# FR101S THRU FR107S

**CUMSUMI** ®

## FAST RECOVERY RECTIFIERS
## Reverse Voltage – 50 to 1000 Volts
## Forward Current – 1.0 Ampere

## Features

- High Current Capability
- Fast switching for high efficiency
- Exceeds Environmental Standards of MIL-S-19500/228
- 1 ampere operation at $T_A = 55^oC$ with no thermal runaway
- Low Leakage.

## Mechanical Data

- **Case:** Molded plastic, A-405
- **Lead:** Axial leads, solderable per MIL-STD-202, method 208 guaranteed.
- **Polarity:** Color band denotes cathode end
- **Mounting Position:** Any

**A-405**　　　　　　Unit: inch(mm)



.025(.64)
.021(.53)
1.0(25.4)MIN.
.205(5.2)
.160(4.1)
.107(2.7)
.080(2.0)
1.0(25.4)MIN.
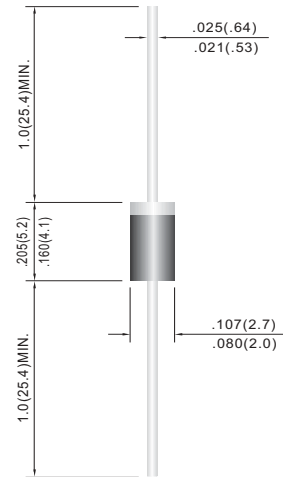
## Absolute Maximum Ratings and Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified, single phase, half wave, 60Hz, resistive or inductive load, for capacitive load, derate current by 20%.

|  | Symbols | FR101S | FR102S | FR103S | FR104S | FR105S | FR106S | FR107S | Units |
|---|---|---|---|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | Volts |
| Maximum RMS voltage | $V_{RMS}$ | 35 | 70 | 140 | 280 | 420 | 560 | 700 | Volts |
| Maximum DC blocking voltage | $V_{DC}$ | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | Volts |
| Average forward rectified current .375" (9.5mm) lead length at $T_A = 55\,^OC$ | $I_{(AV)}$ | 1 | | | | | | | Amp |
| Peak forward surge current 8.3mS single half sine-wave superimposed on rated load (JEDEC method) | $I_{FSM}$ | 30 | | | | | | | Amps |
| Maximum forward voltage at 1A DC and 25$^o$C | $V_F$ | 1.3 | | | | | | | Volts |
| Maximum reverse current　　$T_A = 25℃$ at rated DC blocking voltage　$T_A = 100℃$ | $I_R$ | 5　　　　　　500 | | | | | | | μA |
| Maximum reverse recovery time (Note 1) | $T_{rr}$ | 150 | | | 250 | | 500 | | nS |
| Typical junction capacitance (Note 2) | $C_J$ | 12 | | | | | | | pF |
| Typical thermal resistance (Note3) | $R_{\theta JA}$ | 67 | | | | | | | ℃/W |
| Operating and storage temperature range | $T_J , T_S$ | -65 to +125 | | | | | | | ℃ |

1) Reverse recovery test conditions: $I_F$ = 0.5A, $I_R$ = 1A, $I_{rr}$ = 0.25A.

2) Measured at 1MH$_Z$ and applied reverse voltage of 4 VDC .

3) Thermal resistance junction to ambient and form junction to lead at 0.375" (9.5mm) lead length P.C.B. mounted.
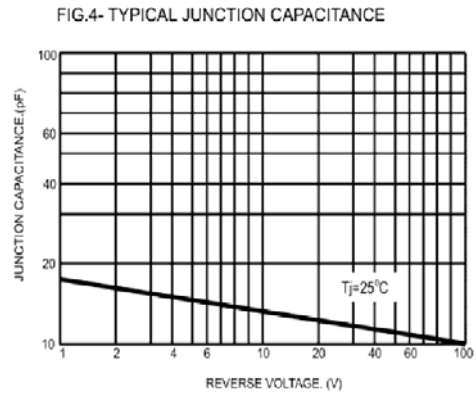
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FIG.1- MAXIMUM TYPICAL FORWARD CURRENT DERATING CURVE

