FAGOR

FES1DSR

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

DO-214AC (SMA)

Voltage	Current
200 V	1.0 A

FEATURE

- Glass Passivated Junction 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 ºC, 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 ºC
- Very soft recovery characteristics
- Significantly reduced EMI. Very low noise.

AUTOMOTIVE GRADE Available

Pb

e3

RoHS COMPLIANT

MECHANICAL DATA

- **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.

Maximun Ratings and Electrical Characteristics at 25 °C

		FES1DSR
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 at T_L = 110 ºC	1.0 A
I_{FSM}	Peak Forward Surge Current, 8.3 ms. Single Half Sine-Wave Superimposed on Rated Load (Jedec Method)	50 A
Cj	Typical Junction Capacitance (1 MHz; -4.0V)	15 pF
$R_{th\ (j-l)}$	Typical Thermal Resistance	27 ºC/W
$R_{th\ (j-a)}$	(5x5 mm^2 x 130 µ Cooper Area)	75 ºC/W
T_j - T_{stg}	Operating Junction and Storage Temperature Range	-65 to +175 ºC

Static Electrical Characteristics

Symbol	Parameter	Test Conditions		Max.	Unit
V_F	Max. Instantaneous Forward Voltage	T_j = 25 ºC	I_F = 1.0 A	0.90	V
		T_j = 100 ºC	I_F = 1.0 A	0.75	
I_R	Max. DC Reverse Leakage Current	T_j = 25 ºC	V_R = V_{RR}	5	µA
		T_j = 100 ºC	V_R = V_{RR}	10	
		T_j = 175 ºC	V_R = V_{RR}	100	

Recovery Characteristics (Tj = 25°C)

Symbol	Test Conditions	Min.	Max	Typ.	Unit
trr	I_F = 0.5 A, dI_F/dt = 100 A/µs, I_{RR} = 1000 mA		25		ns
ta				15	
tb				6	
tb/ta	Softness	0.45			
Qrr	VR= 30V, dI_F/dt = 50 A/µs, I_F = 1A			7	nC
	VR= 30V, dI_F/dt = 50 A/µs, I_F = 2A			8.5	
	VR= 30V, dI_F/dt = 50 A/µs, I_F = 5A			9.5	
	VR= 30V, dI_F/dt = 50 A/µs, I_F = 15A			10	
Qrr	VR= 30V, dIF/dt = 150 A/µs, I_F = 1A			9	nC
	VR= 30V, dIF/dt = 150 A/µs, I_F = 2A			15	
	VR= 30V, dIF/dt = 150 A/µs, I_F = 5A			25	
	VR= 30V, dIF/dt = 150 A/µs, I_F = 15A			30	

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Ordering information

PREFERRED P/N	PACKAGE CODE	DELIVERY MODE	BASE QUANTITY	UNIT WEIGHT (g)
FES1DSR TRTB	TRTB	13" diameter tape and reel	7,500	0.060
FES1DSR HE3 TRTB	TRTB	13" diameter tape and reel	10,000	0.060

