

**Speedy Diode - Short Reverse Recovery Time, Fast Recovery Diode**

|              |       |               |       |
|--------------|-------|---------------|-------|
| $V_{RRM}$    | 600 V | $I_F$         | 30 A  |
| $V_{F(TYP)}$ | 1.8 V | $T_{RR(TYP)}$ | 45 ns |

**Features**

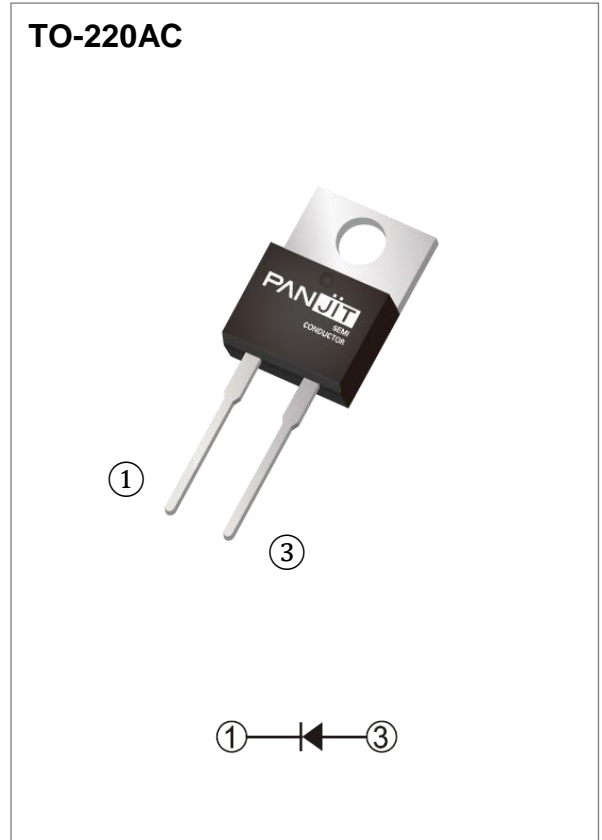
- Fast recovery
- Suppressed switching loss with low  $T_{RR}$
- Soft recovery characteristic for better EMI
- High junction temperature 150 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

**Mechanical Data**

- Case: TO-220AC molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.067 ounces, 1.89 grams

**Application**

- PFC, UPS, PV Inverter, EV Charging Station, Welder



**Maximum Ratings and Thermal Characteristics** ( $T_C = 25\text{ }^\circ\text{C}$  unless otherwise specified)

| PARAMETER   | SYMBOL      | LIMIT   | UNITS |
|---|-------------|---------|-------|
| Repetitive Peak Reverse Voltage   | $V_{RRM}$   | 600     | V     |
| DC Blocking Voltage   | $V_{DC}$    | 600     | V     |
| Diode Forward Current @ $T_C=95^\circ\text{C}$                          | $I_{F(AV)}$ | 30      | A     |
| Repetitive Peak Surge Current<br><i>tp = 8.3 ms, sine-wave, D=0.5</i>   | $I_{FRM}$   | 60      | A     |
| Peak Forward Surge Current<br><i>tp = 8.3 ms, single half sine-wave</i> | $I_{FSM}$   | 175     | A     |
| Maximum Power Dissipation   | $P_{total}$ | 96      | W     |
| Operating Junction Temperature Range                                    | $T_J$       | -55~150 | °C    |
| Storage Temperature Range   | $T_{STG}$   | -55~150 | °C    |

**Electrical Characteristics** ( $T_C = 25\text{ }^\circ\text{C}$  unless otherwise specified)

| PARAMETER                     | SYMBOL          | TEST CONDITION   | MIN. | TYP. | MAX. | UNITS                     |
|-------------------------------|-----------------|--|------|------|------|---------------------------|
| Forward voltage drop          | $V_F$           | $I_F = 30\text{ A}, T_J = 25\text{ }^\circ\text{C}$  | -    | 1.8  | 2.3  | V                         |
|                               |                 | $I_F = 30\text{ A}, T_J = 125\text{ }^\circ\text{C}$   | -    | 1.45 | -    |                           |
| Reverse leakage current       | $I_R$           | $V_R = 600\text{ V}, T_J = 25\text{ }^\circ\text{C}$   | -    | -    | 250  | $\mu\text{A}$             |
|                               |                 | $V_R = 600\text{ V}, T_J = 125\text{ }^\circ\text{C}$  | -    | -    | 1    | mA                        |
| Reverse recovery time         | $T_{RR}$        | $I_F = 0.5\text{ A}, I_R = 1\text{ A},$<br>$I_{RR} = 0.25\text{ A}$<br>$T_J = 25\text{ }^\circ\text{C}$              | -    | -    | 45   | ns                        |
|                               |                 | $I_F = 1\text{ A}, V_R = 30\text{ V},$<br>$di/dt = 300\text{ A}/\mu\text{s},$<br>$T_J = 25\text{ }^\circ\text{C}$    | -    | -    | 35   | ns                        |
| Reverse recovery time         | $T_{RR}$        | $I_F = 30\text{ A}, V_R = 400\text{ V},$<br>$di/dt = 300\text{ A}/\mu\text{s},$<br>$T_J = 25\text{ }^\circ\text{C}$  | -    | 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         | $T_{RR}$        | $I_F = 30\text{ A}, V_R = 400\text{ V},$<br>$di/dt = 300\text{ A}/\mu\text{s},$<br>$T_J = 125\text{ }^\circ\text{C}$ | -    | 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  | -    |                           |
| Thermal Resistance            | $R_{\theta JC}$ |  | -    | -    | 1.3  | $^\circ\text{C}/\text{W}$ |

