

## Features

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

|                                   |      |
|-----------------------------------|------|
| $V_{RRM}$                         | 650V |
| $I_F (T_c = 156.5^\circ\text{C})$ | 6A   |
| $Q_c$                             | 22nC |

## 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-252



Inner Circuit



G = GPT  
3 = Gen3  
S = SiC Schottky Diode  
065 = Voltage Rating 650V  
06 = Current Rating 6A  
C = TO-252  
DDDDDD = Traceable Code



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

| Parameter                                                                                                          | Symbol        | Value            | Unit                 |
|--------------------------------------------------------------------------------------------------------------------|---------------|------------------|----------------------|
| Repetitive Peak Reverse Voltage                                                                                    | $V_{RRM}$     | 650              | V                    |
| Surge Peak Reverse Voltage                                                                                         | $V_{RSM}$     | 650              | V                    |
| Continuous Forward Current<br>$T_c = 25^\circ\text{C}$<br>$T_c = 135^\circ\text{C}$<br>$T_c = 156.5^\circ\text{C}$ | $I_F$         | 21.4<br>9.9<br>6 | A                    |
| Repetitive Peak Forward Surge Current<br>$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse          | $I_{FRM}$     | 30               | A                    |
| Non-Repetitive Forward Surge Current<br>$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse           | $I_{FSM}$     | 66               | A                    |
| $i^2t$ Value<br>$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ , Half Sine Pulse                                   | $\int i^2 dt$ | 22               | $\text{A}^2\text{s}$ |
| Power Dissipation<br>$T_c = 25^\circ\text{C}$<br>$T_c = 110^\circ\text{C}$                                         | $P_{tot}$     | 82<br>35         | W                    |
| Operating Junction Range                                                                                           | $T_J$         | -55 to +175      | $^\circ\text{C}$     |
| Storage Temperature Range                                                                                          | $T_{stg}$     | -55 to +175      | $^\circ\text{C}$     |

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

| Parameter                 | Symbol   | Test Condition                                  | Value |      |      | Unit          |
|---------------------------|----------|-------------------------------------------------|-------|------|------|---------------|
|                           |          |                                                 | min.  | typ. | max. |               |
| DC Blocking Voltage       | $V_{DC}$ |                                                 | 650   | -    | -    | V             |
| Forward Voltage           | $V_F$    | $I_F = 6\text{A}$                               |       |      |      | V             |
|                           |          | $T_J = 25^\circ\text{C}$                        | -     | 1.36 | 1.7  |               |
|                           |          | $T_J = 175^\circ\text{C}$                       | -     | 1.64 | 2    |               |
| Reverse Current           | $I_R$    | $V_R = 650\text{V}$                             |       |      |      | $\mu\text{A}$ |
|                           |          | $T_J = 25^\circ\text{C}$                        | -     | 0.12 | 50   |               |
|                           |          | $T_J = 175^\circ\text{C}$                       | -     | 0.91 | 100  |               |
| Total Capacitance         | C        | $f = 1\text{MHz}$                               |       |      |      | pF            |
|                           |          | $V_R = 0\text{V}$                               | -     | 440  | -    |               |
|                           |          | $V_R = 200\text{V}$                             | -     | 42   | -    |               |
|                           |          | $V_R = 400\text{V}$                             | -     | 41   | -    |               |
| Total Capacitive Charge   | $Q_C$    | $V_R = 400\text{V}$<br>$T_J = 25^\circ\text{C}$ | -     | 22   | -    | nC            |
| Capacitance Stored Energy | $E_C$    | $V_R = 400\text{V}$                             | -     | 5    | -    | $\mu\text{J}$ |

**Thermal Characteristics**

| Parameter                            | Symbol        | Test Condition | Value |      |      | Unit               |
|--------------------------------------|---------------|----------------|-------|------|------|--------------------|
|                                      |               |                | min.  | typ. | max. |                    |
| Thermal Resistance,<br>junction-case | $R_{th(j-c)}$ |                | -     | 1.84 | -    | $^\circ\text{C/W}$ |

