

TO-220-2L Plastic-Encapsulate Diode

MUR30HR60 HYPERFAST RECTIFIER, FRED

MAIN CHARACTERISTICS

| | |
|--------------|--|
| I_o | 30A |
| V_{RRM} | 600V |
| T_{rr} | 22ns |
| T_j | 175°C |
| $V_{F(typ)}$ | 1.4V(@$T_j=150^\circ\text{C}$) |

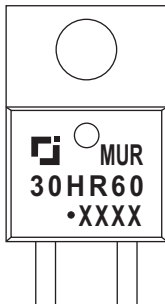
FEATURES

- Ultrafast Recovery Times and Low Recovery Loss
- Low Forward Voltage
- Low Reverse Leakage Current

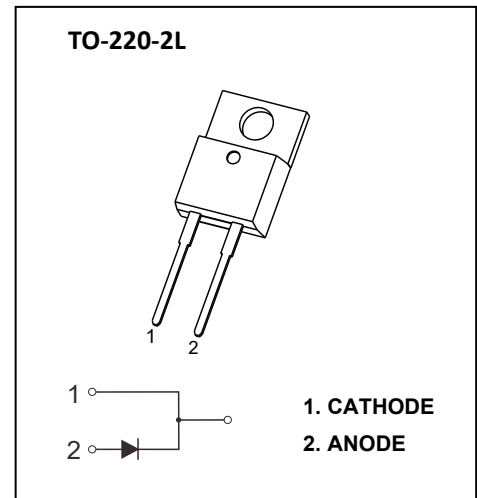
APPLICATIONS

Specifically designed to improve efficiency of PFC and output rectification stages of EV / HEV battery charging stations, booster stage of solar inverters and UPS applications, these devices are perfectly matched to operate with MOSFETs or high speed IGBTs.

MARKING



MUR30HR60= Device code
 Solid dot = Green molding compound device
 if none, the normal device
 XXXX = Code



MAXIMUM RATINGS ($T_c=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | MUR30HR60 | Unit |
|-----------------|--|------------|--------------------|
| V_{RRM} | Peak Repetitive Reverse Voltage | 600 | V |
| V_R | DC Blocking Voltage | | |
| $I_{F(AV)}$ | Average Forward Current($T_c=141^\circ\text{C}$) | 30 | A |
| $I_{F(RMS)}$ | RMS Forward Current($T_c=141^\circ\text{C}$) | 42 | A |
| I_{FSM} | Non-Repetitive Surge Forward Current (8.3ms) | 340 | A |
| P_D | Power dissipation | 188 | W |
| $R_{\theta JC}$ | Thermal Resistance From Junction to Case | 0.8 | $^\circ\text{C/W}$ |
| T_j | Operating Junction Temperature Range | -55 ~ +175 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | -55 ~ +175 | $^\circ\text{C}$ |