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

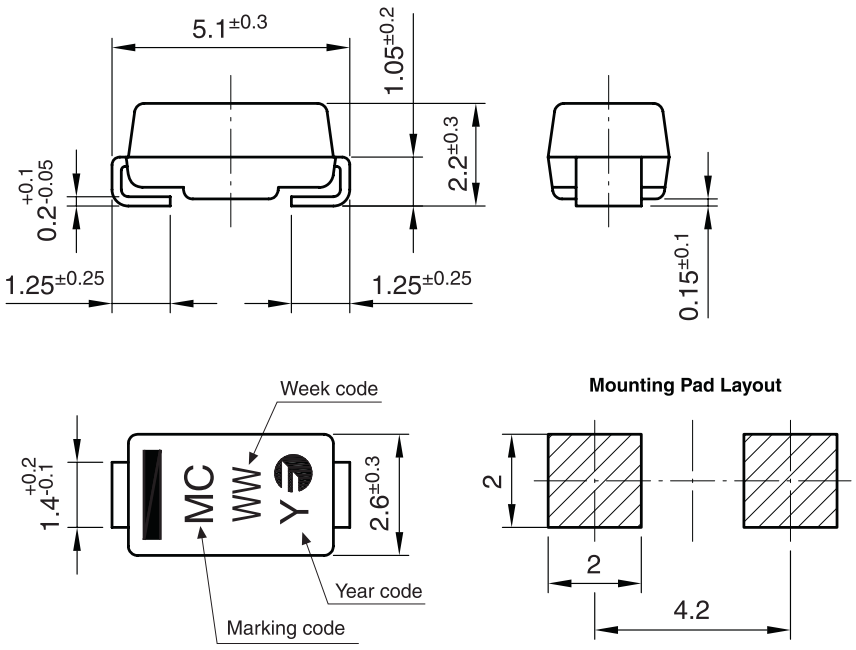

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Fig. 1 REVERSE CURRENT vs REVERSE VOLTAGE

