

# FRS1JE

## SURFACE MOUNT FAST RECOVERY RECTIFIERS

**REVERSE VOLTAGE – 600 Volts**  
**FORWARD CURRENT – 1.0 Ampere**

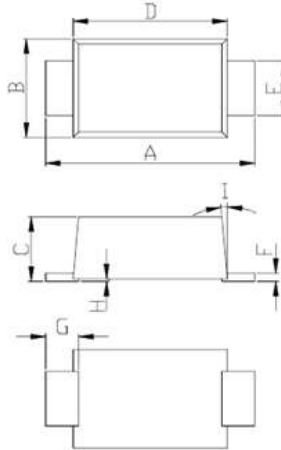
### FEATURES

- Fast switching for high efficiency
- For surface mounted applications
- Glass passivated chip
- Low reverse leakage current
- Low forward voltage drop
- High current capability
- Qualified according to AEC-Q101 Rev\_C
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

### MECHANICAL DATA

- Case: JEDEC DO-219AA
- Case Material: "Green" molding compound, UL Flammability classification 94V-0, "Halogen-free".
- Terminals: Lead Free Plating (Matte Tin Finish.)
- Component in accordance to RoHs 2002/95/EC
- Marking code: R1J
- Weight: 16.3 mg (Approximate)

### F1A



F1A			
DIM.	MIN.	TYP.	MAX.
A	3.50	3.80	3.90
B	1.70	1.90	2.00
C	0.81	1.18	1.20
D	2.70	2.80	2.90
E	0.80	1.00	1.35
F	0.05	0.15	0.30
G	0.35	0.60	0.85
H	0.03	0.07	0.10
I	0°	5°	8°

All dimension in millimeter.

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

### ABSOLUTE RATING

PARAMETER	SYMBOL	VALUE	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
Maximum DC blocking voltage	$V_{DC}$	600	V
Average rectified forward current	$I_{(AV)}$	1.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	30	A
Operating temperature range	$T_J$	-55 ~ +150	°C
Storage temperature rang	$T_{STG}$	-55 ~ +150	°C

### STATIC ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITION		SYMBOL	TYP.	MAX	UNIT
Forward voltage (Note 4)	$I_F=1.0A$	$T_J=25^\circ C$	$V_F$	1.1	1.3	V
Leakage current	$V_R=600V$	$T_J=25^\circ C$ $T_J=100^\circ C$	$I_R$	0.5 10	5 200	$\mu A$
Typical junction capacitance (Note 5)			$C_T$	7		pF

### THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP.	UNIT
Typical thermal resistance (Note 6)	$R_{thJA}$	95	°C/W
	$R_{thJL}$	30	
	$R_{thJC}$	20	

### DYNAMIC ELECTRICAL CHARACTERISTICS

PARAMETER	TEST CONDITION	SYMBOL	MAX	UNIT
Reverse recovery time	$I_F=0.5A, I_{rr}=0.25A, I_R=1.0A$	$t_{rr}$	250	ns

#### Note:

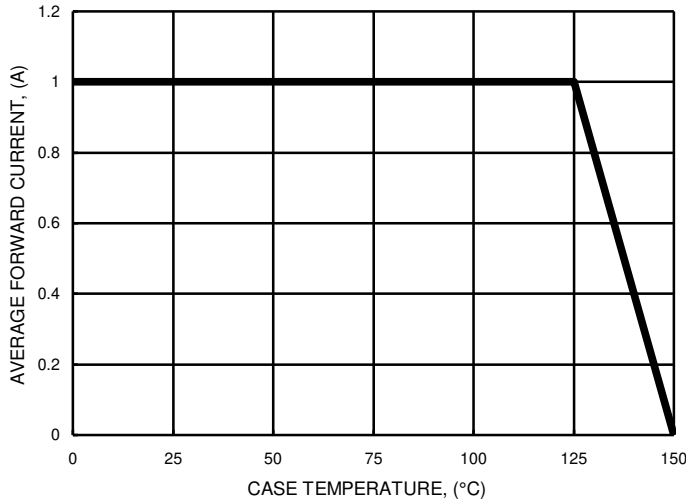
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. 300us pulse width, 2% duty cycle.
5. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
6. Thermal resistance test performed in accordance with JESD-51. Unit mounted on glass-epoxy substrate with 5 x 7 mm copper pad.

