

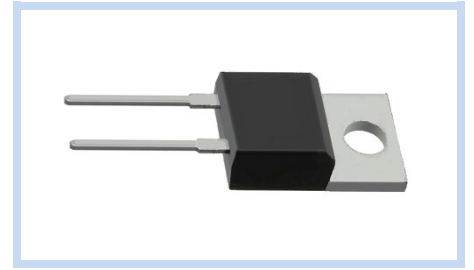
# Fast Recovery Rectifier 600V 30A TO-220

FRED3060ST220

MERITEK

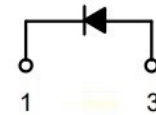
## FEATURES

- Optimized Performance Between VF & TR
- Soft Recovery Characteristic
- Reduced EMI and Improved Performance
- Improved Thermal Performance
- Application: Rectifiers in Switching Mode Power, UPS, PV Inverter, EV Charging Station, and Welder



## MECHANICAL DATA

- Case: TO-220AC, Molded Plastic
- Terminals: Solderable per MIL-STD-750, Method 2026



## MAXIMUM RATINGS

| Parameter                                                                          | Symbol          | Value    | Units                |
|------------------------------------------------------------------------------------|-----------------|----------|----------------------|
| Maximum Recurrent Peak Reverse Voltage                                             | $V_{RRM}$       | 600      | V                    |
| Maximum DC Blocking Voltage                                                        | $V_{DC}$        | 600      |                      |
| Average Forward Rectified Current at $T_L=100^{\circ}\text{C}$                     | $I_{F(AV)}$     | 30       | A                    |
| Repetitive Peak Surge Current, 8.3ms, Sine-Wave, D=0.5                             | $I_{FRM}$       | 60       |                      |
| Peak Forward Surge Current, 8.3ms Single Half-Sine-Wave Superimposed on Rated Load | $I_{FSM}$       | 280      |                      |
| Maximum Power Dissipation                                                          | $P_{TOT}$       | 96       | W                    |
| Maximum Thermal Resistance                                                         | $R_{\theta JC}$ | 1.3      | $^{\circ}\text{C/W}$ |
| Operating Junction and Storage Temperature Range                                   | $T_J, T_{STG}$  | -55~+150 | $^{\circ}\text{C}$   |