TYPICAL CHARACTERISTIC CURVES

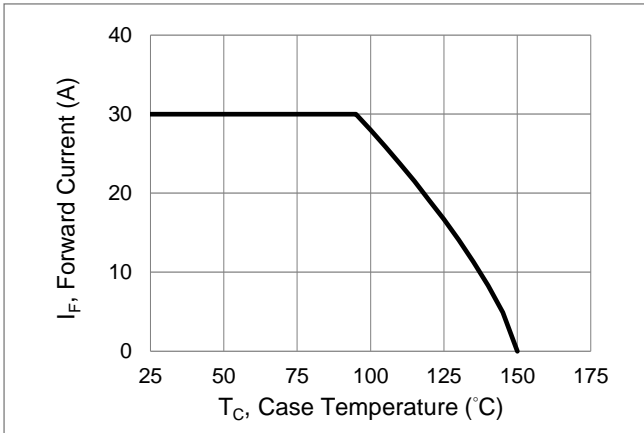


Fig.1 Forward Current Derating Curve

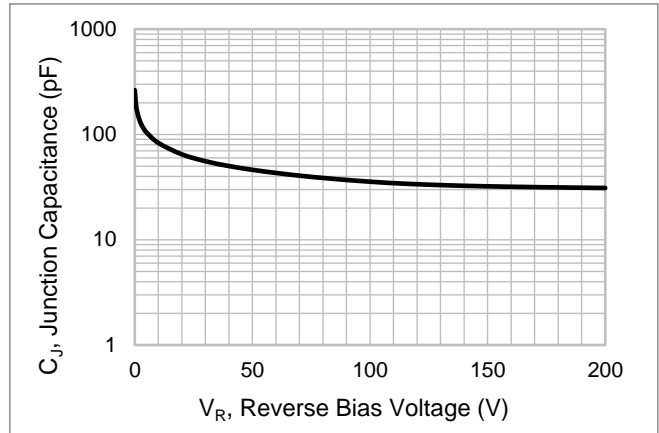


Fig.2 Typical Junction Capacitance

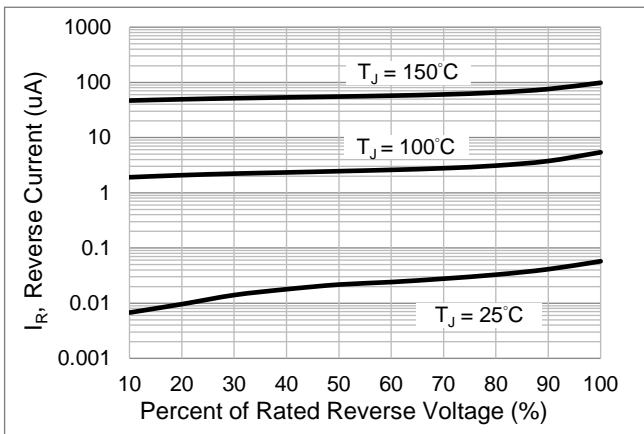


Fig.3 Typical Reverse Characteristics

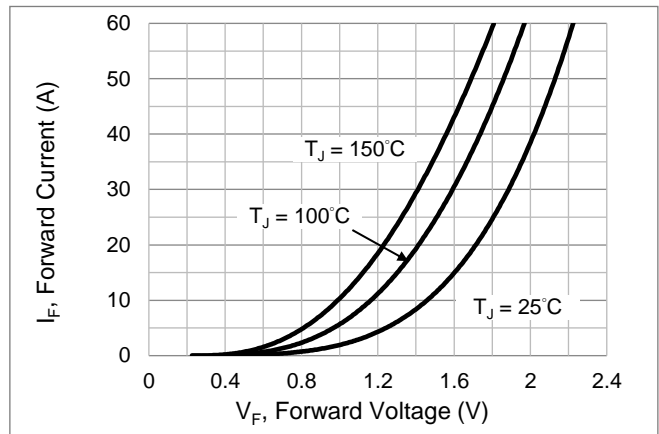


Fig.4 Typical Forward Characteristics

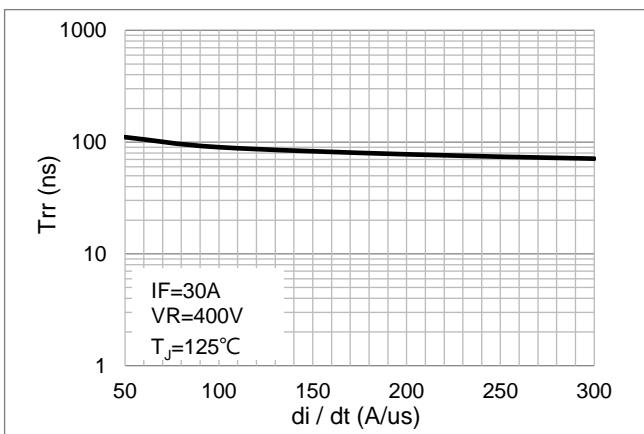


Fig.5 Typical Reverse Recovery Time Versus di/dt