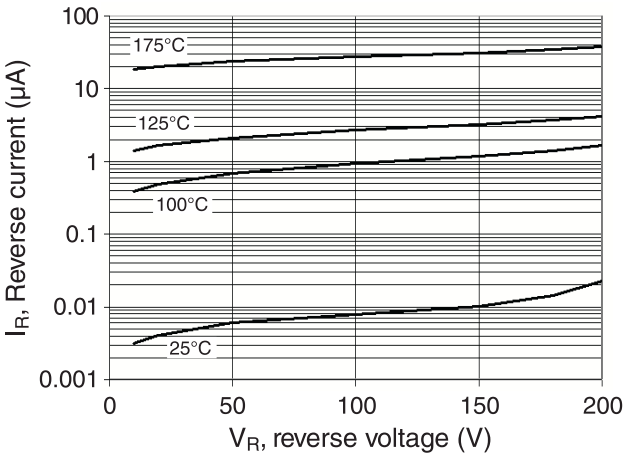

Fig. 2 FORWARD VOLTAGE vs FORWARD CURRENT

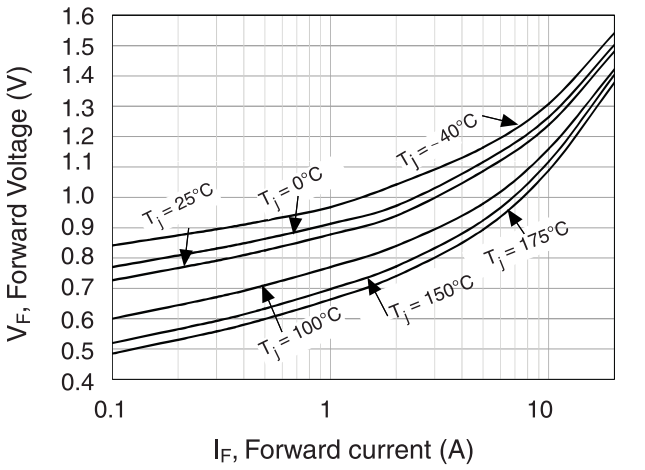

Fig. 3 AVERAGE POWER LOSSES vs. AVERAGE CURRENT

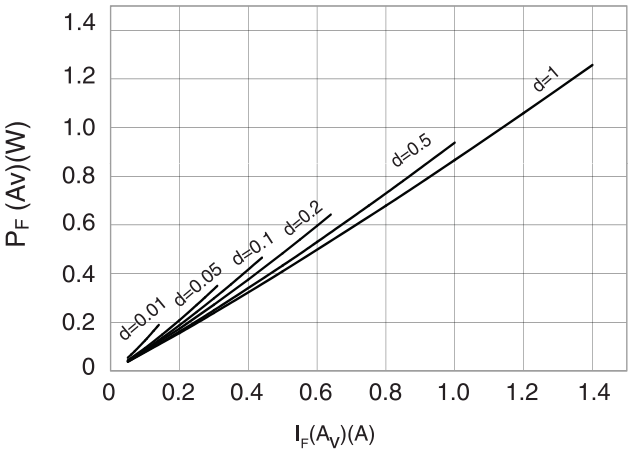

Fig. 4 PEAK CURRENT vs. FORM FACTOR