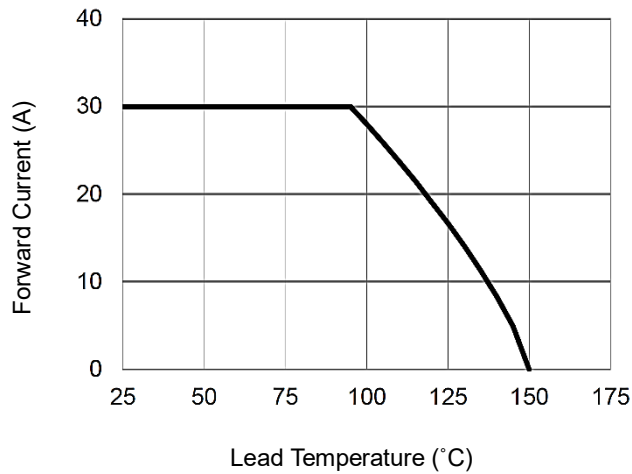
## ELECTRICAL CHARACTERISTICS

| Parameter                     | Conditions                                                                                | Symbol    | Min | Typ. | Max | Unit          |
|-------------------------------|-------------------------------------------------------------------------------------------|-----------|-----|------|-----|---------------|
| Instantaneous Forward Voltage | $I_F=30\text{A}, T_J=25^{\circ}\text{C}$                                                  | $V_F$     | --  | 1.8  | 2.3 | V             |
|                               | $I_F=30\text{A}, T_J=125^{\circ}\text{C}$                                                 |           | --  | 1.45 | --  |               |
| Reverse Leakage Current       | $V_R=600\text{V}, T_J=25^{\circ}\text{C}$                                                 | $I_R$     | --  | --   | 250 | $\mu\text{A}$ |
|                               | $V_R=600\text{V}, T_J=125^{\circ}\text{C}$                                                |           | --  | --   | 1   | mA            |
| Reverse Recovery Time         | $I_F=0.5\text{A}, I_R=1\text{A}, I_{RR}=0.25\text{A}, T_J=25^{\circ}\text{C}$             | $T_{RR}$  | --  | --   | 45  | nS            |
|                               | $I_F=1\text{A}, V_R=30\text{V}, di/dt=300\text{A}/\mu\text{s}, T_J=25^{\circ}\text{C}$    |           | --  | --   | 35  |               |
| Reverse Recovery Time         | $I_F=30\text{A}, V_R=400\text{V}, di/dt=300\text{A}/\mu\text{s}, T_J=25^{\circ}\text{C}$  | $T_{RR}$  | --  | 45   | 70  | nS            |
| Peak Recovery Current         |                                                                                           | $I_{RRM}$ | --  | 3.6  | --  | A             |
| Reverse Recovery Charge       |                                                                                           | $Q_{RR}$  | --  | 90   | --  | nC            |
| Softness factor = $t_b/t_a$   |                                                                                           | $S$       | --  | 1.5  | --  | --            |
| Reverse Recovery Time         | $I_F=30\text{A}, V_R=400\text{V}, di/dt=300\text{A}/\mu\text{s}, T_J=125^{\circ}\text{C}$ | $T_{RR}$  | --  | 70   | --  | nS            |
| Peak Recovery Current         |                                                                                           | $I_{RRM}$ | --  | 9.9  | --  | A             |
| Reverse Recovery Charge       |                                                                                           | $Q_{RR}$  | --  | 480  | --  | nC            |
| Softness factor = $t_b/t_a$   |                                                                                           | $S$       | --  | 0.3  | --  | --            |

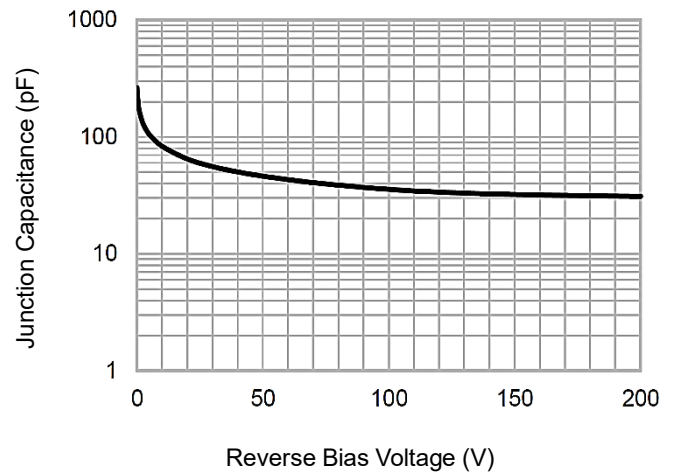
Notes:  $T_C=25^{\circ}\text{C}$  unless otherwise noted