## Typical Characteristics Curves

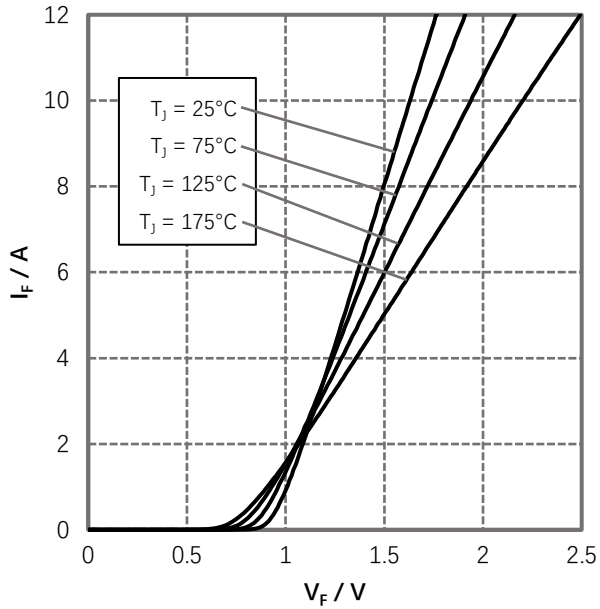


Figure 1. Forward Characteristics

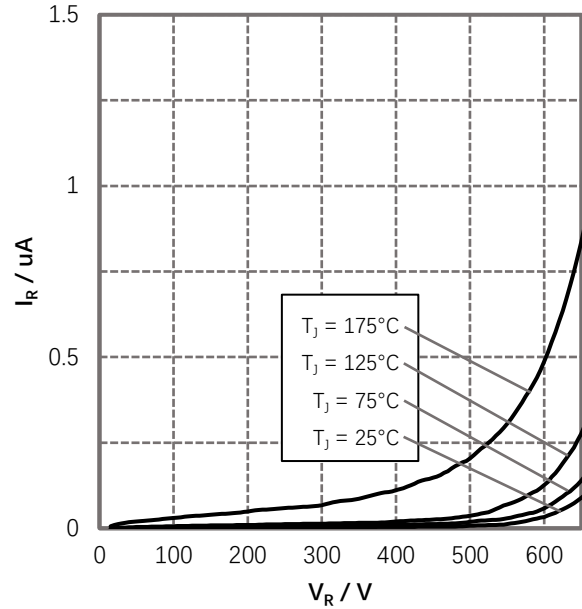


Figure 2. Reverse Characteristics

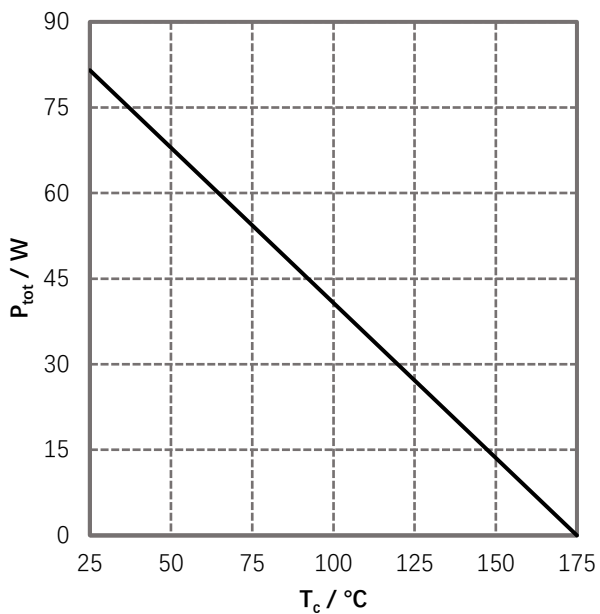


Figure 3. Power Derating

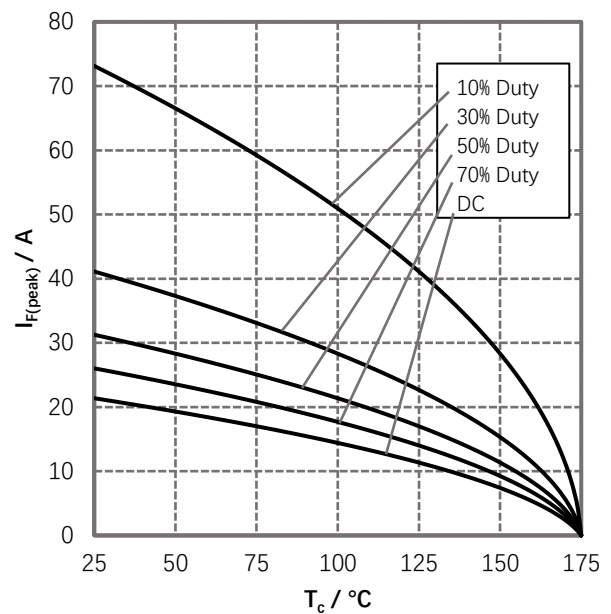


Figure 4. Current Derating