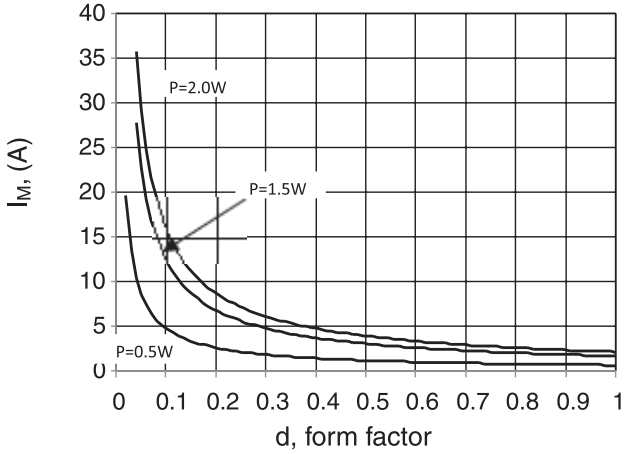

Fig. 5 RELATIVE VARIATION OF THERMAL IMPEDANCE TO AMBIENT vs. PULSE

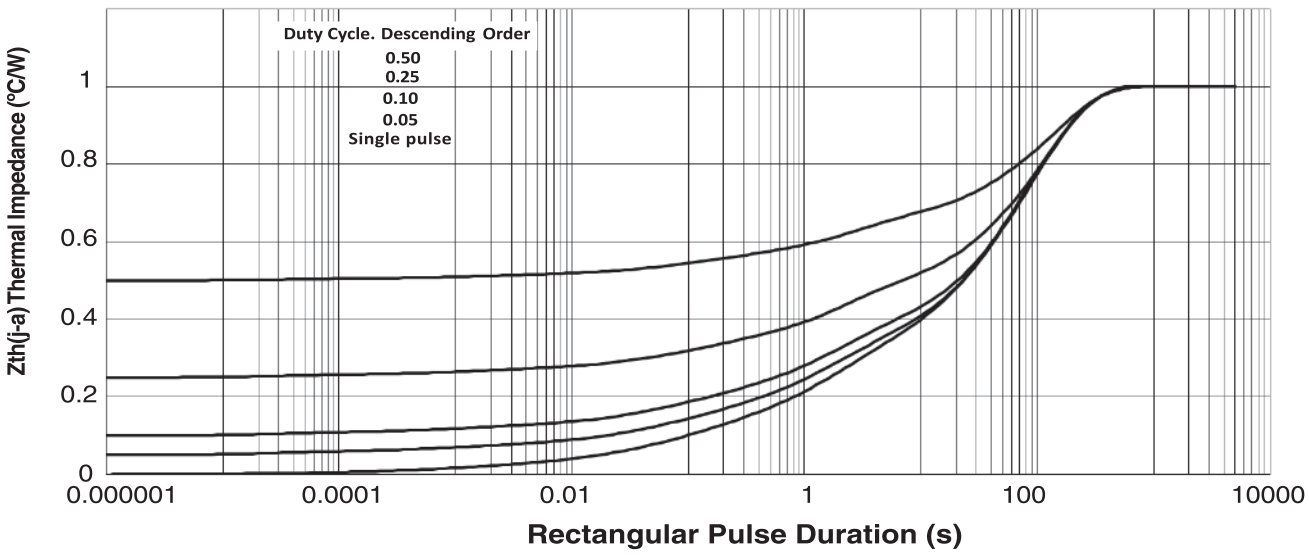

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Fig. 6 FORWARD CURRENT DERATING CURVE

