

## 3A, 50V - 1000V Fast Recovery Rectifier

### FEATURES

- High current capability, Low  $V_F$
- High reliability
- High surge current capability
- Low power loss, high efficiency
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- General purpose

### MECHANICAL DATA

- Case: DO-201AD
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Pure tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Polarity: Indicated by cathode band
- Weight: 1.20g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	3	A
$V_{RRM}$	50 - 1000	V
$I_{FSM}$	125	A
$T_{JMAX}$	150	°C
Package	DO-201AD	
Configuration	Single die	



DO-201AD



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)									
PARAMETER	SYMBOL	FR 301G-K	FR 302G-K	FR 303G-K	FR 304G-K	FR 305G-K	FR 306G-K	FR 307G-K	UNIT
Marking code on the device		FR 301G	FR 302G	FR 303G	FR 304G	FR 305G	FR 306G	FR 307G	
Repetitive peak reverse voltage	$V_{RRM}$	50	100	200	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	140	280	420	560	700	V
Forward current	$I_F$	3							A
Surge peak forward current, 8.3ms single half sine wave superimposed on rated load	$I_{FSM}$	125							A
Junction temperature	$T_J$	-55 to +150							°C
Storage temperature	$T_{STG}$	-55 to +150							°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-ambient thermal resistance	$R_{\theta JA}$	35	°C/W

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
<b>PARAMETER</b>	<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage <sup>(1)</sup>	$I_F = 3\text{A}, T_J = 25^\circ\text{C}$	$V_F$	-	1.3	V
Reverse current @ rated $V_R$ <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	5	$\mu\text{A}$
	$T_J = 125^\circ\text{C}$		-	100	$\mu\text{A}$
Junction capacitance	1MHz, $V_R = 4.0\text{V}$	$C_J$	30	-	pF
Reverse recovery time	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	$t_{rr}$	-	150	ns
			-	250	ns
			-	500	ns
			-	-	-

**Notes:**

1. Pulse test with  $PW = 0.3\text{ms}$
2. Pulse test with  $PW = 30\text{ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> <sup>(1)</sup>	<b>PACKAGE</b>	<b>PACKING</b>
FR3xG-K	DO-201AD	1,250 / Tape & Reel
FR3xG-K A0G	DO-201AD	500 / Ammo box

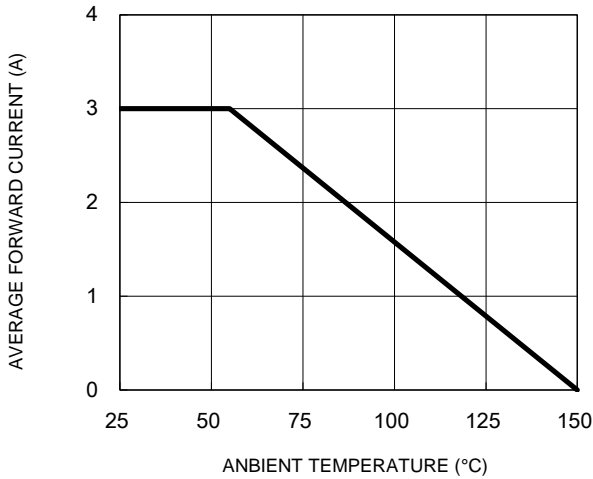
**Notes:**

1. "x" defines voltage from 50V (FR301G-K) to 1000V (FR307G-K)

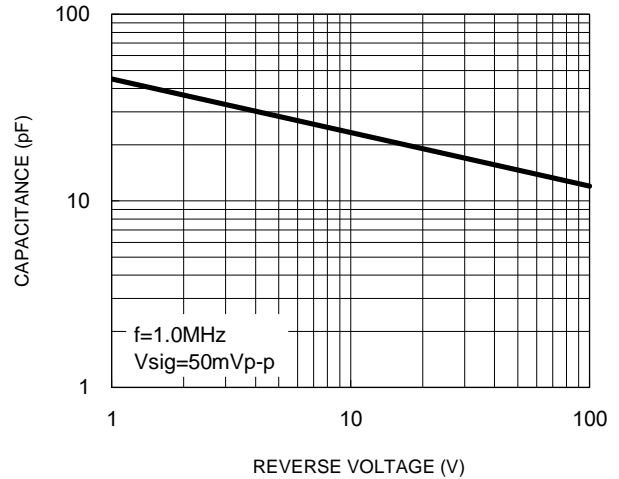
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

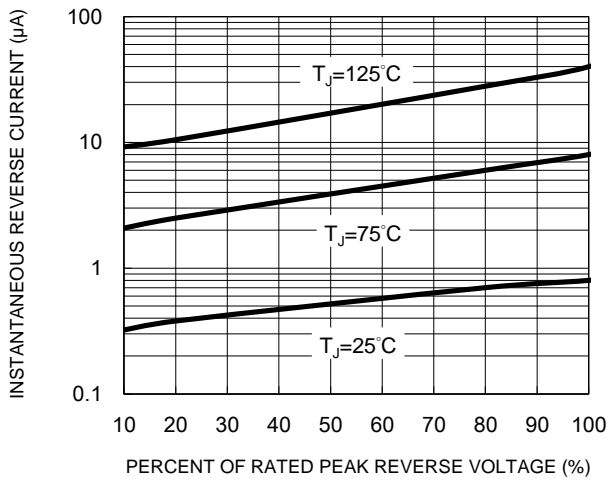
**Fig.1 Forward Current Derating Curve**



