

H3D08065B2-Silicon Carbide Schottky Diode (Version 1.1)

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature

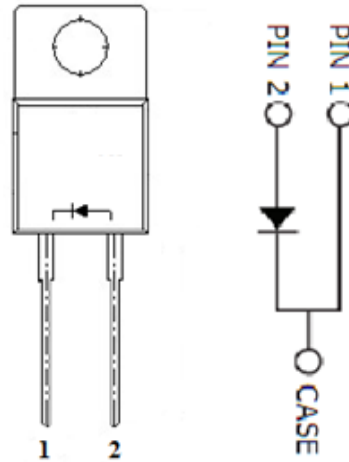
| Product Overview | | |
|-----------------------------------|-----|----|
| V_{RRM} | 650 | V |
| $I_F, T_C \leq 155^\circ\text{C}$ | 8 | A |
| Q_C | 22 | nC |

Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station



| Part Number | Package | Marking |
|-------------|---------|------------|
| H3D08065B2 | TO-220 | H3D08065B2 |

Maximum Ratings

| Symbol | Parameter | Value | Unit | Test Conditions |
|-----------|---------------------------------|-------|------|--------------------------|
| V_{RRM} | Repetitive Peak Reverse Voltage | 650 | V | $T_C = 25^\circ\text{C}$ |
| V_{RSM} | Surge Peak Reverse Voltage | 650 | V | $T_C = 25^\circ\text{C}$ |

| | | | | |
|----------------|--------------------------------------------|------------|------------------|------------------------------------------------------------------|
| V_R | DC Blocking Voltage | 650 | V | $T_C = 25^\circ\text{C}$ |
| I_F | Forward Current | 8 | A | $T_C \leq 155^\circ\text{C}$ |
| | | 13 | A | $T_C \leq 135^\circ\text{C}$ |
| I_{FRM} | Non-Repetitive Forward Surge Current | 70 | A | $T_C = 25^\circ\text{C}$, $t_p = 8.3\text{ms}$, Half Sine Wave |
| T_C | Maximum Case Temperature | 155 | $^\circ\text{C}$ | |
| T_J, T_{STG} | Operating Junction and Storage Temperature | -55 to 175 | $^\circ\text{C}$ | |

Electrical Characteristics

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions |
|--------|-------------------------|------|------|---------------|--------------------------------------------------------------------------------------------------------|
| V_F | Forward Voltage | 1.42 | 1.65 | V | $I_F = 8\text{A}$, $T_J = 25^\circ\text{C}$ |
| | | 1.75 | 2.3 | | $I_F = 8\text{A}$, $T_J = 175^\circ\text{C}$ |
| I_R | Reverse Current | 1 | 20 | μA | $V_R = 650\text{V}$, $T_J = 25^\circ\text{C}$ |
| | | 5 | 100 | | $V_R = 650\text{V}$, $T_J = 175^\circ\text{C}$ |
| C | Total Capacitance | 520 | / | pF | $V_R = 0\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ |
| | | 50 | / | | $V_R = 200\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ |
| | | 41 | / | | $V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{MHz}$ |
| Q_C | Total Capacitive Charge | 22 | / | nC | $V_R = 650\text{V}$, $I_F = 8\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$, $T_J = 25^\circ\text{C}$ |

Thermal Characteristics

| Symbol | Parameter | Typ. | Unit |
|-----------------|------------------------------------------|------|---------------------------|
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 1.4 | $^\circ\text{C}/\text{W}$ |

