

| | | |
|-------------------------------|---|--------|
| V_{RRM} | = | 1200 V |
| $I_F (T_c=135^\circ\text{C})$ | = | 12 A |
| Q_c | = | 37 nC |

Features

- 1.2kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F

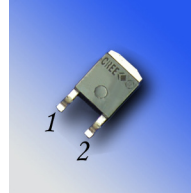
Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Solar Inverters
- UPS
- Motor Drives
- Power Factor Correction

Package



TO-252-2



| Part Number | Package | Marking |
|-------------|----------|------------|
| LG4D08120E | TO-252-2 | LG4D08120E |

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

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|-------------|---|-----------------|------------------|---|------|
| V_{RRM} | Repetitive Peak Reverse Voltage | 1200 | V | | |
| V_{RSM} | Surge Peak Reverse Voltage | 1300 | V | | |
| V_{DC} | DC Blocking Voltage | 1200 | V | | |
| I_F | Continuous Forward Current | 24.5 12 8 | A | $T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=155^\circ\text{C}$ | |
| I_{FRM} | Repetitive Peak Forward Surge Current | 38 26 | A | $T_c=25^\circ\text{C}$, $t_p=10$ ms, Half Sine pulse $T_c=110^\circ\text{C}$, $t_p=10$ ms, Half Sine pulse | |
| I_{FSM} | Non-Repetitive Peak Forward Surge Current | 64 50 | A | $T_c=25^\circ\text{C}$, $t_p=10$ ms, Half Sine pulse $T_c=110^\circ\text{C}$, $t_p=10$ ms, Half Sine pulse | |
| $I_{F,Max}$ | Non-Repetitive Peak Forward Current | 600 480 | A | $T_c=25^\circ\text{C}$, $t_p=10$ μs , Pulse $T_c=110^\circ\text{C}$, $t_p=10$ μs , Pulse | |
| P_{tot} | Power Dissipation | 137 59 | W | $T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$ | |
| T_j | Operating Junction Range | -55 to +175 | $^\circ\text{C}$ | | |
| T_{stg} | Storage Temperature Range | -55 to +135 | $^\circ\text{C}$ | | |

Electrical Characteristics

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions | Note |
|--------|-------------------------|-----------------|------------|---------------|--|------|
| V_F | Forward Voltage | 1.5 2.2 | 1.8 3 | V | $I_F = 2\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 2\text{ A}$ $T_J = 175^\circ\text{C}$ | |
| I_R | Reverse Current | 35 100 | 250 350 | μA | $V_R = 1200\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1200\text{ V}$ $T_J = 175^\circ\text{C}$ | |
| Q_C | Total Capacitive Charge | 37 | | nC | $V_R = 800\text{ V}$, $I_F = 2\text{ A}$ $di/dt = 200\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$ | |
| C | Total Capacitance | 560 37 27 | | pF | $V_R = 0\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 400\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 800\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ | |

Note:

1. This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

| Symbol | Parameter | Typ. | Unit |
|-----------------|---|------|---------------------------|
| $R_{\theta JC}$ | TO-252 Package Thermal Resistance from Junction to Case | 1.1 | $^\circ\text{C}/\text{W}$ |

