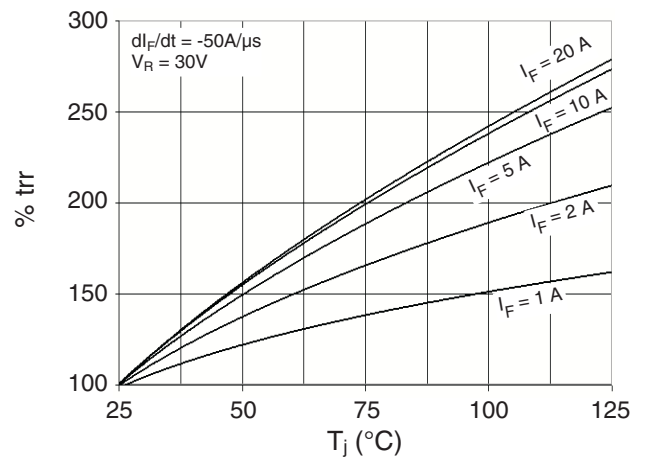


Fig. 17 trr vs JUNCTION TEMPERATURE



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Fig. 18 TRANSIENT PEAK FORWARD VOLTAGE vs di_F/dt

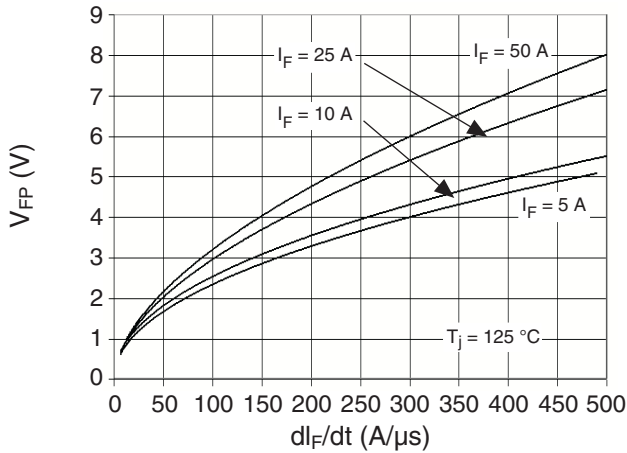


Fig. 19 FORWARD RECOVERY TIME vs di_F/dt

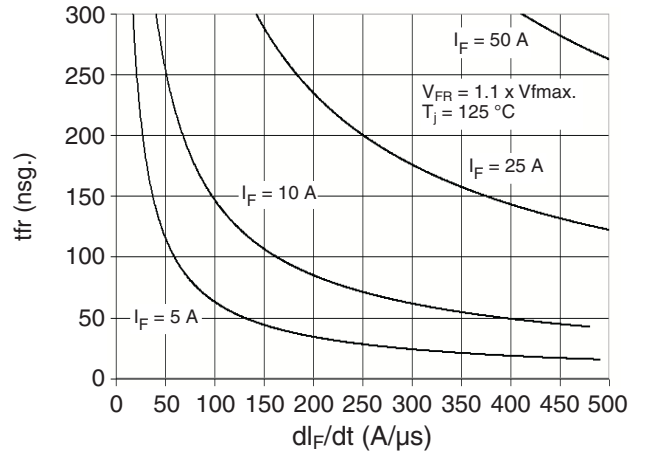


Fig. 20 RECOVERY TIME vs JUNCTION TEMPERATURE

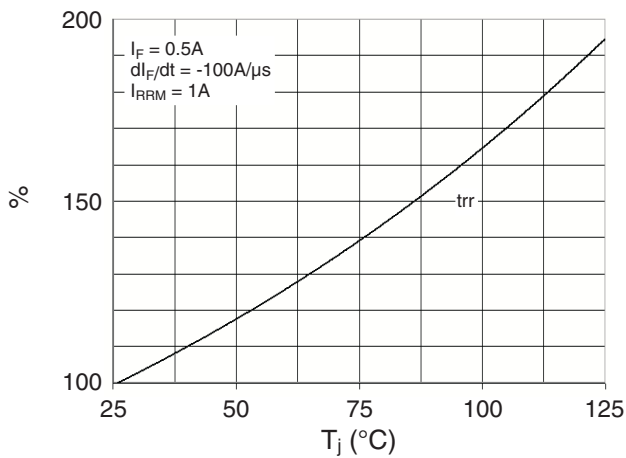
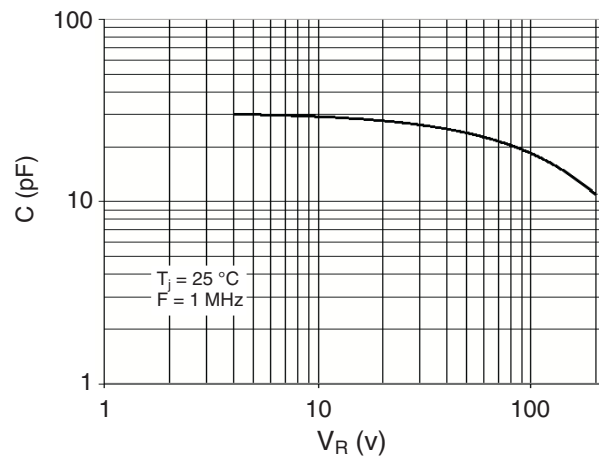


Fig. 21 JUNCTION CAPACITANCE vs. REVERSE BIAS



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Date	Revision	Description of Changes
15-Apr-2014	0	Original Data Sheet
11-Jul-2014	1	Modified Fig. 2 and Fig. 3
03-Sep-2014	2	Include Fig. 5 (Thermal impedance)

Disclaimer

All product, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise.

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