Typical Performance

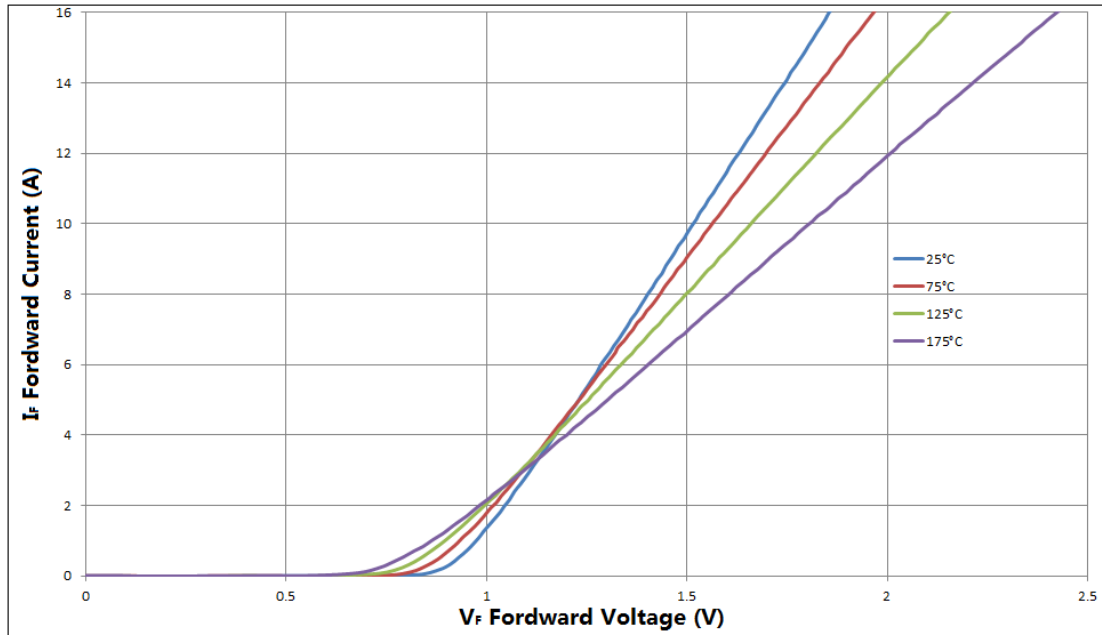


Figure 1. Forward Characteristics

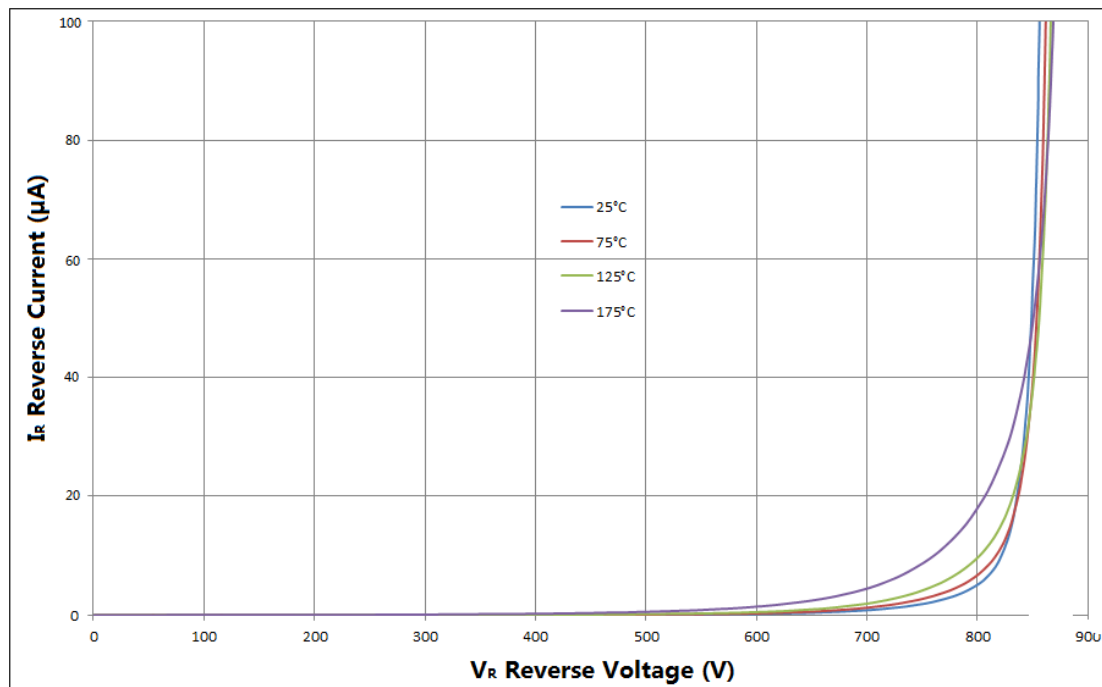


Figure 2. Reverse Characteristics

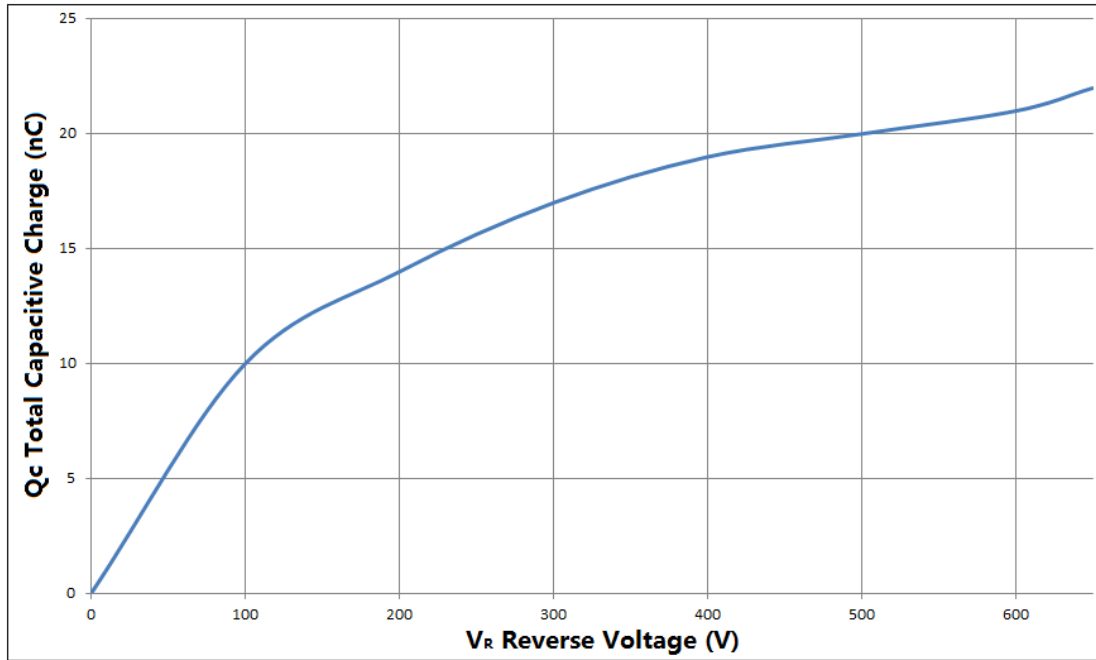


Figure 3. Total Capacitive Charge vs. Reverse Voltage