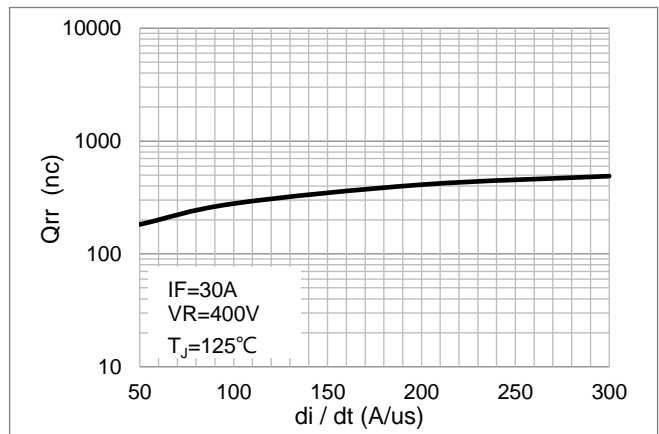
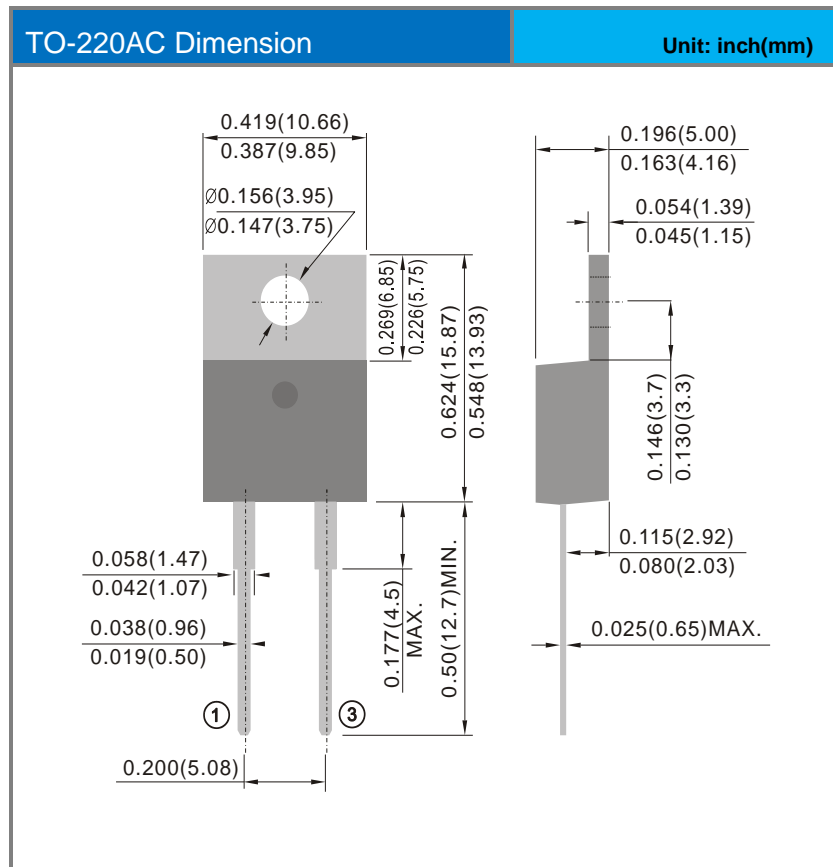


Fig.6 Typical Reverse Recovery Charges Versus di/dt

**Product and Packing Information**

| Part No.   | Package Type | Packing Type | Marking   |
|------------|--------------|--------------|-----------|
| PSDP3060S1 | TO-220AC     | 50pcs / Tube | SDP3060S1 |

**Packaging Information**



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