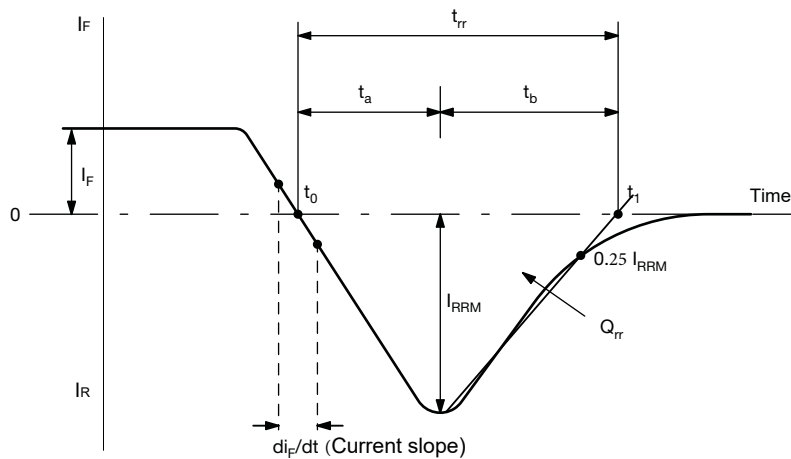
Typical Characteristics

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|------------|-----------------------|--|-------------------------|------|------|---------------|
| $V_{(BR)}$ | Reverse Voltage | $I_R=100\mu\text{A}$ | 600 | | | V |
| I_R | Reverse Current | $V_R=600\text{V}$ | $T_J=25^\circ\text{C}$ | | 1.0 | μA |
| | | | $T_J=150^\circ\text{C}$ | | 5.0 | mA |
| V_F | Forward Voltage | $I_F=30\text{A}$ | $T_J=25^\circ\text{C}$ | 2.2 | 2.6 | V |
| | | | $T_J=150^\circ\text{C}$ | 1.4 | | V |
| C_{tot} | Total Capacitance | $V_R=200\text{V}, f=1\text{MHz}$ | | 44 | | pF |
| t_{rr} | Reverse Recovery time | $I_F=0.5\text{A}, I_R=1\text{A}, I_{rr}=0.25\text{A}$ | | 25 | | ns |
| | | $I_F=1\text{A}, V_R=30\text{V}, di_F/dt = 200\text{A}/\mu\text{s}$ | | 22 | | ns |

ELECTRICAL CHARACTERISTICS ($T_c=25^\circ\text{C}$ unless otherwise specified)

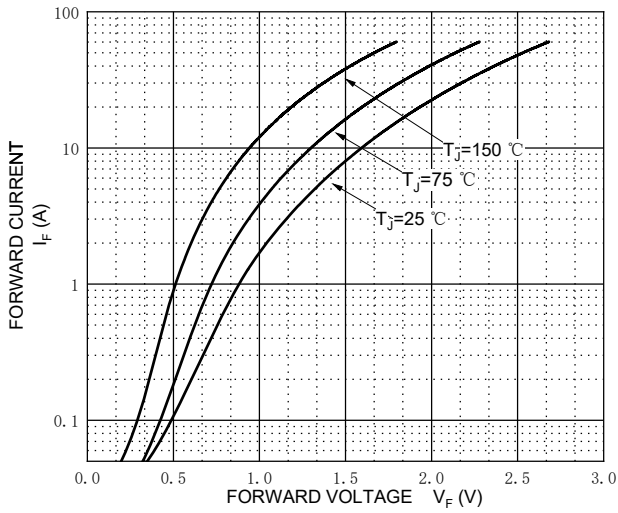
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------|-------------------------------|---|------|------|------|-------------|
| t_{rr} | Reverse Recovery Time | $I_F=30\text{A}, V_R=400\text{V}, di_F/dt=200\text{A}/\mu\text{s}$ | | 33 | | ns |
| I_{RRM} | Max. Reverse Recovery Current | | | 2.0 | | A |
| Q_{rr} | Reverse Recovery Charge | | | 42 | | nC |
| t_{rr} | Reverse Recovery Time | $I_F=30\text{A}, V_R=400\text{V}, di_F/dt=200\text{A}/\mu\text{s}, T_J=125^\circ\text{C}$ | | 104 | | ns |
| I_{RRM} | Max. Reverse Recovery Current | | | 7.0 | | A |
| Q_{rr} | Reverse Recovery Charge | | | 423 | | nC |
| t_{rr} | Reverse Recovery Time | $I_F=30\text{A}, V_R=400\text{V}, di_F/dt=600\text{A}/\mu\text{s}, T_J=125^\circ\text{C}$ | | 59 | | ns |
| I_{RRM} | Max. Reverse Recovery Current | | | 20.3 | | A |
| Q_{rr} | Reverse Recovery Charge | | | 672 | | nC |



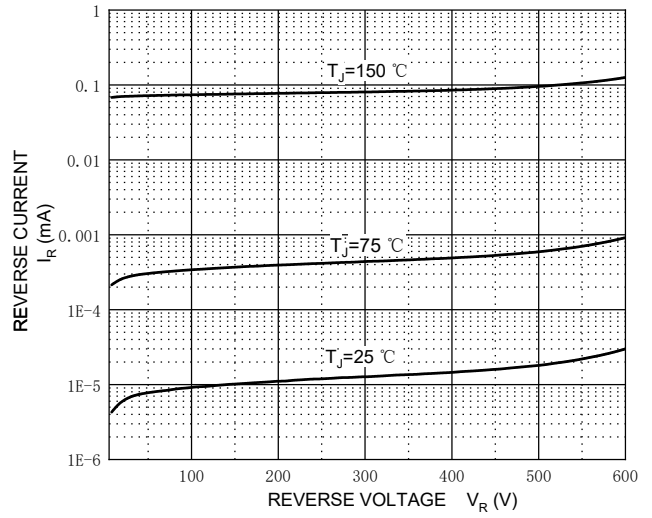
Reverse Recovery Waveform and Definitions

