

GE04MPS06Q

650V 4A SiC Schottky MPS™ Diode



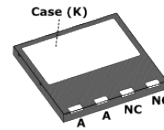
Silicon Carbide Schottky Diode

| | | |
|---------------------------------|---|-------|
| V_{RRM} | = | 650 V |
| $I_F (T_C = 163^\circ\text{C})$ | = | 4 A |
| Q_C | = | 9 nC |

Features

- Benchmark Low Built-In Voltage (V_{BI})
- Superior Figure of Merit $Q_C * V_F$
- Gen5 Thin Chip Technology for Low V_F
- Enhanced Surge Current & UIS Robustness
- Low Thermal Resistance
- Zero Reverse Recovery
- Excellent dV/dt Ruggedness

Package



QFN8x8



Advantages

- Low Conduction Losses for All Load Conditions
- Optimal Price Performance
- Increased System Power Density
- High System Reliability
- Reduced Cooling Requirements
- Temperature Independent Fast Switching
- Easy to Parallel without Thermal Runaway

Applications

- Switched Mode Power Supply (SMPS)
- Boost Power Factor Correction (PFC)
- Server and Telecom Power Supply
- LLC Clamping
- Uninterruptible Power Supply (UPS)

Absolute Maximum Ratings (At $T_C = 25^\circ\text{C}$ Unless Otherwise Stated)

| Parameter | Symbol | Conditions | Values | Unit | Note |
|---|----------------|--|------------|----------------------|------|
| Repetitive Peak Reverse Voltage | V_{RRM} | | 650 | V | |
| Continuous Forward Current | I_F | $T_C = 100^\circ\text{C}, D = 1$ | 11 | A | |
| | | $T_C = 135^\circ\text{C}, D = 1$ | 8 | | |
| | | $T_C = 163^\circ\text{C}, D = 1$ | 4 | | |
| Non-Repetitive Peak Forward Surge Current, Half Sine Wave | I_{FSM} | $T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$ | 24 | A | |
| | | $T_C = 150^\circ\text{C}, t_p = 10 \text{ ms}$ | 20 | | |
| Repetitive Peak Forward Surge Current, Half Sine Wave | I_{FRM} | $T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$ | TBD | A | |
| | | $T_C = 150^\circ\text{C}, t_p = 10 \text{ ms}$ | TBD | | |
| Non-Repetitive Peak Forward Surge Current | I_{FMAX} | $T_C = 25^\circ\text{C}, t_p = 10 \mu\text{s}$ | TBD | A | |
| i^2t Value | $\int i^2 dt$ | $T_C = 25^\circ\text{C}, t_p = 10 \text{ ms}$ | 2.88 | A^2s | |
| Non-Repetitive Avalanche Energy | E_{AS} | $L = 2.6 \text{ mH}, I_{AS} = 4 \text{ A}$ | 21 | mJ | |
| Diode Ruggedness | dV/dt | $V_R = 0 \sim 520 \text{ V}$ | 100 | V/ns | |
| Power Dissipation | P_{TOT} | $T_C = 25^\circ\text{C}$ | 81 | W | |
| Operating and Storage Temperature | T_j, T_{stg} | | -55 to 175 | $^\circ\text{C}$ | |