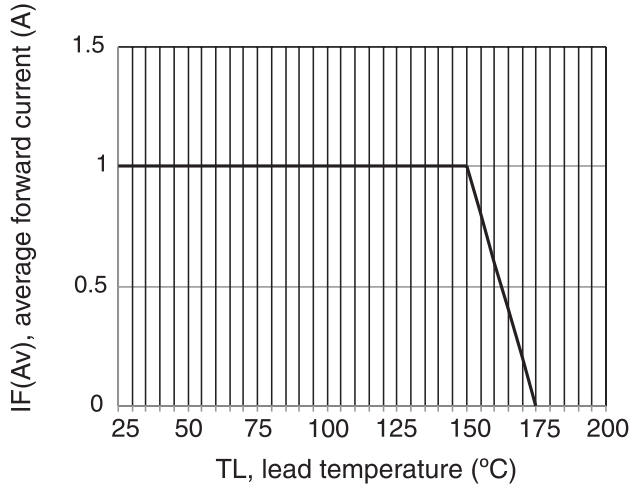

Fig. 7 tb/ta CURVES vs. FORWARD CURRENT

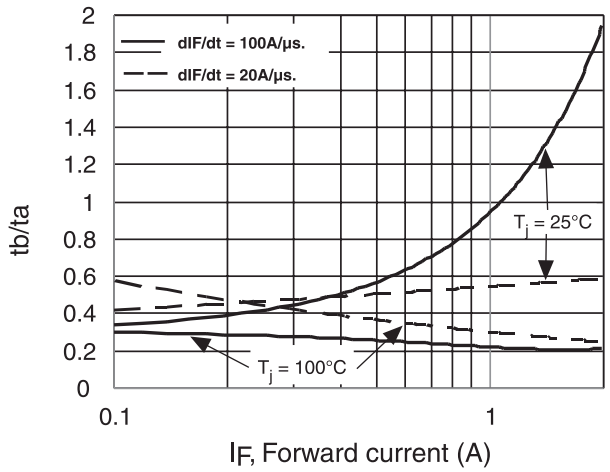

Fig. 8 t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT. Tc = 25 °C

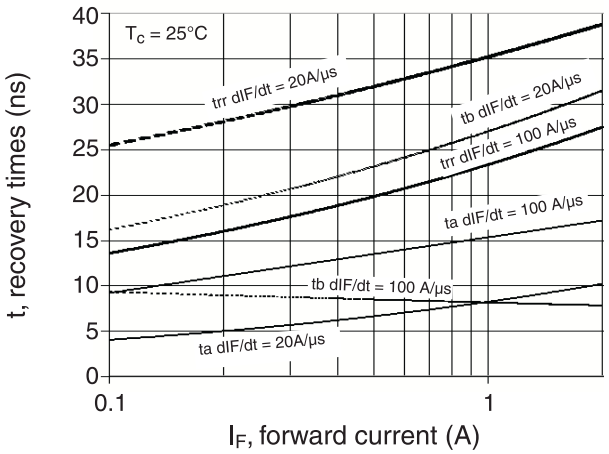

Fig. 9 t_{rr}, t_a AND t_b CURVES vs FORWARD CURRENT. Tc = 100 °C

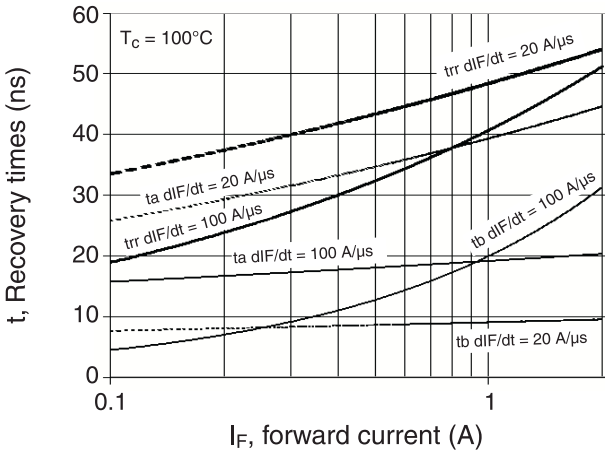

Fig. 10 RECOVERY TIME vs dI_F/dt

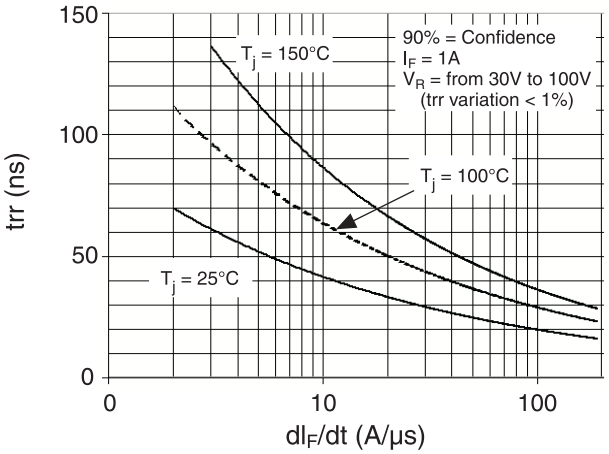

Fig. 11 PEAK REVERSE CURRENT vs dI_F/dt

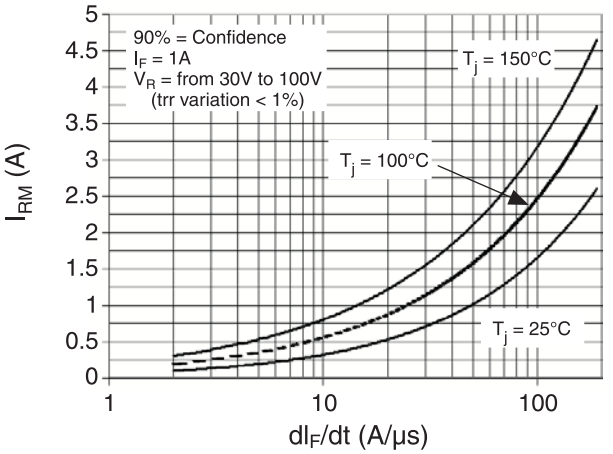

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Fig. 12 trr vs dI_F/dt. I_F = 2 A