REV.-4, Oct.-2021, KSEP06

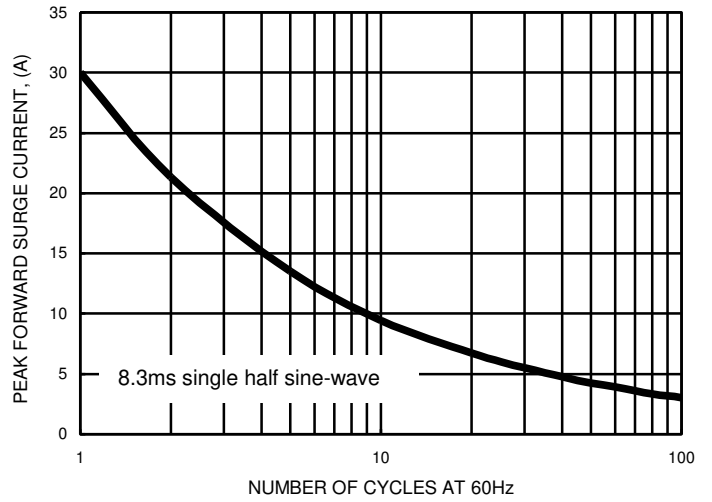
**RATING AND CHARACTERISTIC CURVES**

**FRS1JE**

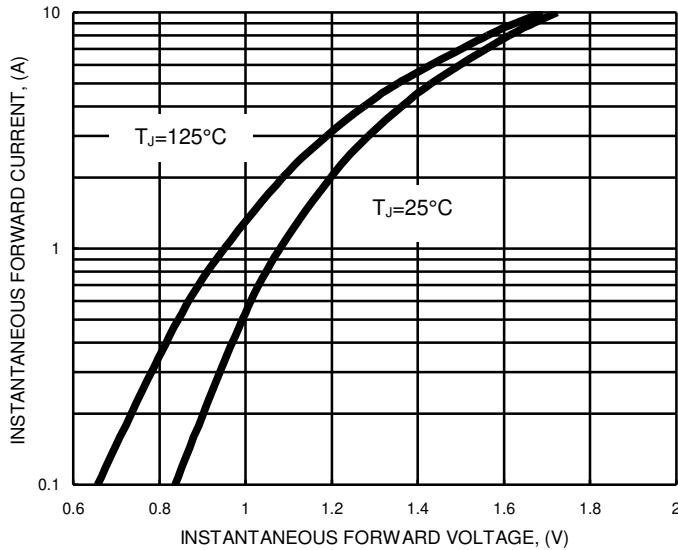
**FIG.1- FORWARD CURRENT DERATING CURVE**



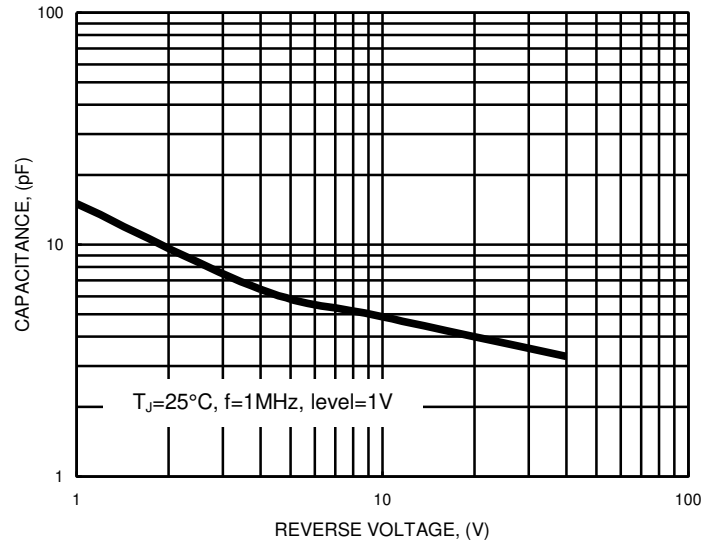
**FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT**



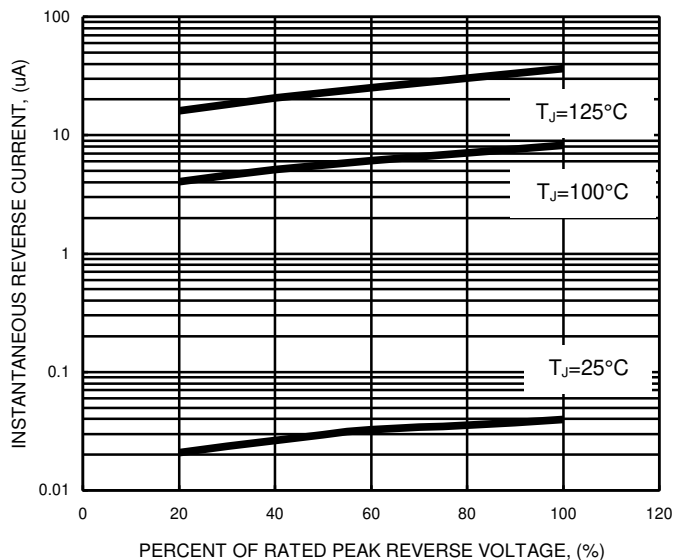
**FIG.3- TYPICAL FORWARD CHARACTERISTICS**



**FIG.4- TYPICAL JUNCTION CAPACITANCE**



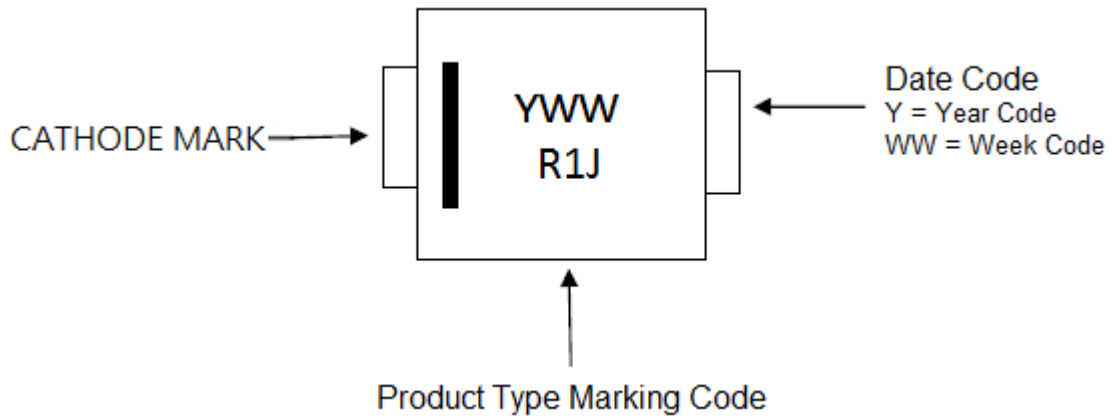
**FIG.5- TYPICAL REVERSE CHARACTERISTICS**



**Ordering Information :**

Part Number	Package	Packing	
		Qty.	Carrier
FRS1JE-7	F1A	2500	Tape & Reel
FRS1JE	F1A	10000	Tape & Reel

**Marking Information :**



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