Single Phase
Half Wave 60Hz
Resistive or
Inductive Load
0.375" (9.5mm)
Lead Length

AVERAGE FORWARD CURRENT. (A)

AMBIENT TEMPERATURE. (°C)

FIG.2- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

PEAK FORWARD SURGE CURRENT (A)

8.3ms Single Half Sine Wave
JEDEC Method

NUMBER OF CYCLES AT 60Hz

FIG.3- TYPICAL FORWARD CHARACTERISTICS

$T_J$=25°C
Pulse Width=300μs
1% Duty Cycle

INSTANTANEOUS FORWARD CURRENT. (A)

FORWARD VOLTAGE. (V)

FIG.4- TYPICAL JUNCTION CAPACITANCE

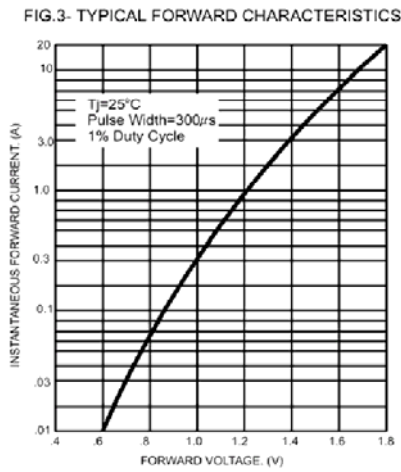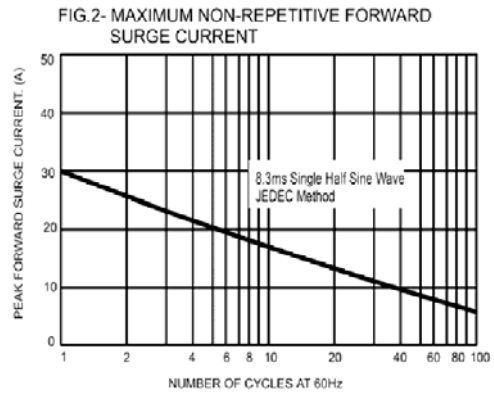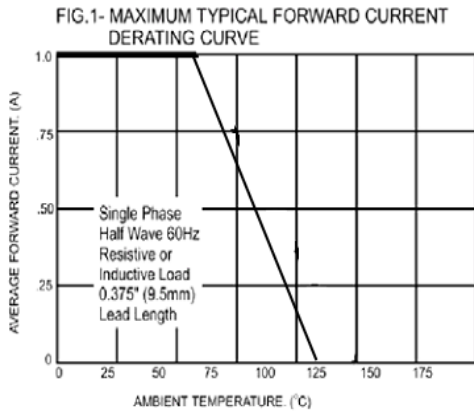JUNCTION CAPACITANCE.(pF)

$T_J$=25°C

REVERSE VOLTAGE. (V)

FIG.5- REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM

50Ω NONINDUCTIVE
10Ω NONINDUCTIVE

(+) 50Vdc (approx) (-)

DUT

1Ω NON INDUCTIVE

OSCILLOSCOPE (NOTE 1)

PULSE GENERATOR (NOTE 2)

(-)
(+)

+0.5A
0
-0.25A
-1.0A

trr

1cm

SET TIME BASE FOR 5/ 10ns/ cm
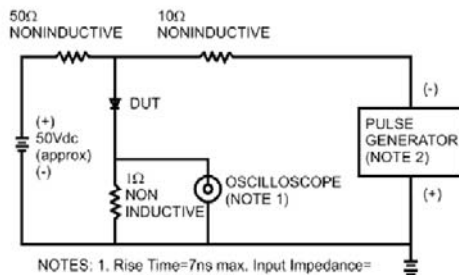
NOTES: 1. Rise Time=7ns max. Input Impedance=
1 megohm 22pf
2. Rise Time=10ns max. Sourse Impedance=
50 ohms