

## Features

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

|                                 |      |
|---------------------------------|------|
| $V_{RRM}$                       | 600V |
| $I_F (T_C = 143^\circ\text{C})$ | 4A   |
| $Q_c$                           | 10nC |

## Benefits

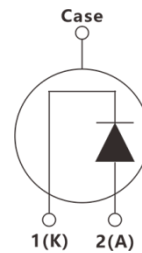
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

## Applications

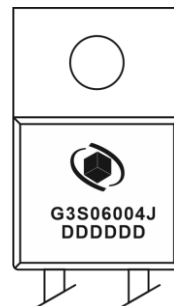
- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction



TO-220ISO



Inner Circuit



G = GPT  
3 = Gen3  
S = SiC Schottky Diode  
060 = Voltage Rating 600V  
04 = Current Rating 4A  
J = TO-220ISO  
DDDDDD = Traceable Code



**Maximum Ratings** (at  $T_J = 25^\circ\text{C}$ , unless otherwise specified)

| Parameter                                                                                                        | Symbol        | Value           | Unit                 |
|------------------------------------------------------------------------------------------------------------------|---------------|-----------------|----------------------|
| Repetitive Peak Reverse Voltage                                                                                  | $V_{RRM}$     | 600             | V                    |
| Surge Peak Reverse Voltage                                                                                       | $V_{RSM}$     | 600             | V                    |
| Continuous Forward Current<br>$T_c = 25^\circ\text{C}$<br>$T_c = 135^\circ\text{C}$<br>$T_c = 143^\circ\text{C}$ | $I_F$         | 9.8<br>4.6<br>4 | A                    |
| Repetitive Peak Forward Surge Current<br>$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse        | $I_{FRM}$     | 20              | A                    |
| Non-Repetitive Forward Surge Current<br>$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse         | $I_{FSM}$     | 32              | A                    |
| $i^2t$ Value<br>$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse                                 | $\int i^2 dt$ | 5.12            | $\text{A}^2\text{s}$ |
| Power Dissipation<br>$T_c = 25^\circ\text{C}$<br>$T_c = 110^\circ\text{C}$                                       | $P_{tot}$     | 38<br>16        | W                    |
| Operating Junction Range                                                                                         | $T_J$         | -55 to +175     | $^\circ\text{C}$     |
| Storage Temperature Range                                                                                        | $T_{stg}$     | -55 to +175     | $^\circ\text{C}$     |
| Mounting Torque, M3 Screw                                                                                        | M             | 1               | Nm                   |

**Electrical Characteristics** (at  $T_J = 25^\circ\text{C}$ , unless otherwise specified)

| Parameter                 | Symbol   | Test Condition                                  | Value |      |      | Unit          |
|---------------------------|----------|-------------------------------------------------|-------|------|------|---------------|
|                           |          |                                                 | min.  | typ. | max. |               |
| DC Blocking Voltage       | $V_{DC}$ |                                                 | 600   | -    | -    | V             |
| Forward Voltage           | $V_F$    | $I_F = 4\text{A}$<br>$T_J = 25^\circ\text{C}$   | -     | 1.53 | 1.7  | V             |
|                           |          | $T_J = 175^\circ\text{C}$                       | -     | 1.94 | 2.5  |               |
| Reverse Current           | $I_R$    | $V_R = 600\text{V}$<br>$T_J = 25^\circ\text{C}$ | -     | 0.05 | 50   | $\mu\text{A}$ |
|                           |          | $T_J = 175^\circ\text{C}$                       | -     | 0.44 | 100  |               |
| Total Capacitance         | C        | $f = 1\text{MHz}$<br>$V_R = 0\text{V}$          | -     | 184  | -    | pF            |
|                           |          | $V_R = 200\text{V}$                             | -     | 19.2 | -    |               |
|                           |          | $V_R = 400\text{V}$                             | -     | 18.8 | -    |               |
|                           |          |                                                 | -     |      | -    |               |
| Total Capacitive Charge   | $Q_C$    | $V_R = 400\text{V}$<br>$T_J = 25^\circ\text{C}$ | -     | 10   | -    | nC            |
| Capacitance Stored Energy | $E_C$    | $V_R = 400\text{V}$                             | -     | 2    | -    | $\mu\text{J}$ |

**Thermal Characteristics**

| Parameter                            | Symbol        | Test Condition | Value |      |      | Unit               |
|--------------------------------------|---------------|----------------|-------|------|------|--------------------|
|                                      |               |                | min.  | typ. | max. |                    |
| Thermal Resistance,<br>junction-case | $R_{th(j-c)}$ |                | -     | 4    | -    | $^\circ\text{C/W}$ |