Typical Characteristics

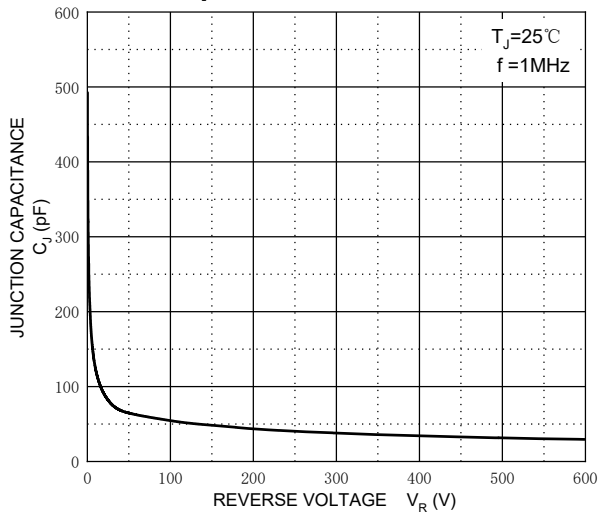
Forward Characteristics



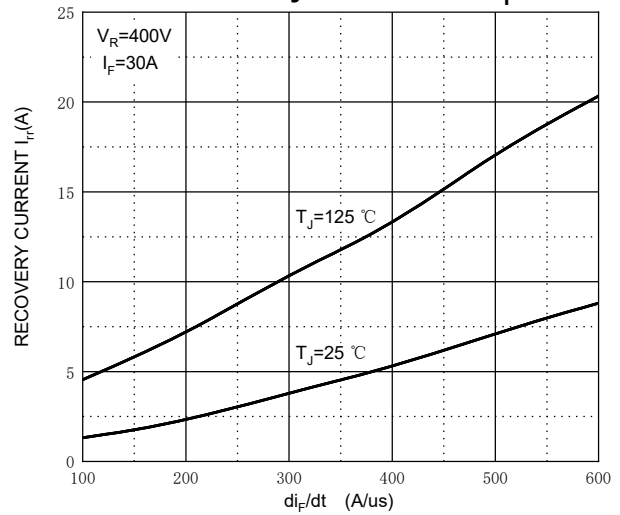
Reverse Characteristics



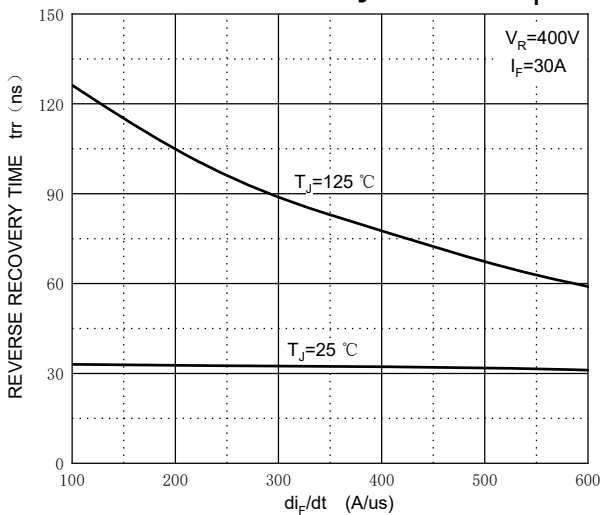
Capacitance Characteristics



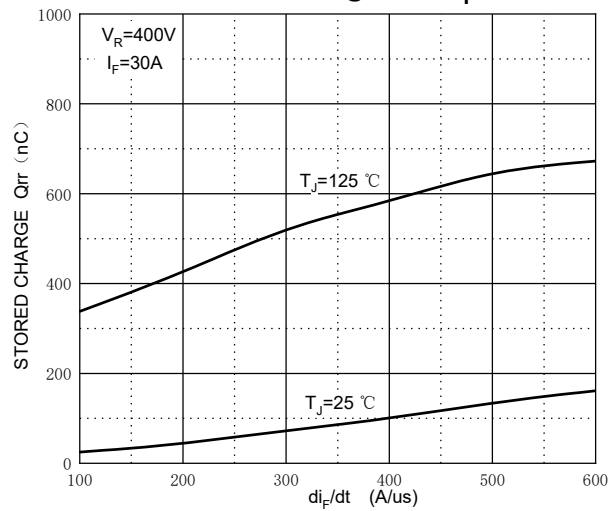