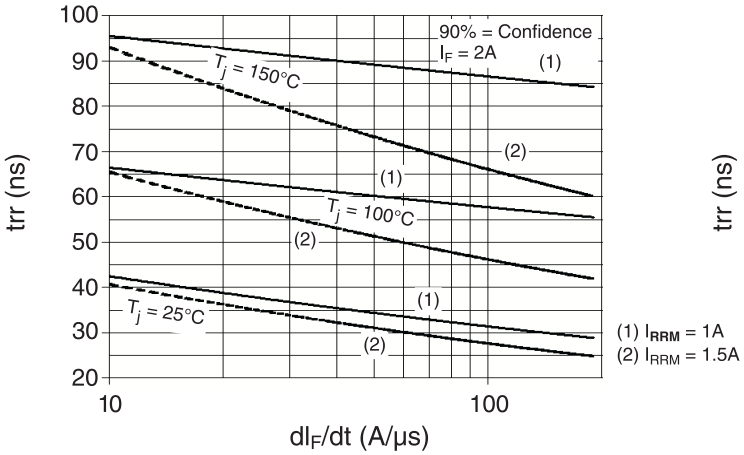

Fig. 13 trr vs dI_F/dt. I_F = 0.1 A

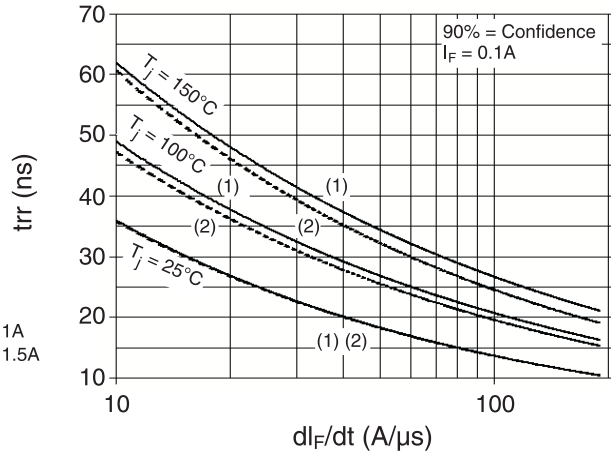

Fig. 14 trr vs dI_F/dt. I_F = 0.5 A

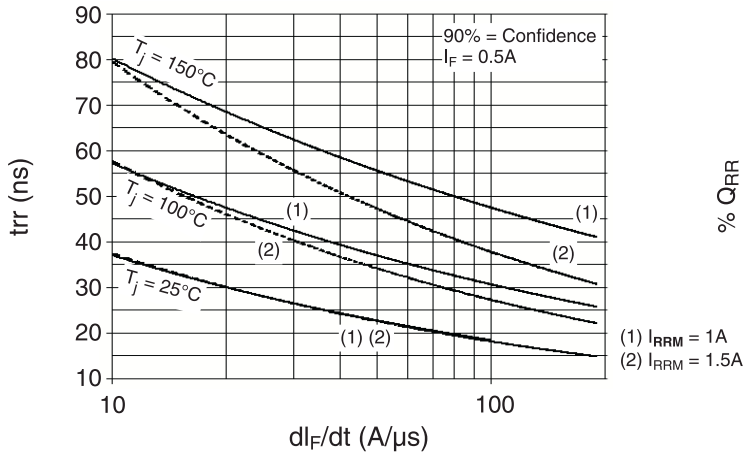

Fig. 15 QRR vs JUNCTION TEMPERATURE

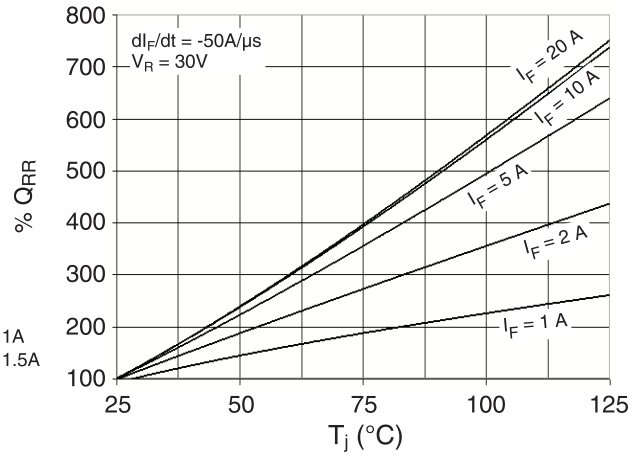

Fig. 16 IRM vs JUNCTION TEMPERATURE

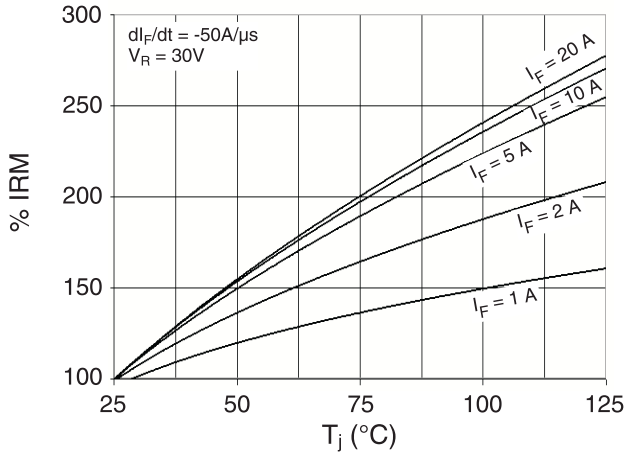

Fig. 17 trr vs JUNCTION TEMPERATURE

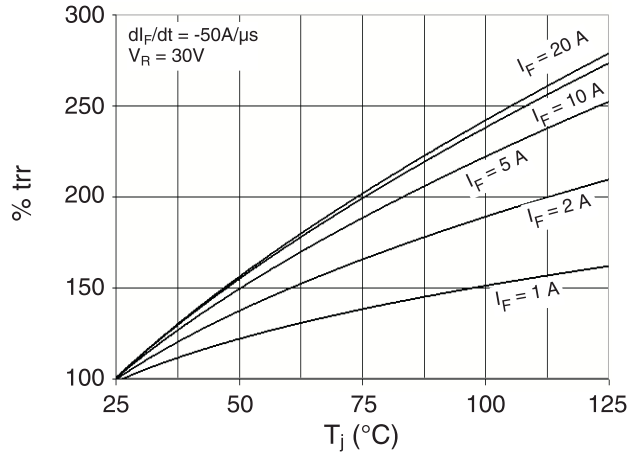

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Fig. 18 TRANSIENT PEAK FORWARD VOLTAGE vs dI_F/dt

