# FR501 THRU FR507

## 5.0 AMP FAST RECOVERY RECTIFIERS



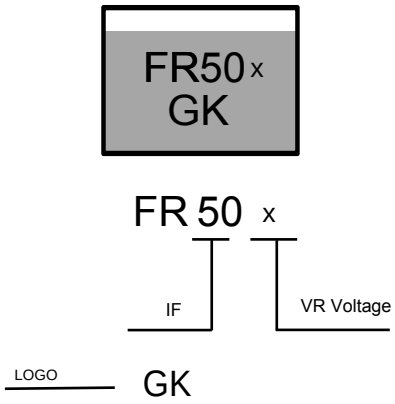
VOLTAGE RANGE
50 to 1000 Volts
CURRENT
5.0 Ampere

## FEATURES

* Low forward voltage drop
* High current capability
* High reliability
* High surge current capability

## MECHANICAL DATA

* Case: Molded plastic
* Epoxy: UL 94V-0 rate flame retardant
* Lead: Axial leads, solderable per MIL-STD-202, method 208 guranteed
* Polarity: Color band denotes cathode end
* Mounting position: Any




## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating 25℃ ambient temperature uniess otherwies specified.
Single phase half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| TYPE NUMBER | FR501 | FR502 | FR503 | FR504 | FR505 | FR506 | FR507 | UNITS |
|---|---|---|---|---|---|---|---|---|
| Maximum Recurrent Peak Reverse Voltage | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum RMS Voltage | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Maximum DC Blocking Voltage | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Maximum Average Forward Rectified Current | 5.0 | | | | | | | A |
| Peak Forward Surge Current, 8.3 ms single half sine-wave superimposed on rated load (JEDEC method) | 150 | | | | | | | A |
| Maximum Instantaneous Forward Volta e at 5.0A | 1.3 | | | | | | | V |
| Maximum DC Reverse Current Ta=25℃ | 5.0 | | | | | | | μA |
| at Rated DC Blocking Voltage Ta=100℃ | 200 | | | | | | | μA |
| Maximum Reverse Recovery Time (Note 1) | 150 | | | | 250 | 500 | | nS |
| Typical Junction Capacitance (Note 2) | 100 | | | | | | | pF |
| Operating and Storage Temperature Range $T_J$, $T_{STG}$ | -65 — +150 | | | | | | | ℃ |

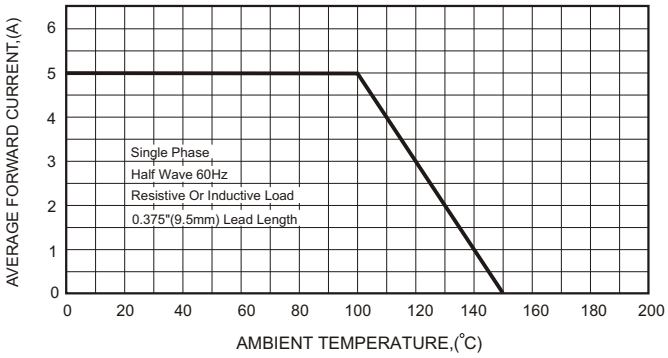
**NOTES:**

1. Reverse Recovery Time test condition: IF=0.5A, IR=1.0A, IRR=0.25A

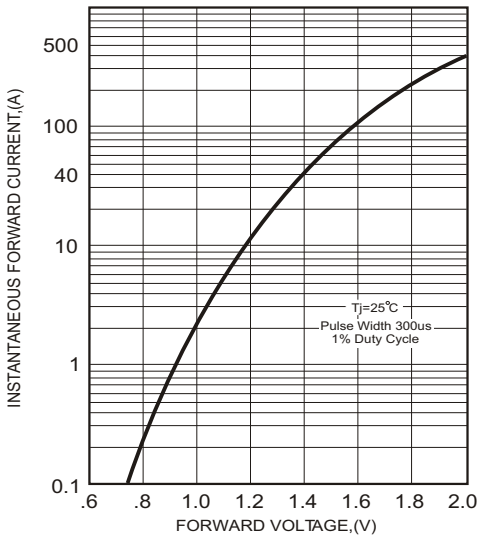
2. Measured at 1MHz and applied reverse voltage of 4.0V D.C.

# RATING AND CHARACTERISTIC CURVES

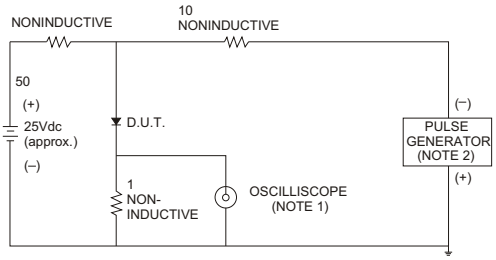
## FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE




## FIG.2-TYPICAL FORWARD CHARACTERISTICS

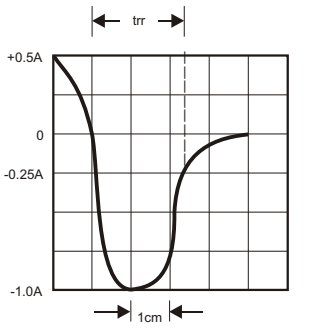



## FIG.3- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTICS




NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm.22pF.