Recovery Current vs. di_F/dt



Reverse Recovery Time vs. di_F/dt

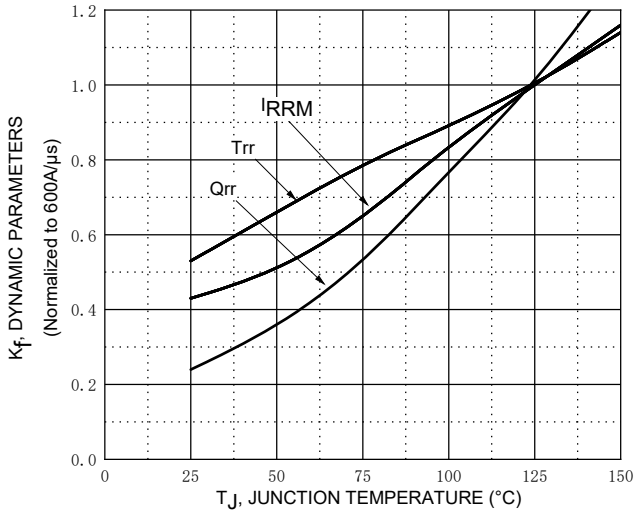


Stored Charge vs. di_F/dt

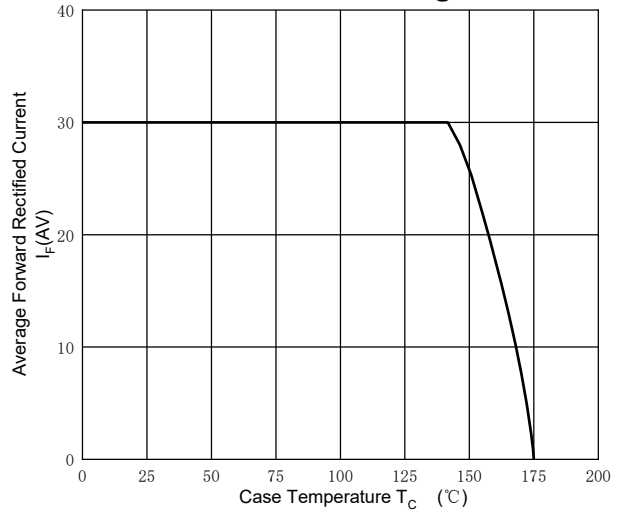


Typical Characteristics

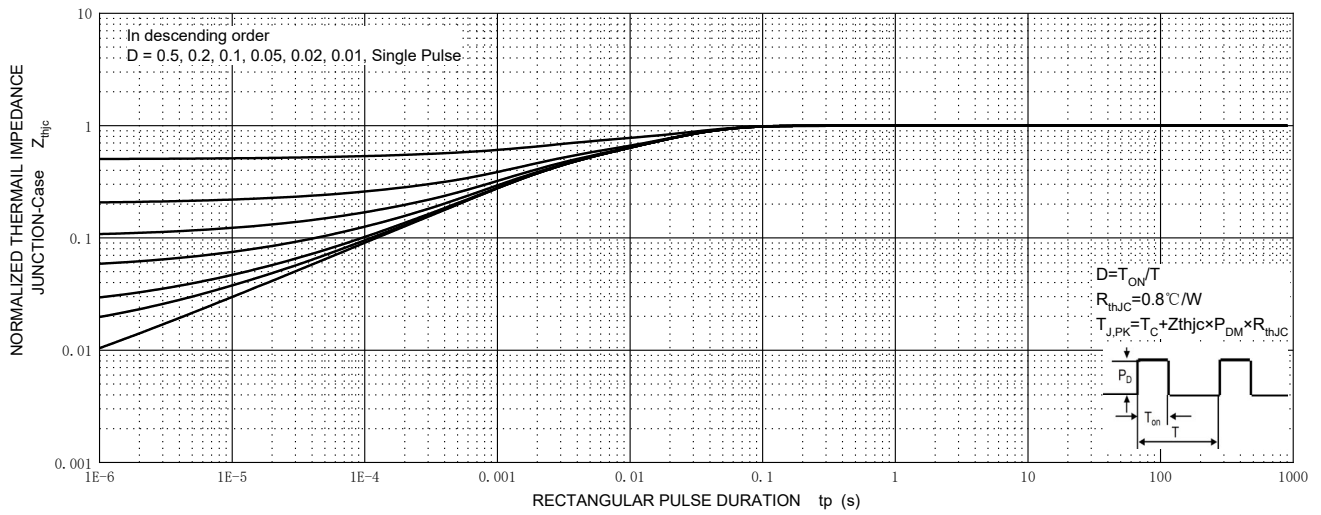
Dynamic Parameters vs. Junction Temperature



