Pb Free Plating Product

# UPA3060S

30.0 Ampere,600Volt SwitchMode Single Fast Recovery Epitaxial Diode

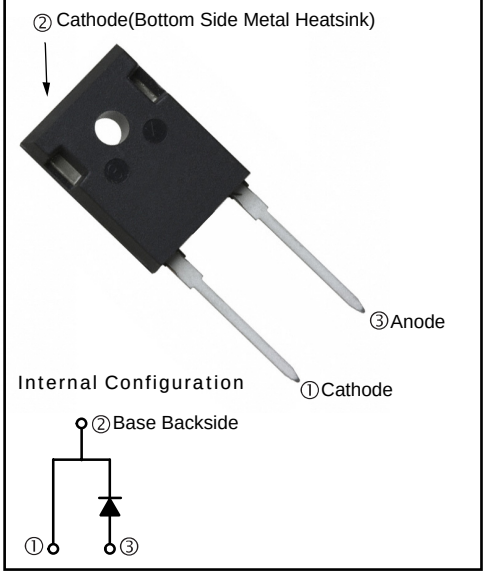
## APPLICATION

- Freewheeling, Snubber, Clamp
- Inversion Welder
- PFC
- Plating Power Supply
- Ultrasonic Cleaner and Welder
- Converter & Chopper
- UPS

## PRODUCT FEATURE

- Ultrafast Recovery Time
- Soft Recovery Characteristics
- Low Recovery Loss
- Low Forward Voltage
- High Surge Current Capability
- Low Leakage Current

TO-247-2L




## GENERAL DESCRIPTION

UPA3060S using the lastest FRED FAB process(planar passivation pellet) with ultrafast and soft recovery characteristics.

## ABSOLUTE MAXIMUM RATINGS

$T_C$=25°C unless otherwise specified

| Symbol | Parameter | Test Conditions | Values | Unit |
|---|---|---|---|---|
| $V_R$ | Maximum D.C. Reverse Voltage | | 600 | V |
| $V_{RRM}$ | Maximum Repetitive Reverse Voltage | | 600 | V |
| $I_{F(AV)}$ | Average Forward Current | $T_C$=110°C, Per Diode | 30 | A |
| $I_{F(RMS)}$ | RMS Forward Current | $T_C$=110°C, Per Diode | 42 | A |
| $I_{FSM}$ | Non-Repetitive Surge Forward Current | $T_J$=45°C, t=10ms, 50Hz, Sine | 300 | A |
| $P_D$ | Power Dissipation | | 156 | W |
| $T_J$ | Junction Temperature | | -40 to +150 | °C |
| $T_{STG}$ | Storage Temperature Range | | -40 to +150 | °C |
| Torque | Module-to-Sink | Recommended（M3） | 1.1 | N·m |
| $R_{\theta JC}$ | Thermal Resistance | Junction-to-Case | 0.8 | °C /W |
| Weight | | | 6.0 | g |

## ELECTRICAL CHARACTERISTICS

$T_C$=25°C unless otherwise specified

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{RM}$ | Reverse Leakage Current | $V_R$=600V | -- | -- | 15 | μA |
| | | $V_R$=600V, $T_J$=125°C | -- | -- | 250 | μA |
| $V_F$ | Forward Voltage | $I_F$=30A | -- | 2.0 | -- | V |
| | | $I_F$=30A, $T_J$=125°C | -- | 1.65 | -- | V |
| $t_{rr}$ | Reverse Recovery Time | $I_F$=1A, $V_R$=30V, $di_F/dt$=-200A/μs | -- | 22 | -- | ns |
| $t_{rr}$ | Reverse Recovery Time | $V_R$=300V, $I_F$=30A | -- | 35 | -- | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt$=-200A/μs, $T_J$=25°C | -- | 2.5 | -- | A |
| $t_{rr}$ | Reverse Recovery Time | $V_R$=300V, $I_F$=30A | -- | 110 | -- | ns |
| $I_{RRM}$ | Max. Reverse Recovery Current | $di_F/dt$=-200A/μs, $T_J$=125°C | -- | 7.0 | -- | A |



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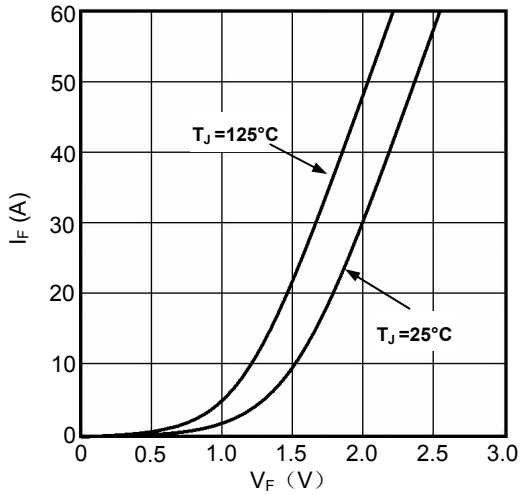