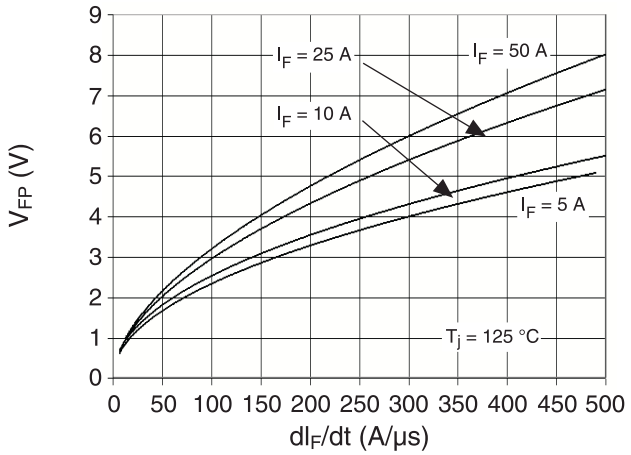


Fig. 19 FORWARD RECOVERY TIME vs dI_F/dt

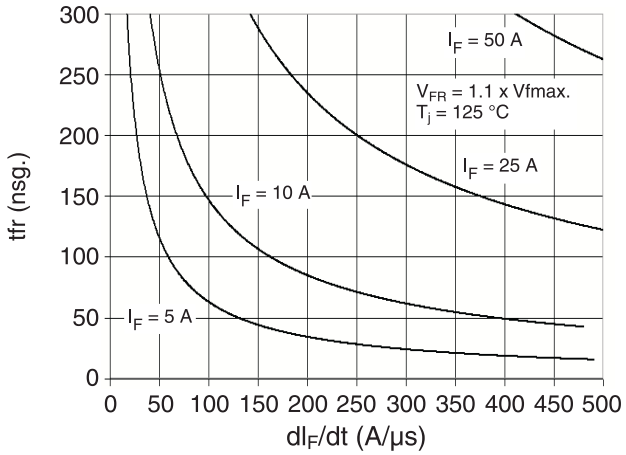


Fig. 20 RECOVERY TIME vs JUNCTION TEMPERATURE

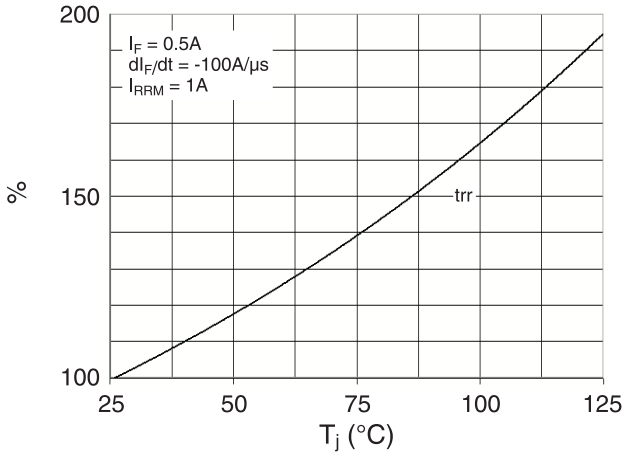
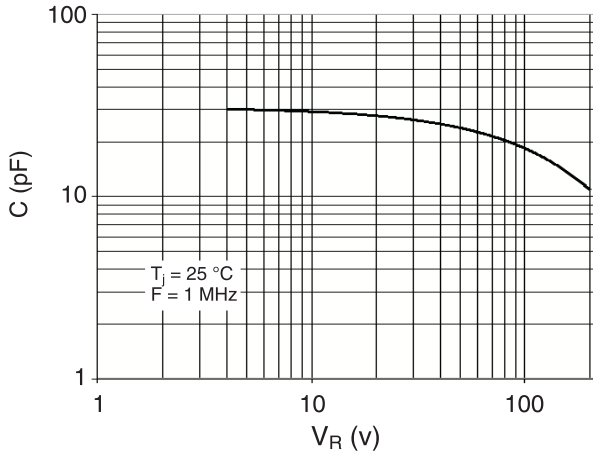


Fig. 21 JUNCTION CAPACITANCE vs. REVERSE BIAS



Revision History

DATE	REVISION	DESCRIPTION OF CHANGES
28-Aug-2019	0	Original Data Sheet

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

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