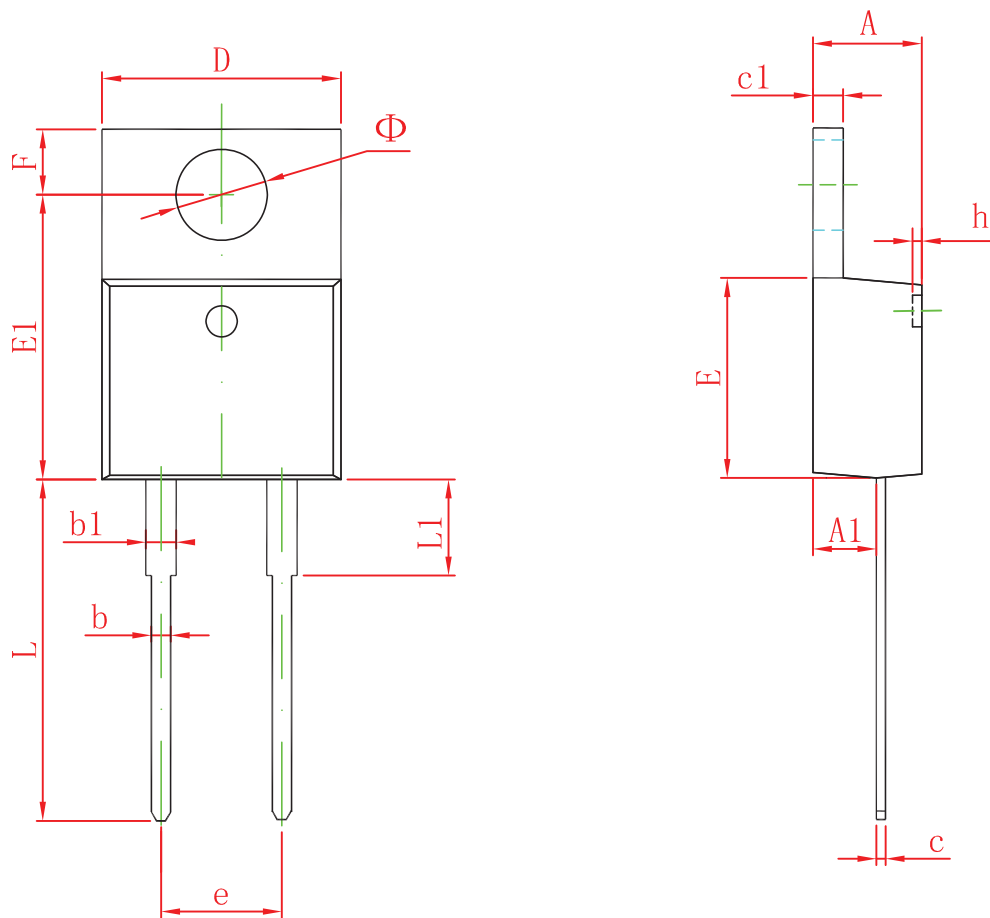
Current Derating



MUR30HR60 Transient Thermal Impedance, Junction-Case



TO-220-2L Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.450 | 4.750 | 0.175 | 0.187 |
| A1 | 2.520 | 2.820 | 0.099 | 0.111 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.300 | 0.500 | 0.012 | 0.020 |
| c1 | 1.170 | 1.370 | 0.046 | 0.054 |
| D | 9.830 | 10.330 | 0.387 | 0.407 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| E1 | 12.050 | 12.650 | 0.474 | 0.498 |
| e | 5.080 TYP | | 0.200 TYP | |
| F | 2.540 | 2.940 | 0.100 | 0.116 |
| h | 0.100 TYP | | 0.004 TYP | |
| L | 13.300 | 13.800 | 0.523 | 0.543 |
| L1 | 3.540 | 3.940 | 0.139 | 0.155 |
| Φ | 3.735 | 3.935 | 0.147 | 0.155 |