Electrical Characteristics

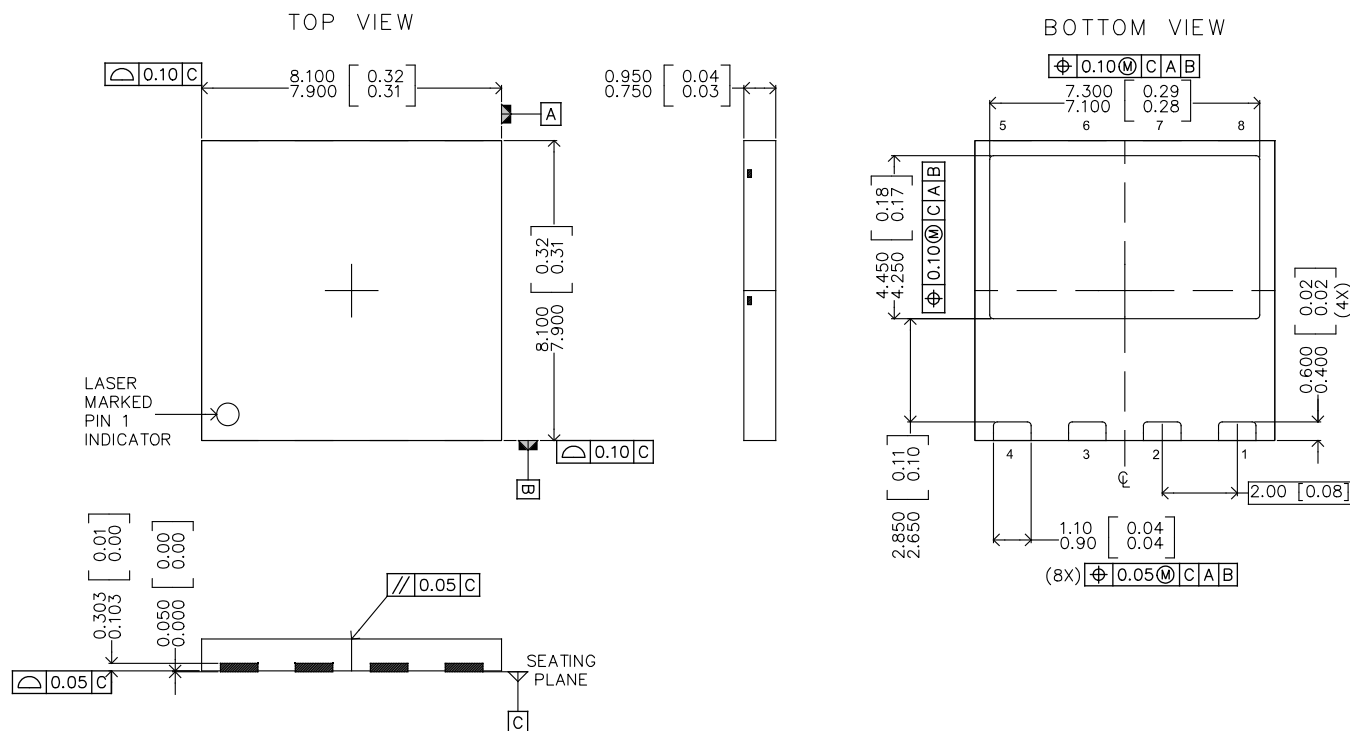
| Parameter | Symbol | Conditions | Values | | | Unit | Note |
|-------------------------|--------|--|--------|------|------|---------------|------|
| | | | Min. | Typ. | Max. | | |
| Diode Forward Voltage | V_F | $I_F = 4\text{ A}, T_j = 25^\circ\text{C}$ | | 1.3 | 1.5 | V | |
| | | $I_F = 4\text{ A}, T_j = 125^\circ\text{C}$ | | 1.48 | | | |
| Reverse Current | I_R | $V_R = 650\text{ V}, T_j = 25^\circ\text{C}$ | | 1 | | μA | |
| | | $V_R = 650\text{ V}, T_j = 125^\circ\text{C}$ | | TBD | | | |
| Total Capacitive Charge | Q_C | $V_R = 200\text{ V}$ | | 6 | | nC | |
| | | $I_F \leq I_{F,MAX}$ $V_R = 400\text{ V}$ | | 9 | | | |
| Switching Time | t_s | $dI_F/dt = 200\text{ A}/\mu\text{s}$ $V_R = 200\text{ V}$ | | < 10 | | ns | |
| | | $V_R = 400\text{ V}$ | | | | | |
| Total Capacitance | C | $V_R = 1\text{ V}, f = 1\text{ MHz}$ | | 175 | | pF | |
| | | $V_R = 400\text{ V}, f = 1\text{ MHz}$ | | 12 | | | |

Thermal/Package Characteristics

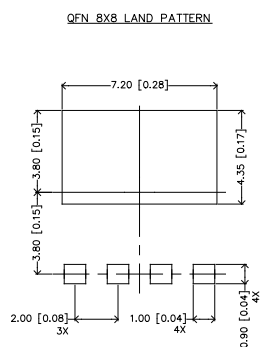
| Parameter | Symbol | Conditions | Values | | | Unit | Note |
|-------------------------------------|------------|------------|--------|------|------|---------------------------|------|
| | | | Min. | Typ. | Max. | | |
| Thermal Resistance, Junction - Case | R_{thJC} | | | | 1.86 | $^\circ\text{C}/\text{W}$ | |
| Weight | W_T | | | - | | g | |

Package Dimensions

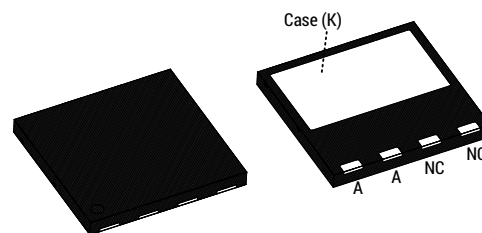
QFN8x8 Package Outline



Recommended Solder Pad Layout



Package View



NOTE

1. CONTROLLED DIMENSION IS INCH. DIMENSION IN BRACKET IS MILLIMETER.
2. DIMENSIONS DO NOT INCLUDE END FLASH, MOLD FLASH, MATERIAL PROTRUSIONS.

Compliance

RoHS Compliance

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS 2), as adopted by EU member states on January 2, 2013 and amended on March 31, 2015 by EU Directive 2015/863. RoHS Declarations for this product can be obtained from your GeneSiC representative.

REACH Compliance

REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a GeneSiC representative to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

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