Typical Performance

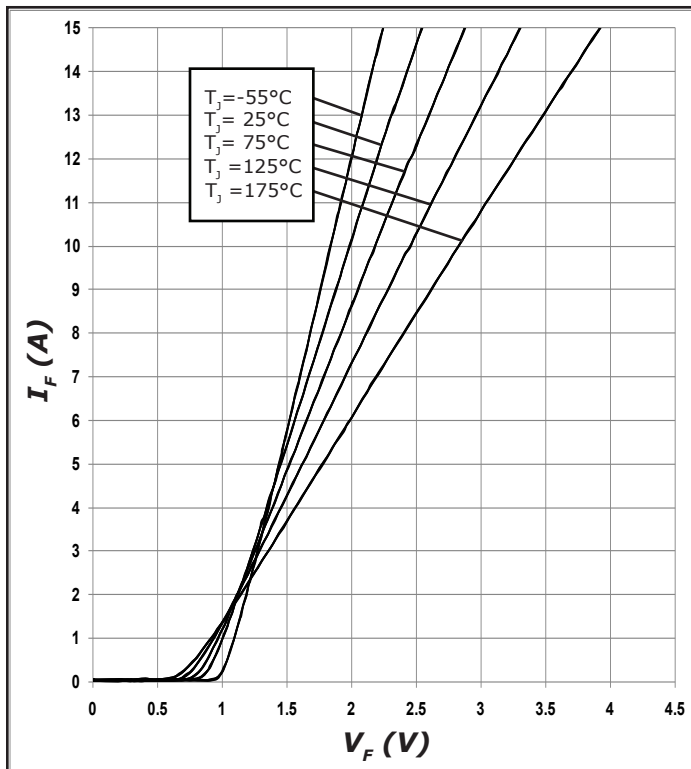


Figure 1. Forward Characteristics

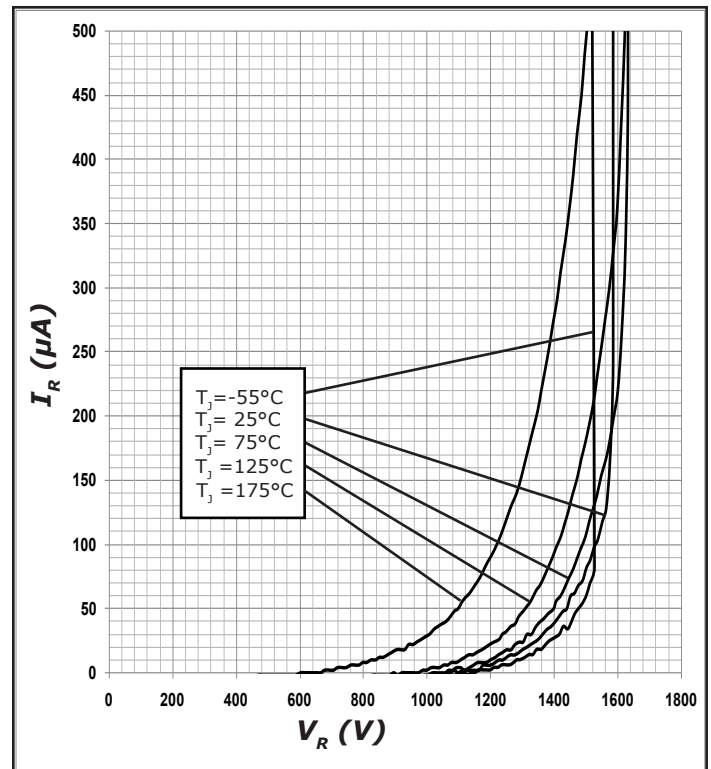


Figure 2. Reverse Characteristics