Fig1. Forward Voltage Drop vs Forward Current

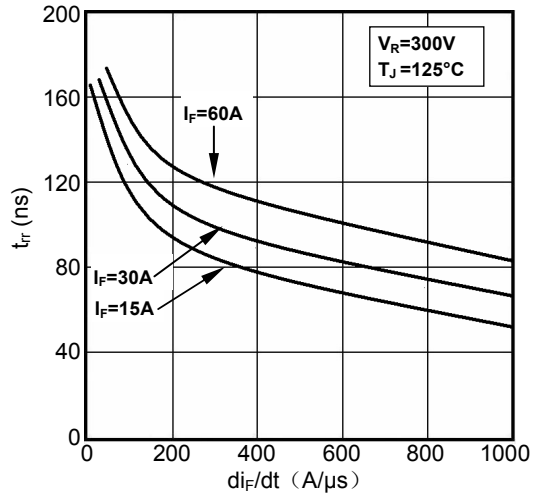



Fig2. Reverse Recovery Time vs $di_F/dt$

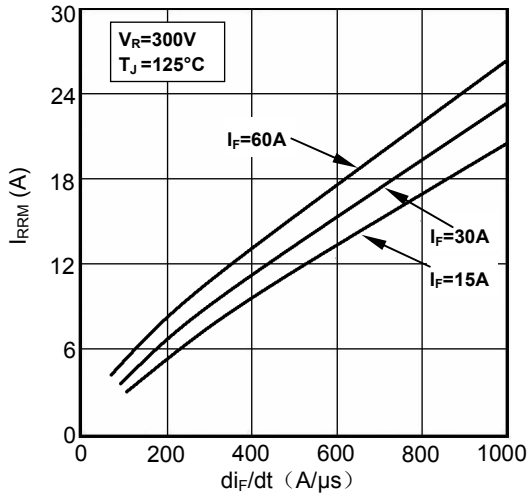



Fig3. Reverse Recovery Current vs $di_F/dt$

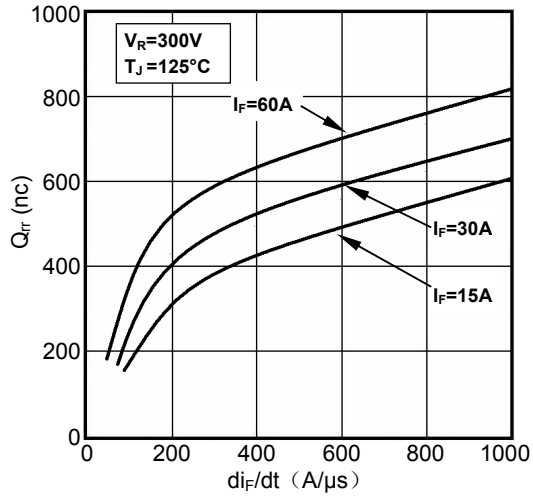



Fig4. Reverse Recovery Charge vs $di_F/dt$

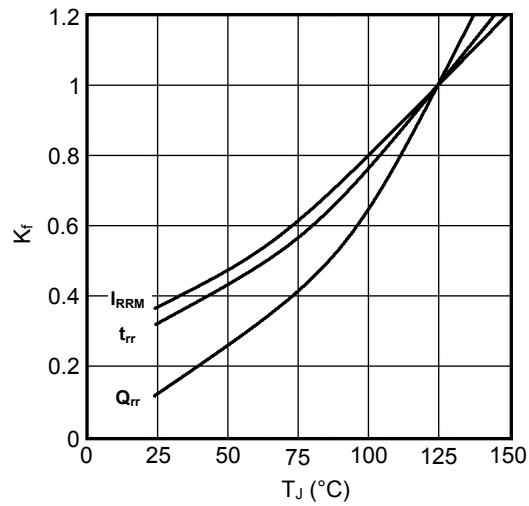



Fig5. Dynamic Parameters vs Junction Temperature

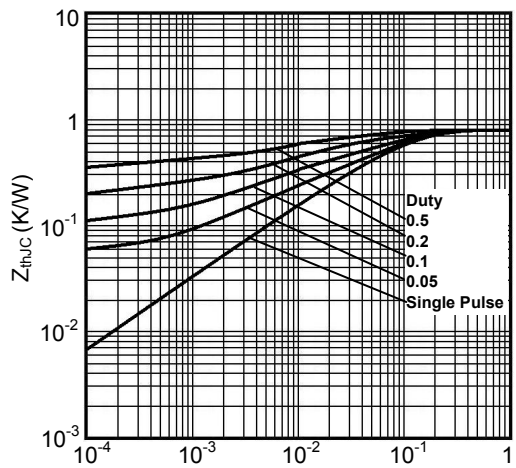



Fig6. Transient Thermal Impedance



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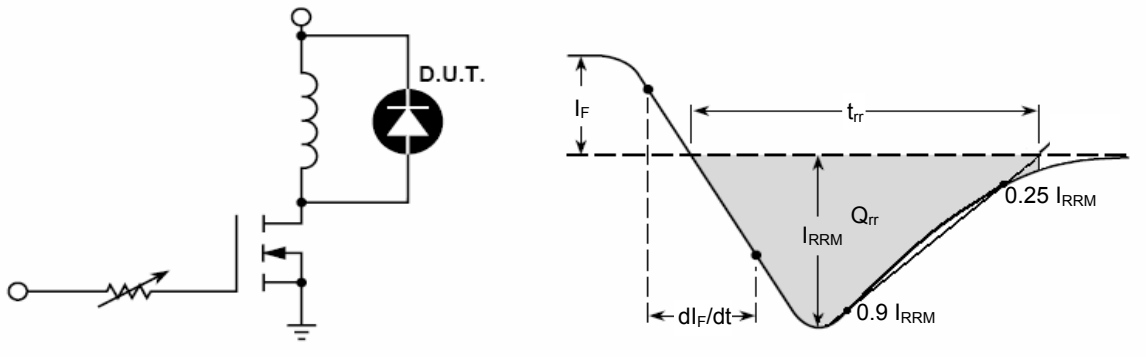
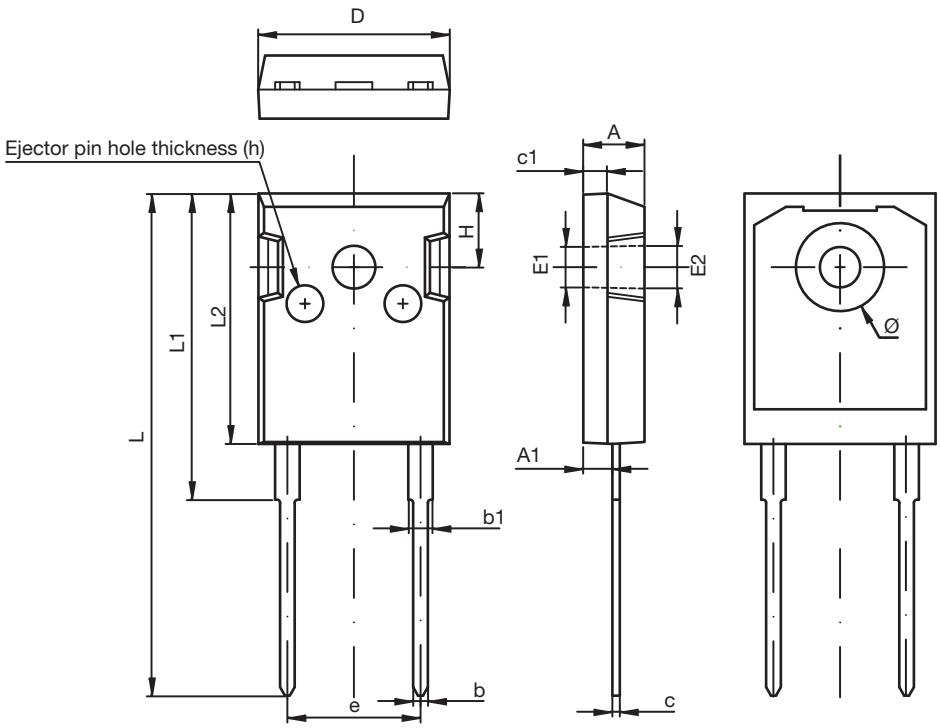



Fig7. Diode Reverse Recovery Test Circuit and Waveform




## TO-247-2L DIMENSIONS

| SYMBOL | DIMENSIONS IN MILLIMETERS | | DIMENSIONS IN INCHES | |
|---|---|---|---|---|
| | MIN. | MAX. | MIN. | MAX. |
| A | 4.850 | 5.150 | 0.191 | 0.200 |
| A1 | 2.200 | 2.600 | 0.087 | 0.102 |
| b | 1.000 | 1.400 | 0.039 | 0.055 |
| b1 | 1.800 | 2.200 | 0.071 | 0.087 |
| c | 0.500 | 0.700 | 0.020 | 0.028 |
| c1 | 1.900 | 2.100 | 0.075 | 0.083 |
| D | 15.450 | 15.750 | 0.608 | 0.620 |
| E1 | 3.500 Ref. | | 0.138 Ref. | |
| E2 | 3.600 Ref. | | 0.142 Ref. | |
| L | 40.900 | 41.300 | 1.610 | 1.626 |
| L1 | 24.800 | 25.100 | 0.976 | 0.988 |
| L2 | 20.300 | 20.600 | 0.799 | 0.811 |
| Ø | 7.100 | 7.300 | 0.280 | 0.287 |
| e | 10.900 Typ. | | 0.429 Typ. | |
| H | 5.980 Typ. | | 0.235 Typ. | |
| h | 0.000 | 0.300 | 0.000 | 0.012 |



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