

Optima Diode - Low forward voltage drop, Fast Recovery Diode

| | | | |
|---------------------------|--------------|----------------------------|--------------|
| V_{RRM} | 600 V | I_F | 30 A |
| V_{F(TYP)} | 1.3 V | T_{RR(TYP)} | 75 ns |

Features

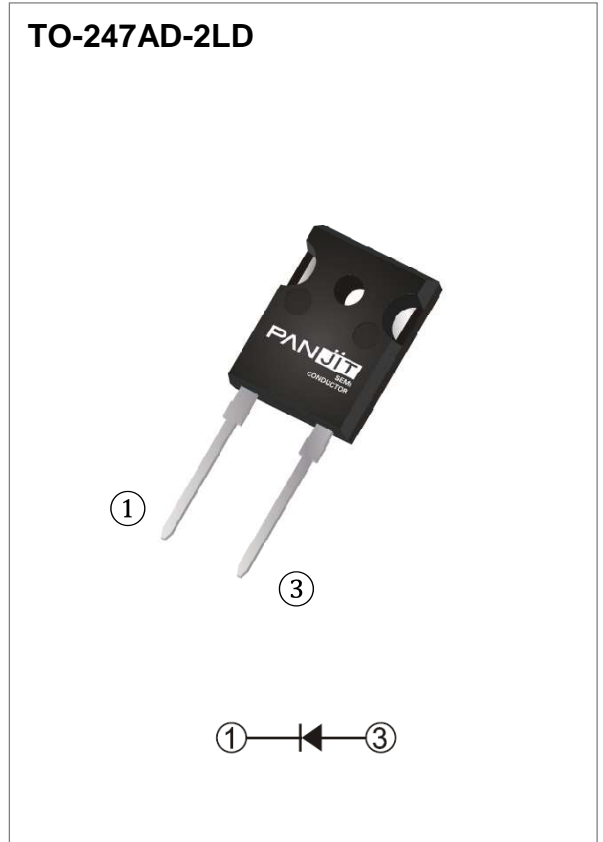
- Fast recovery
- Low forward voltage
- Optimized trade-off performance between V_F & T_{RR}
- Soft recovery characteristic for better EMI
- High junction temperature 150 °C
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

Mechanical Data

- Case: TO-247AD-2LD molded plastic
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.2136 ounces, 6.056 grams

Application

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



Maximum Ratings and Thermal Characteristics (T_C = 25 °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 =125°C | I _{F(AV)} | 30 | A |
| Repetitive Peak Surge Current <i>t_p = 8.3 ms, sine-wave, D=0.5</i> | I _{FRM} | 60 | A |
| Peak Forward Surge Current <i>t_p = 8.3 ms, single half sine-wave</i> | I _{FSM} | 270 | A |
| Maximum Power Dissipation | P _{total} | 179 | 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 | $I_F = 30\text{ A}, T_J = 25\text{ }^\circ\text{C}$ | - | 1.3 | 1.8 | V |
| | | $I_F = 30\text{ A}, T_J = 125\text{ }^\circ\text{C}$ | - | 1.2 | - | |
| Reverse leakage current | I_R | $V_R = 600\text{ V}, T_J = 25\text{ }^\circ\text{C}$ | - | - | 250 | μA |
| | | $V_R = 600\text{ V}, T_J = 125\text{ }^\circ\text{C}$ | - | - | 1 | mA |
| Reverse recovery time | T_{RR} | $I_F = 0.5\text{ A}, I_R = 1\text{ A},$ $I_{RR} = 0.25\text{ A}$ $T_J = 25\text{ }^\circ\text{C}$ | - | - | 55 | ns |
| | | $I_F = 1\text{ A}, V_R = 30\text{ V},$ $di/dt = 300\text{ A}/\mu\text{s},$ $T_J = 25\text{ }^\circ\text{C}$ | - | - | 40 | ns |
| Reverse recovery time | T_{RR} | $I_F = 30\text{ A}, V_R = 400\text{ V},$ $di/dt = 300\text{ A}/\mu\text{s},$ $T_J = 25\text{ }^\circ\text{C}$ | - | 75 | 115 | ns |
| Peak recovery current | I_{RRM} | | - | 6.6 | - | A |
| Reverse recovery charge | Q_{RR} | | - | 325 | - | nC |
| Softness factor = t_b / t_a | S | | - | 0.9 | - | |
| Reverse recovery time | T_{RR} | $I_F = 30\text{ A}, V_R = 400\text{ V},$ $di/dt = 300\text{ A}/\mu\text{s},$ $T_J = 125\text{ }^\circ\text{C}$ | - | 115 | - | ns |
| Peak recovery current | I_{RRM} | | - | 14.5 | - | A |
| Reverse recovery charge | Q_{RR} | | - | 1150 | - | nC |
| Softness factor = t_b / t_a | S | | - | 0.46 | - | |
| Thermal Resistance | $R_{\theta JC}$ | | - | - | 0.7 | $^\circ\text{C}/\text{W}$ |