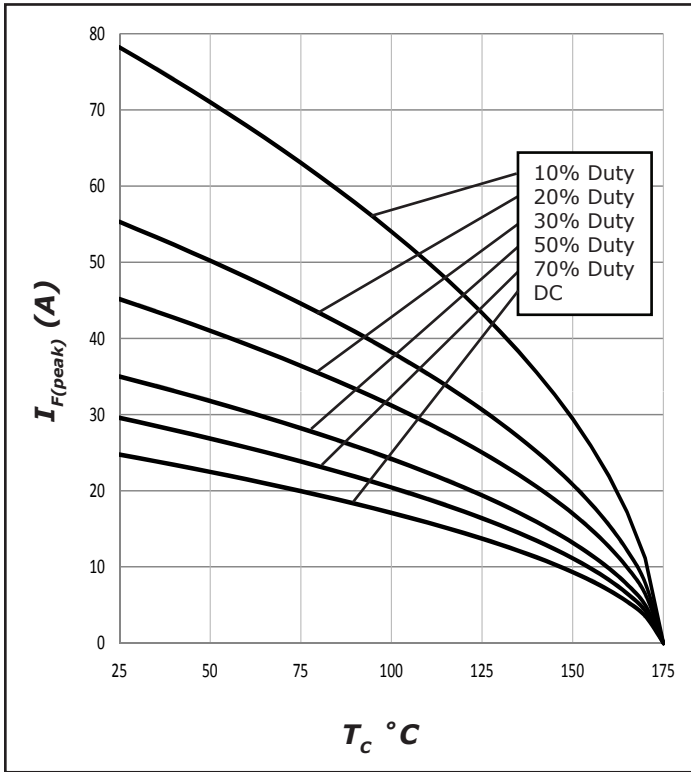


Figure 3. Current Derating

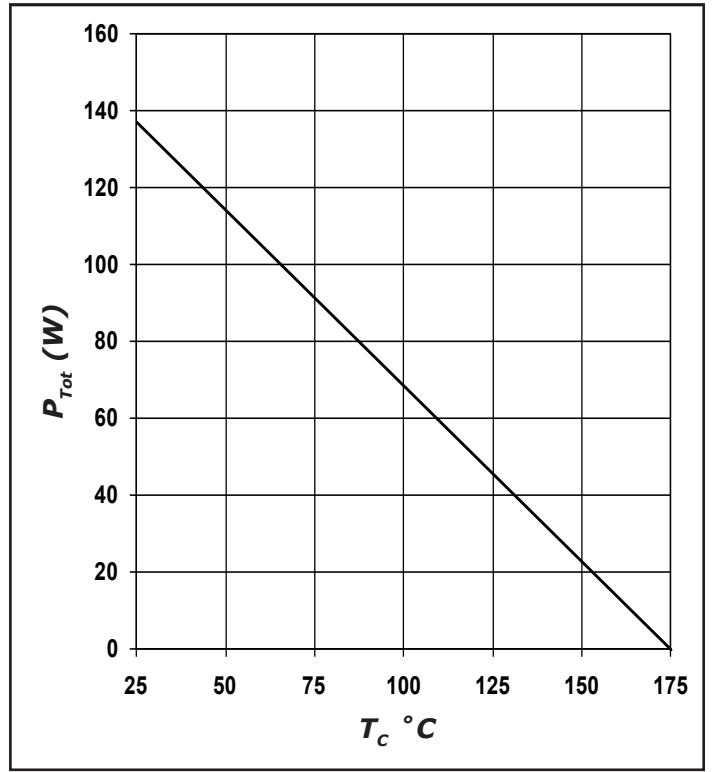


Figure 4. Power Derating

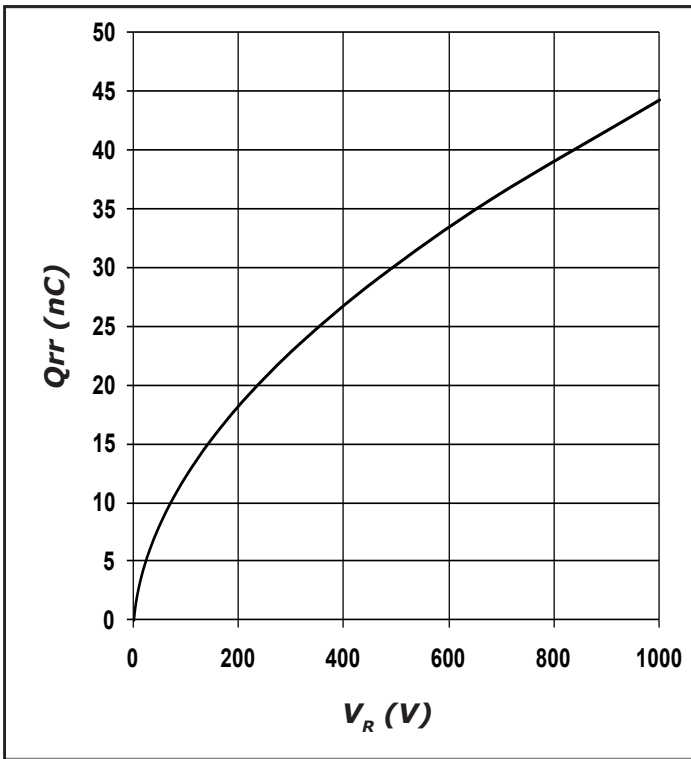


Figure 5. Recovery Charge vs. Reverse Voltage