## Typical Characteristics Curves

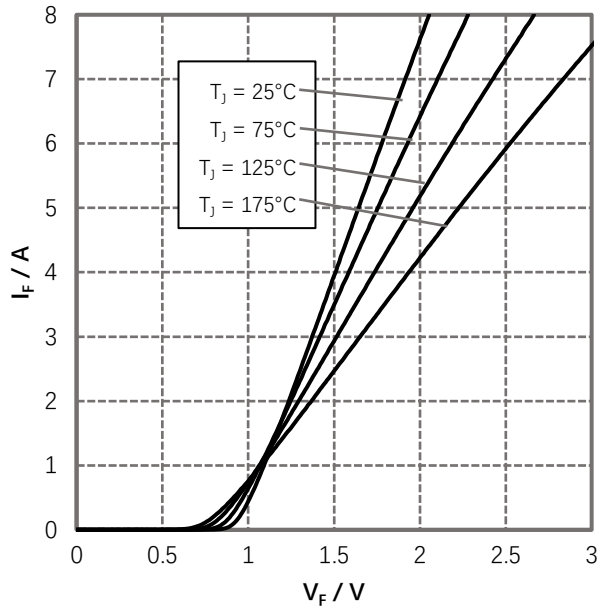


Figure 1. Forward Characteristics

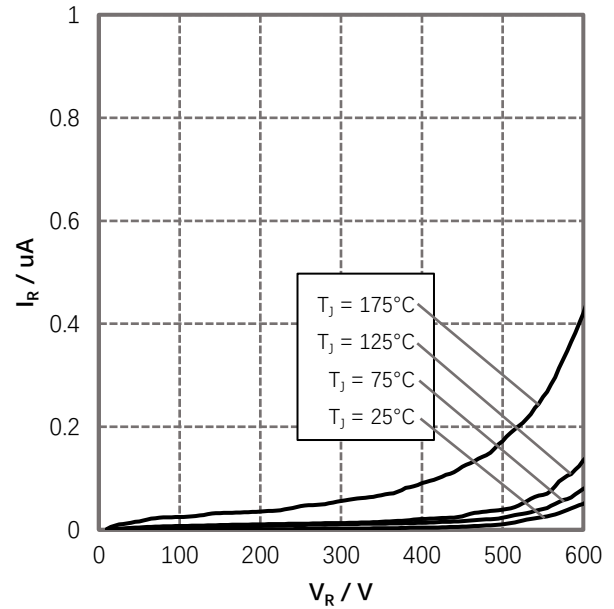


Figure 2. Reverse Characteristics

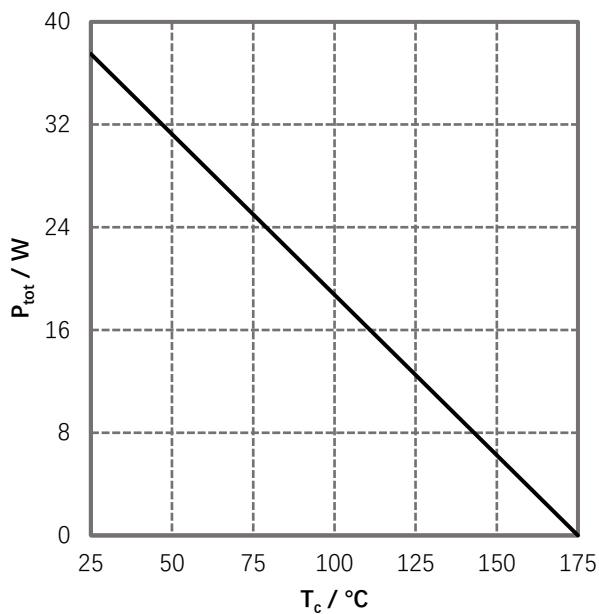


Figure 3. Power Derating

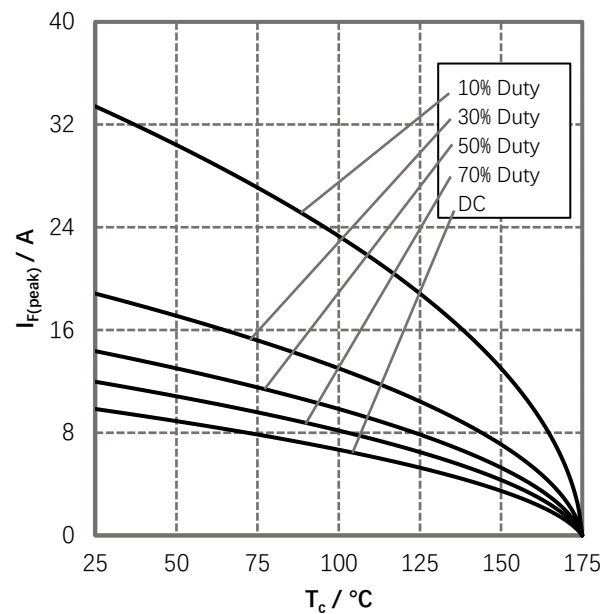


Figure 4. Current Derating

## Typical Characteristics Curves

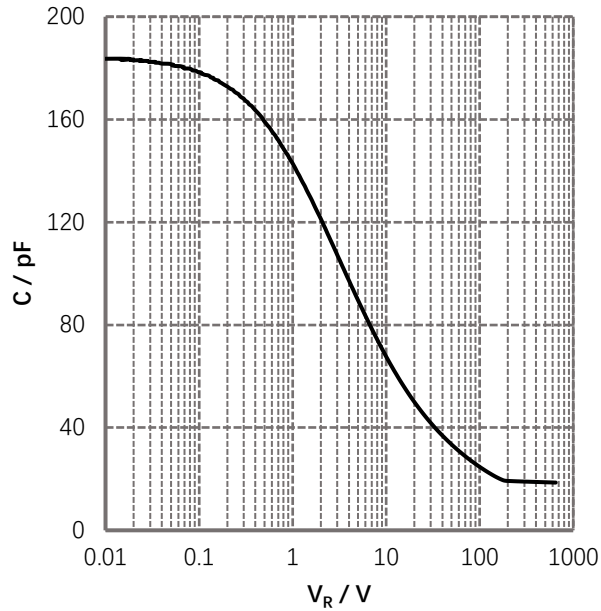


Figure 5. Capacitance vs. Reverse Voltage

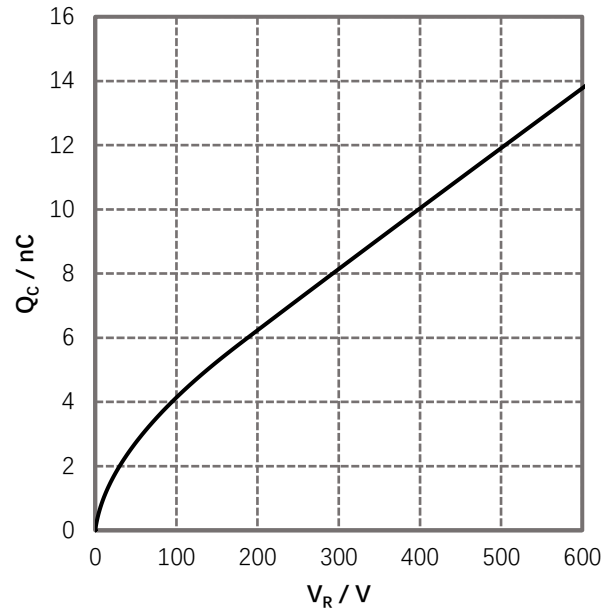


Figure 6. Reverse Charge vs. Reverse Voltage

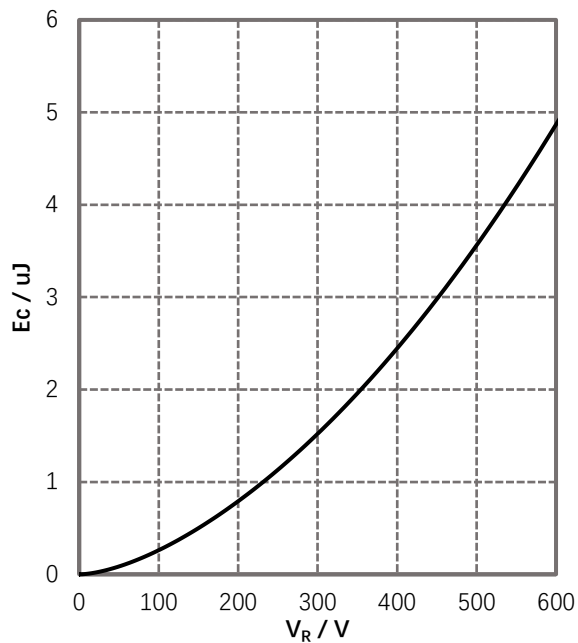


Figure 7. Capacitance Stored Energy

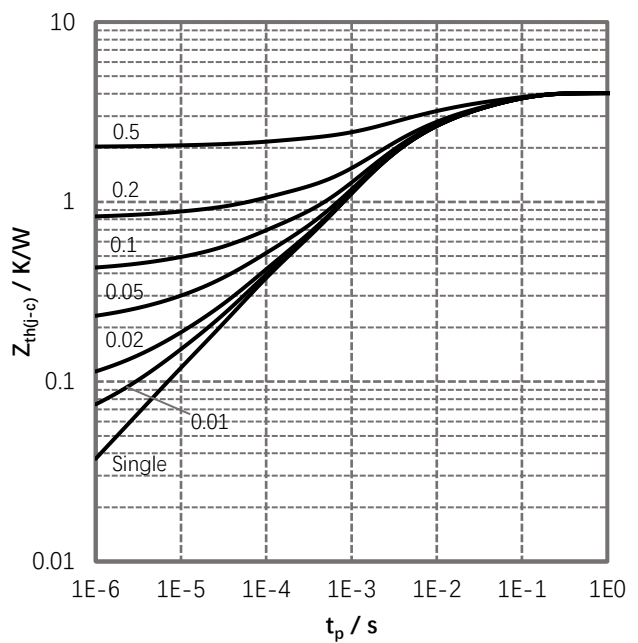
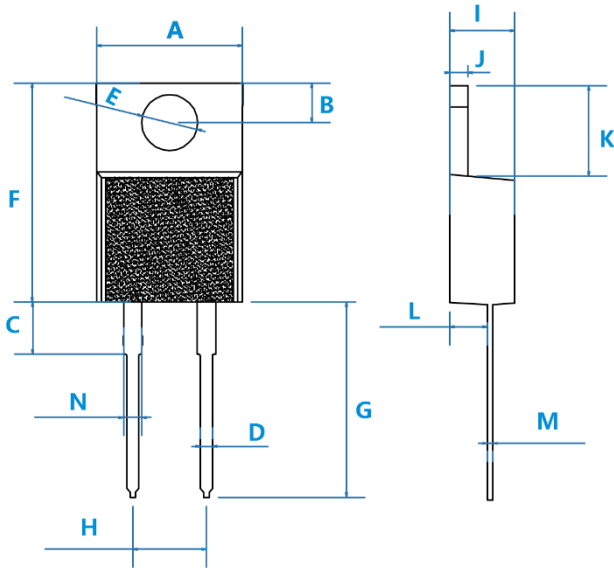


Figure 8. Transient Thermal Impedance

## Package Dimensions



| DIM. | Unit(mm) |       | Unit(inch) |       |