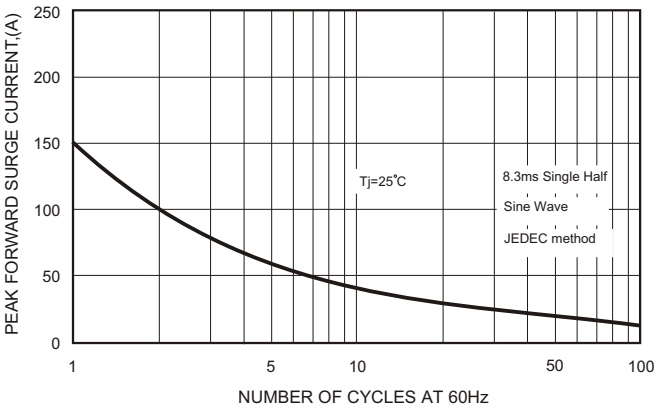
2. Rise Time= 10ns max., Source Impedance= 50 ohms.



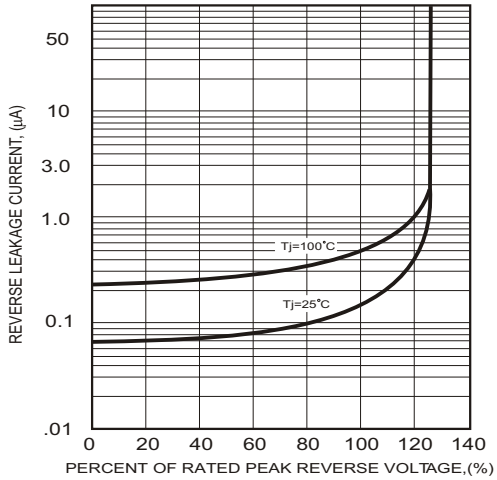

SET TIME BASE FOR

50 / 10ns / cm

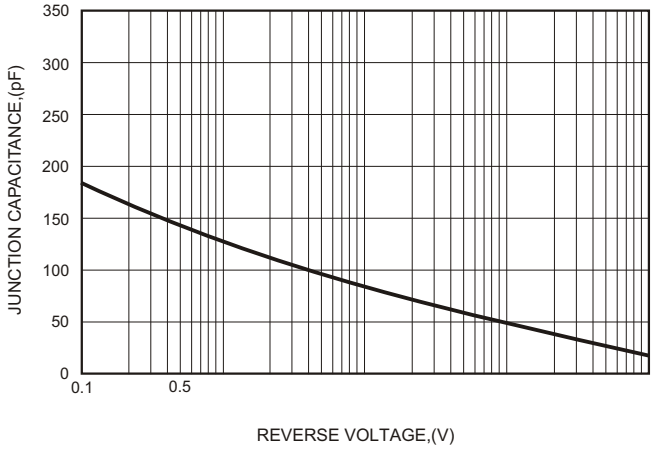
## FIG.4-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT




## FIG.5 - TYPICAL REVERSE CHARACTERISTICS



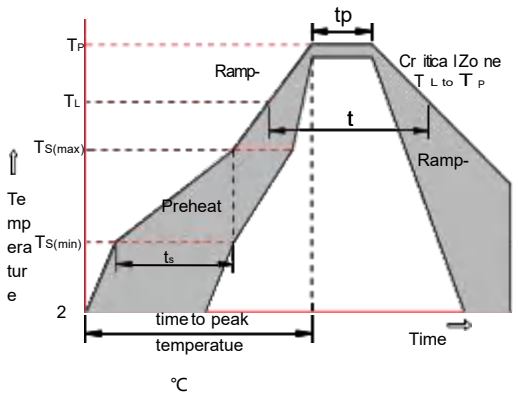

## FIG.6-TYPICAL JUNCTION CAPACITANCE



## Soldering parameters

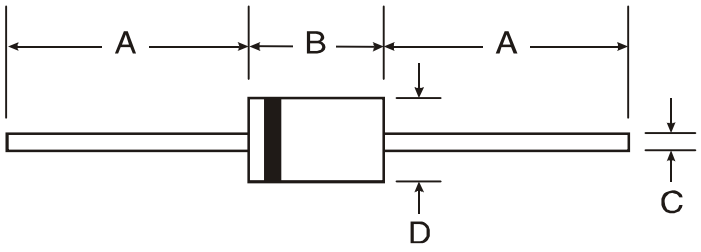
| Reflow Condition | | Pb-Free assembly (see as bellow) |
|---|---|---|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp ($T_L$) to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$)(Liquid us) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃ of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |

**FIG5:** Reflow condition




## Package Dimensions & Suggested Pad Layout

**DO-27**




| DO-27 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 24.00 | - |
| **B** | 7.20 | 9.50 |
| **C** | 1.15 | 1.25 |
| **D** | 5.00 | 5.60 |
| **All Dimensions in mm** | | |