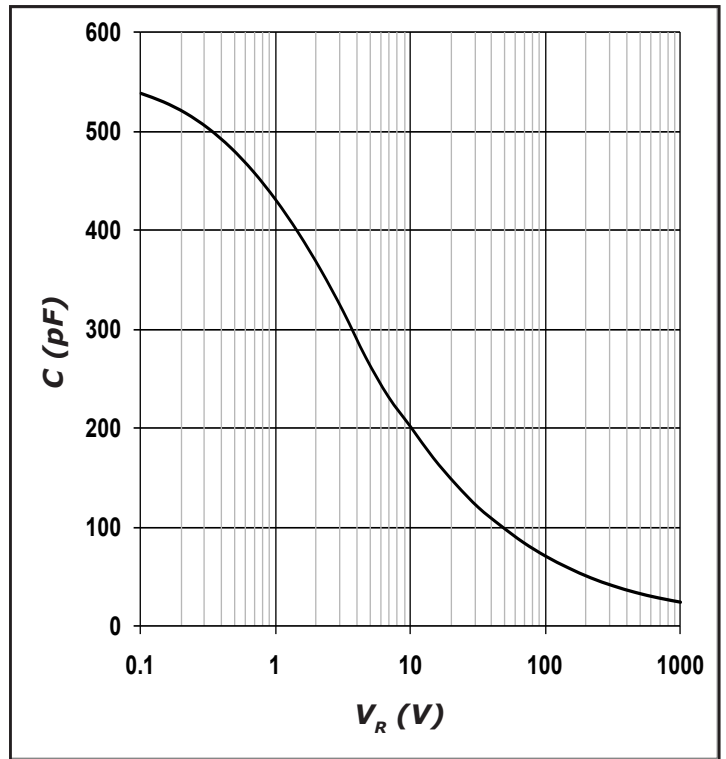


Figure 6. Capacitance vs. Reverse Voltage

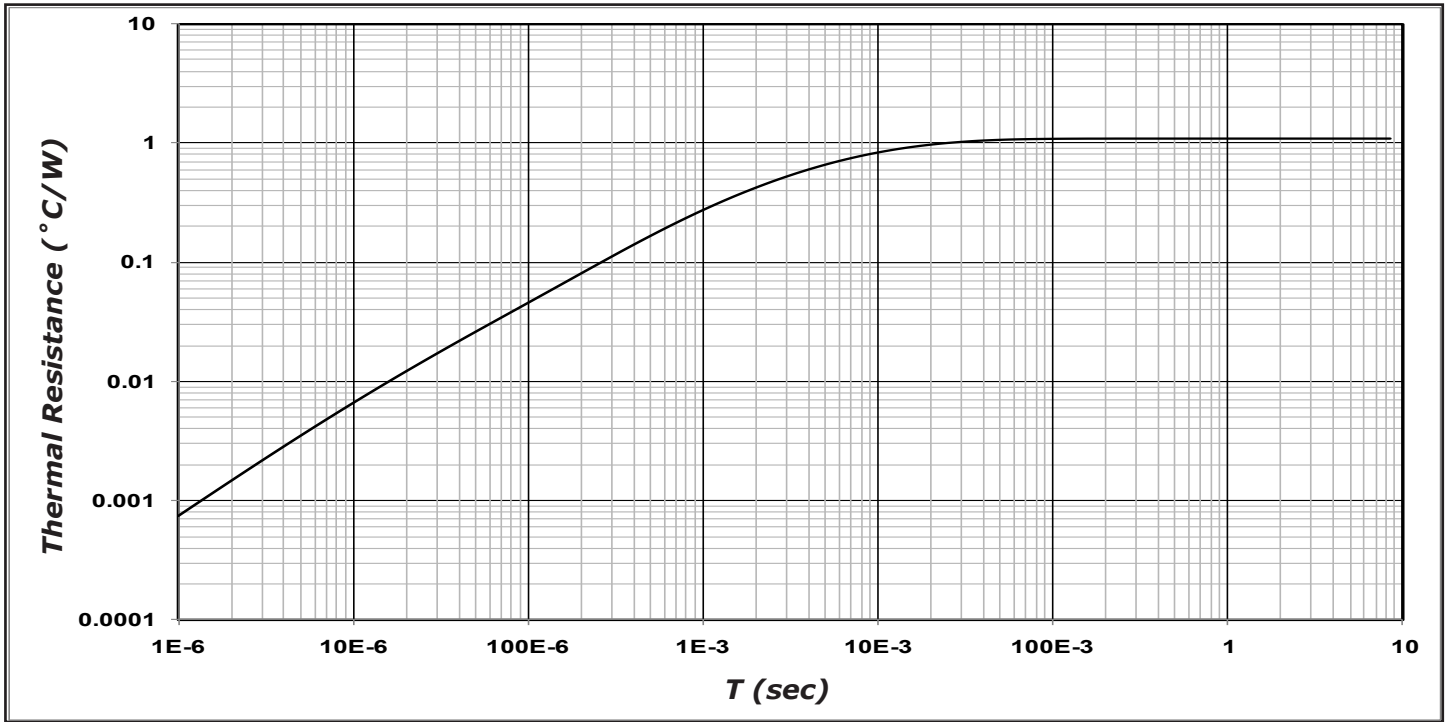
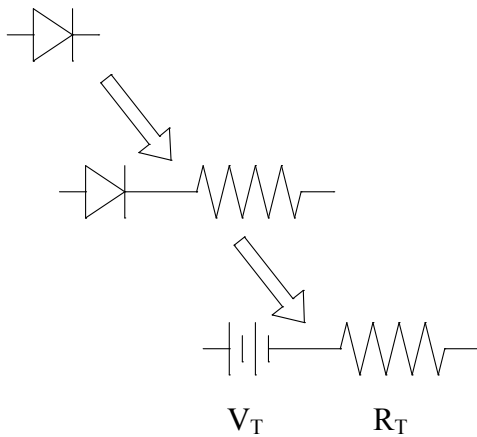