|------|----------|-------|------------|-------|
|      | Min      | Max   | Min        | Max   |
| A    | 9.7      | 10.4  | 0.381      | 0.409 |
| B    | 2.5      | 3     | 0.098      | 0.118 |
| C    | 3.5      | 3.9   | 0.137      | 0.153 |
| D    | 0.7      | 0.92  | 0.027      | 0.036 |
| E    | 3.72     | 3.95  | 0.146      | 0.155 |
| F    | 14.51    | 15.55 | 0.571      | 0.612 |
| G    | 12.95    | 13.9  | 0.509      | 0.547 |
| H    | 4.95     | 5.19  | 0.194      | 0.204 |
| I    | 4.38     | 4.65  | 0.172      | 0.183 |
| J    | 1.15     | 1.36  | 0.045      | 0.053 |
| K    | 5.86     | 6.38  | 0.230      | 0.251 |
| L    | 2.35     | 2.85  | 0.092      | 0.112 |
| M    | 0.32     | 0.58  | 0.012      | 0.022 |
| N    | 1.18     | 1.42  | 0.046      | 0.055 |

## Ordering Information

| Part Number | Marking   | Package   | Packaging Mode |
|-------------|-----------|-----------|----------------|
| G3S06004J   | G3S06004J | TO-220ISO | 50pcs/Tube     |

## Notes

- Global Power Technology reserves the right to change or modify any of the products and their inherent physical and technical specifications without prior notice.
- The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics.

## Related Links

- Global Power Technology Website: <http://www.globalpowertech.cn/>
- GPT online store is now open! you can place an order directly online, buy it easily, and send it directly from the factory! For more detailed product, price information and coupon activities, please log in to GPT online store: <http://sc.globalpowertech.cn/>