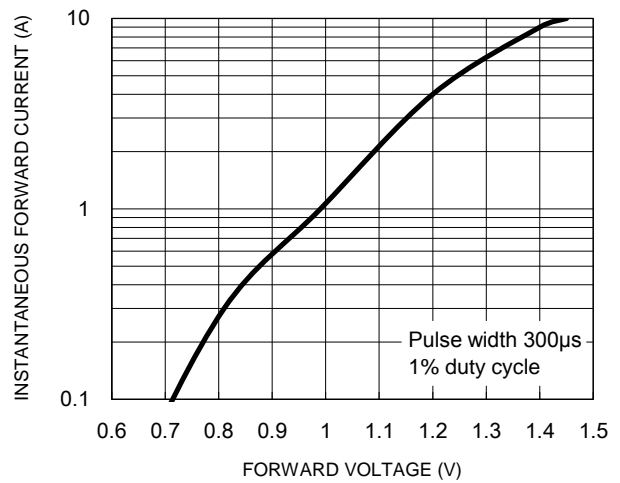
**Fig.2 Typical Junction Capacitance**



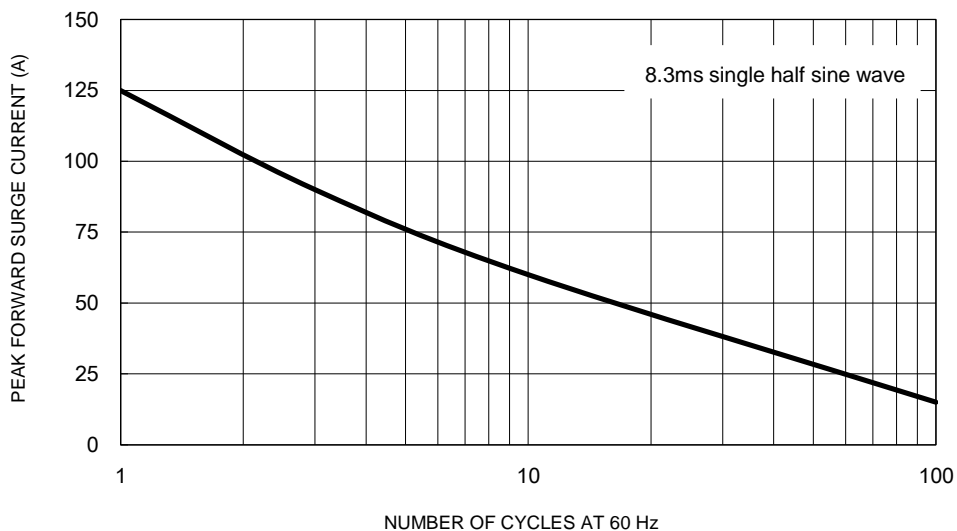
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



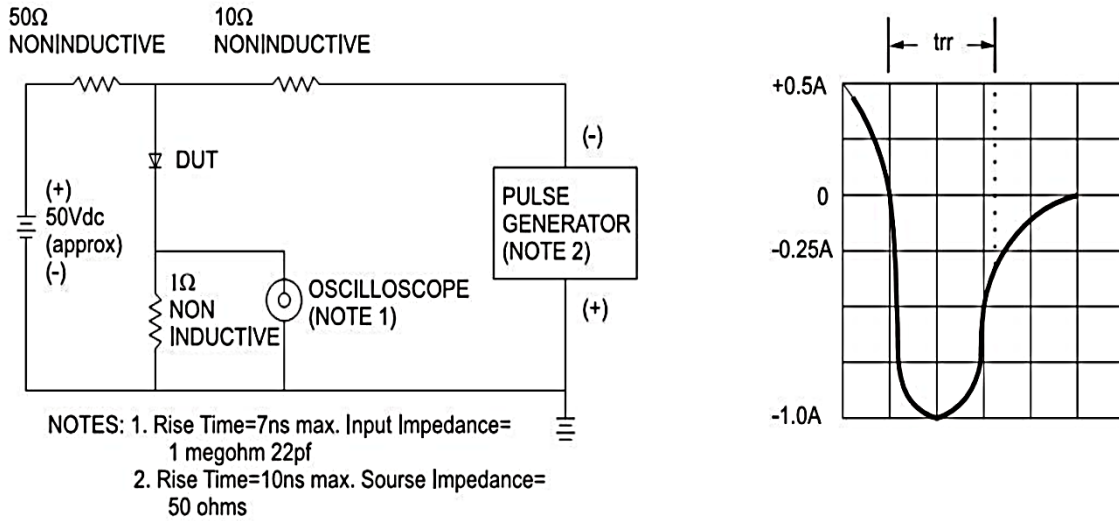
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



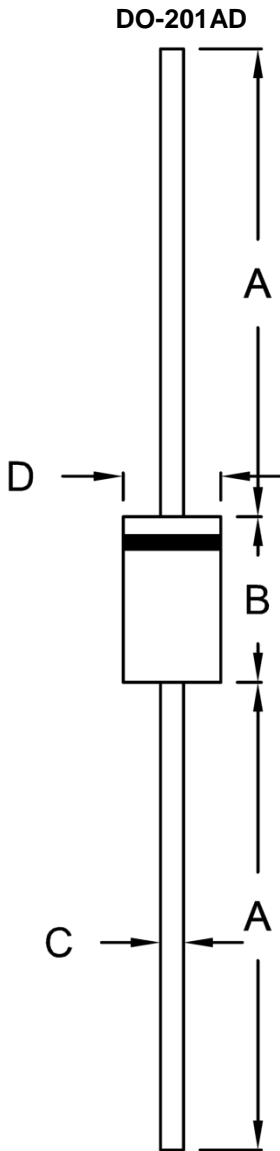
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.6 Reverse Recovery Time Characteristic and Test Circuit Diagram**



**PACKAGE OUTLINE DIMENSIONS**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	8.50	9.50	0.335	0.374
C	1.20	1.30	0.047	0.051
D	5.00	5.60	0.197	0.220

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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