Figure 7. Transient Thermal Impedance

Diode Model



$$V_{FT} = V_T + I_f * R_T$$

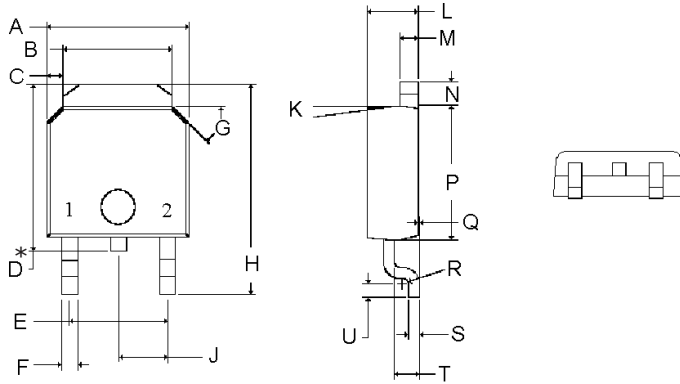
$$V_T = 0.96 + (T_j * -2.1 * 10^{-3})$$

$$R_T = 0.06 + (T_j * 8.0 * 10^{-4})$$

Note: T_j = Diode Junction Temperature In Degrees Celsius, valid from 25°C to 175°C

Package Dimensions

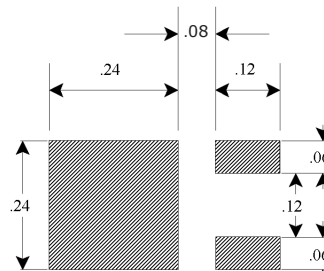
Package TO-252-2



| POS | Inches | | Millimeters | |
|-----|------------|------|-------------|--------|
| | Min | Max | Min | Max |
| A | .250 | .289 | 6.350 | 7.341 |
| B | .197 | .215 | 5.004 | 5.461 |
| C | .027 | .050 | .686 | 1.270 |
| D* | .270 | .322 | 6.858 | 8.179 |
| E | .178 | .182 | 4.521 | 4.623 |
| F | .025 | .045 | .635 | 1.143 |
| G | 44° | 46° | 44° | 46° |
| H | .380 | .410 | 9.652 | 10.414 |
| J | .090 TYP | | 2.286 TYP | |
| K | 6° | 8° | 6° | 8° |
| L | .086 | .094 | 2.184 | 2.388 |
| M | .018 | .034 | .457 | .864 |
| N | .035 | .050 | .889 | 1.270 |
| P | .231 | .246 | 5.867 | 6.248 |
| Q | 0.00 | .005 | 0.00 | .127 |
| R | R0.010 TYP | | R0.254 TYP | |
| S | .017 | .023 | .432 | .584 |
| T | .038 | .045 | .965 | 1.143 |
| U | .021 | .029 | .533 | .737 |

Note:
* Tab "D" may not be present

Recommended Solder Pad Layout



TO-252-2

| Part Number | Package | Marking |
|-------------|----------|----------|
| LG4D08120E | TO-252-2 | C4D05120 |