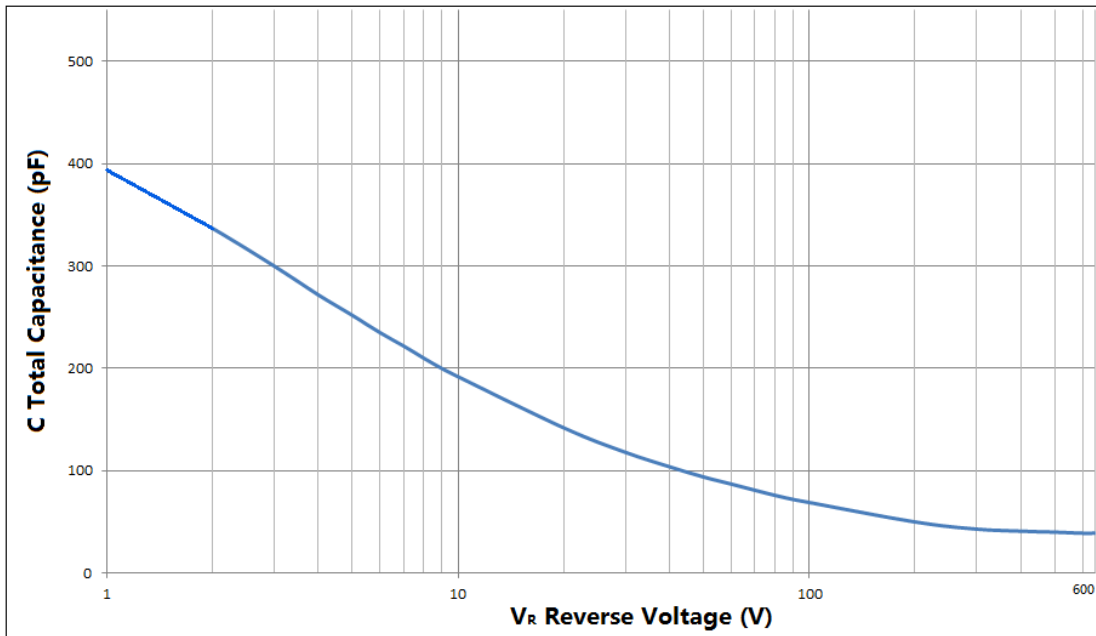


Figure 4. Total Capacitance vs. Reverse Voltage

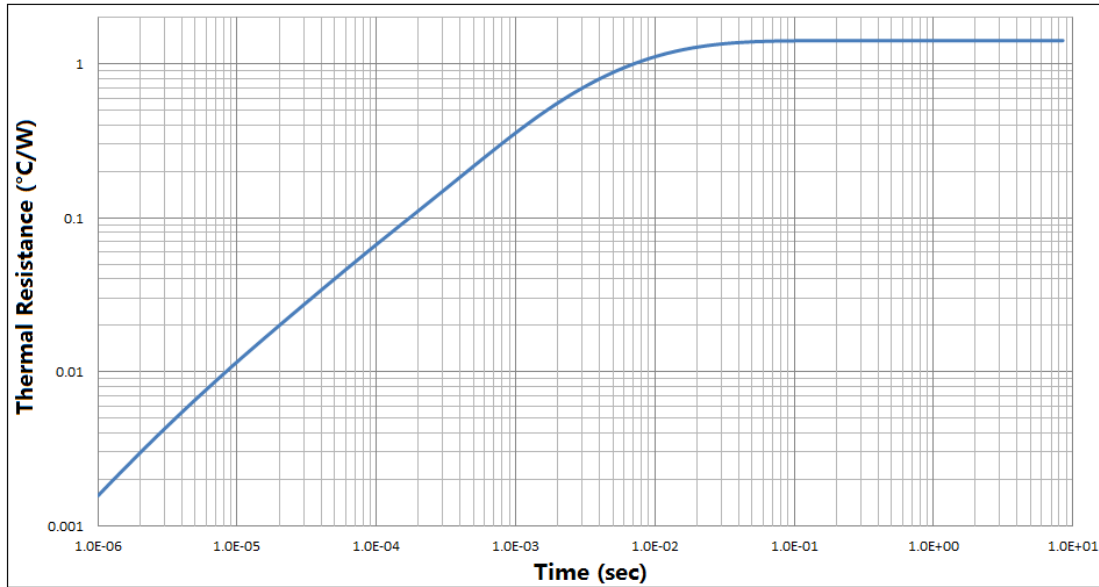
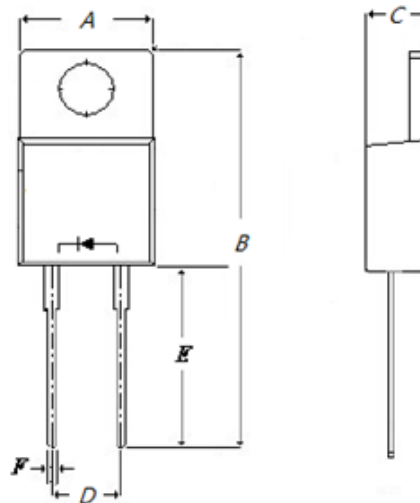


Figure 5. Transient Thermal Impedance

Package TO-220



| Symbol | Min. (mm) | Typ. (mm) | Max. (mm) |
|--------|-----------|-----------|-----------|
| A | 9.17 | 10.08 | 10.91 |
| B | 27.00 | 28.58 | 30.00 |
| C | 3.89 | 4.50 | 5.00 |
| D | 4.20 | 5.10 | 5.80 |
| E | 11.70 | 13.30 | 14.97 |
| F | 0.50 | 0.80 | 1.21 |