TYPICAL CHARACTERISTIC CURVES

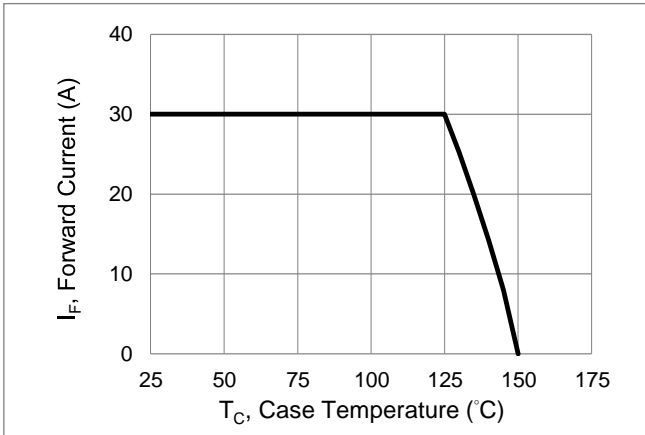


Fig.1 Forward Current Derating Curve

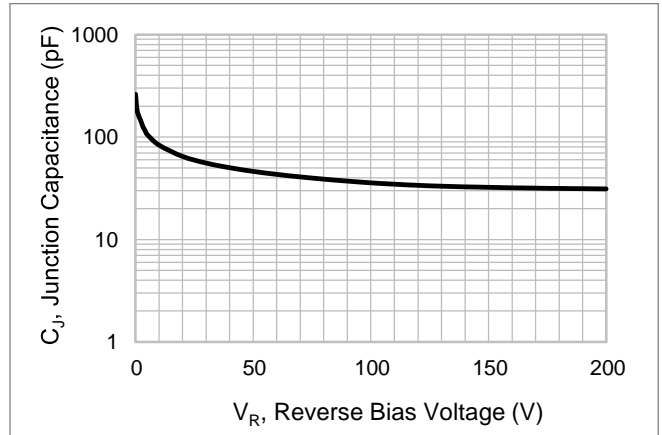


Fig.2 Typical Junction Capacitance

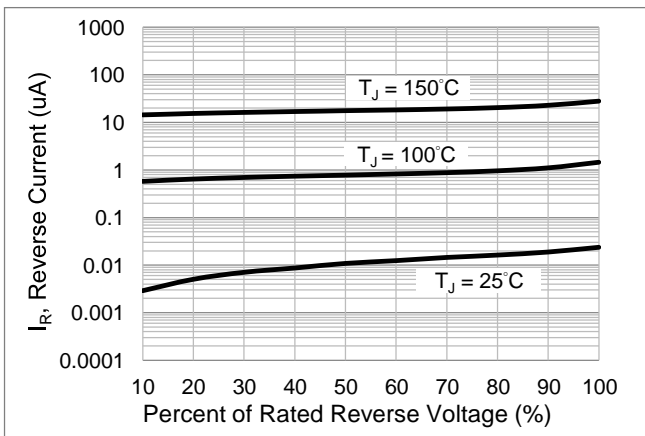


Fig.3 Typical Reverse Characteristics

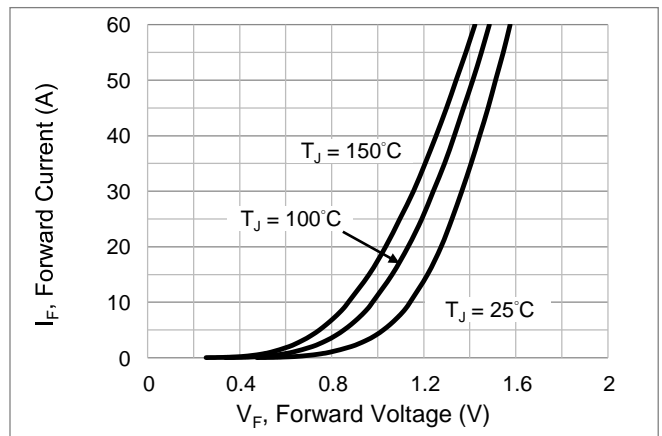


Fig.4 Typical Forward Characteristics

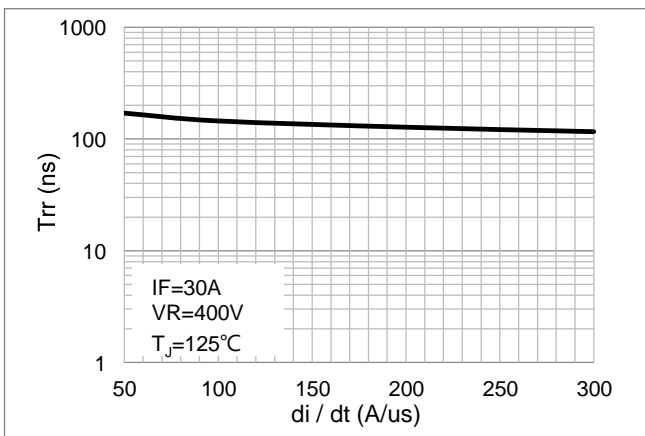


Fig.5 Typical Reverse Recovery Time Versus di/dt

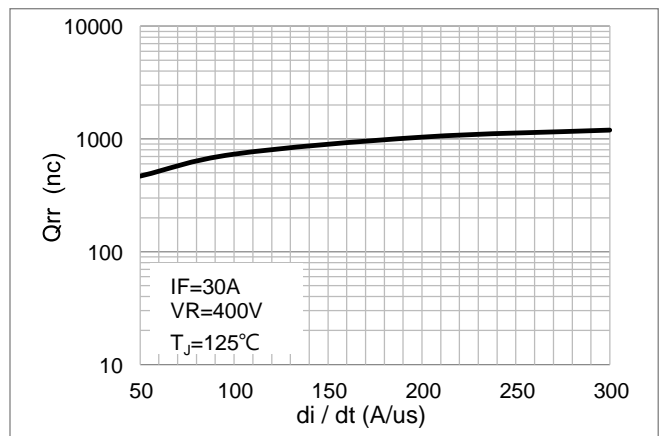


Fig.6 Typical Reverse Recovery Charges Versus di/dt