## CHARACTERISTIC CURVES

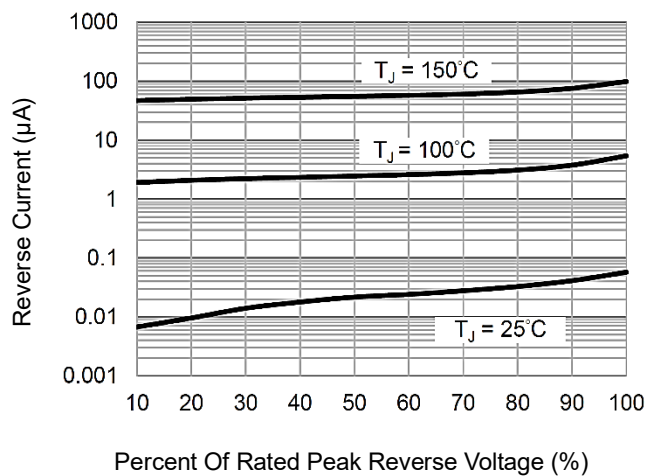
Forward Current Derating Curve



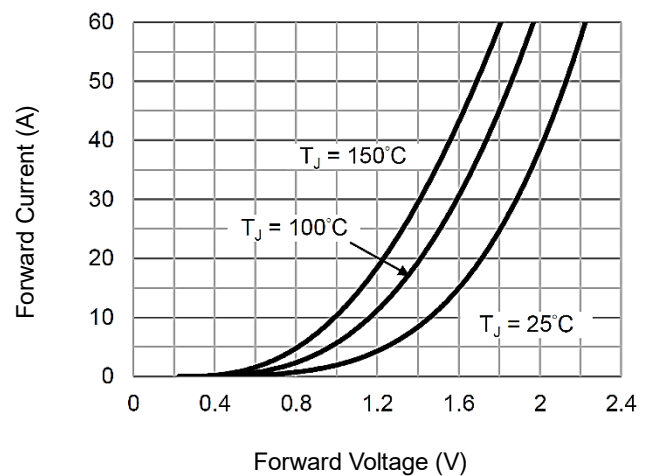
Typical Junction Capacitance



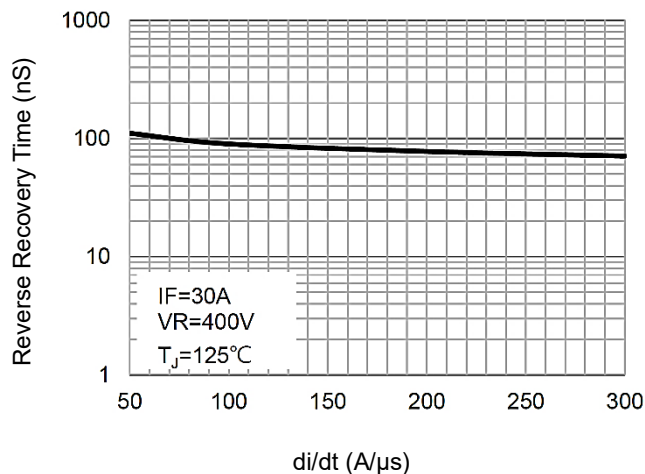
Typical Reverse Characteristics



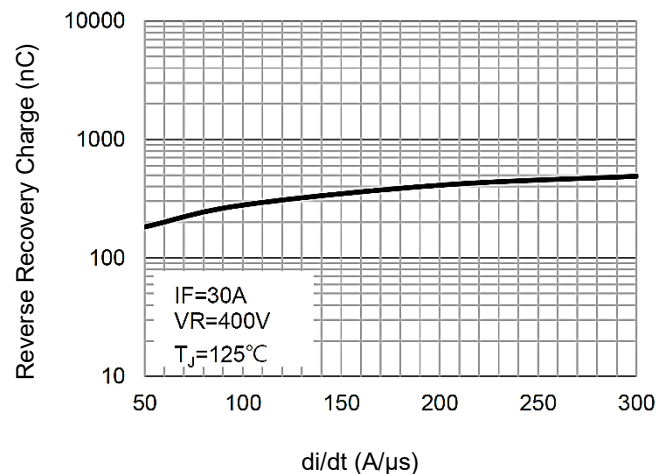
Typical Forward Characteristics



Typical Reverse Recovery Time



Typical Reverse Recovery Charge



**Fast Recovery Rectifier**  
**600V 30A TO-220**

FRED3060ST220

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**DIMENSIONS**

| Item | Min (mm) | Max (mm) |
|------|----------|----------|
| A    | 4.16     | 5.00     |
| A1   | 1.15     | 1.39     |
| A2   | 2.03     | 2.92     |
| B    | 0.50     | 0.96     |
| b2   | 1.07     | 1.47     |
| C    | 0.00     | 0.65     |
| D    | 13.93    | 15.87    |
| E    | 9.85     | 10.66    |
| e1   | 5.08 BSC |          |
| H1   | 5.75     | 6.85     |
| L    | 12.70    | -        |
| L1   | -        | 4.50     |
| P    | 3.75     | 3.95     |

Notes: Pin 1: Cathode; Pin 3: Anode