## Typical Characteristics Curves

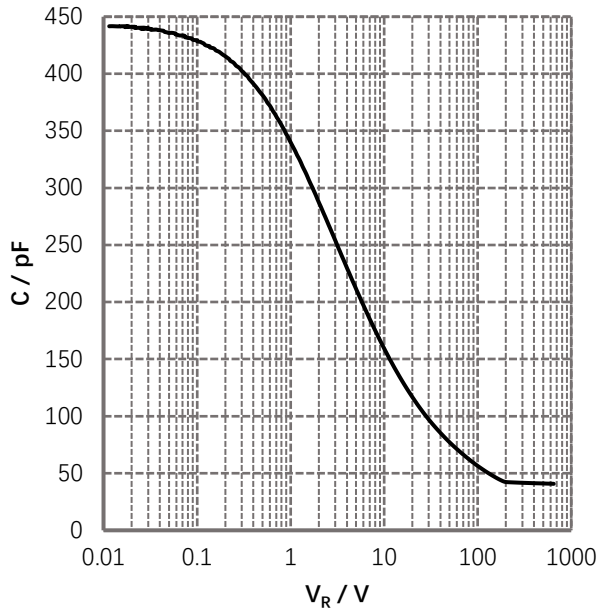


Figure 5. Capacitance vs. Reverse Voltage

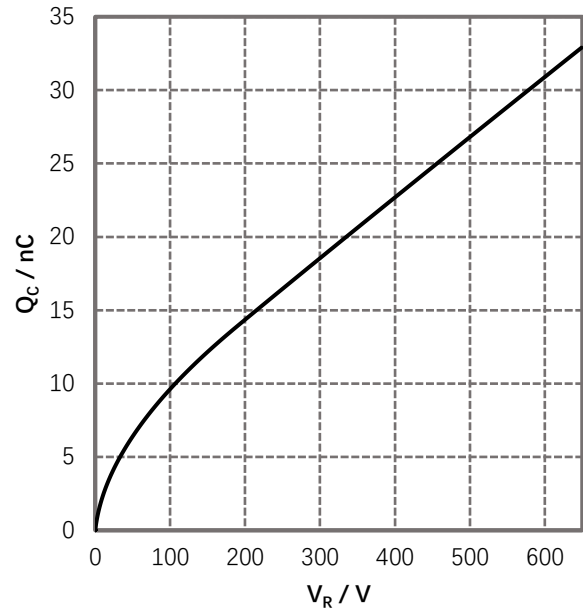


Figure 6. Reverse Charge vs. Reverse Voltage

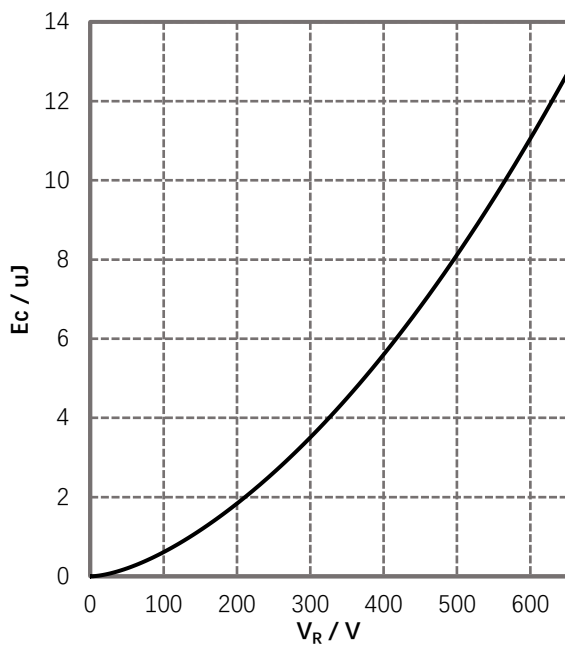


Figure 7. Capacitance Stored Energy

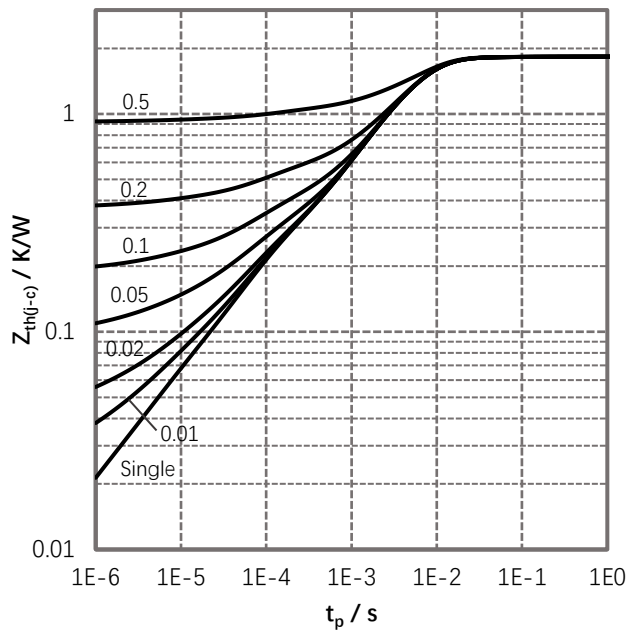
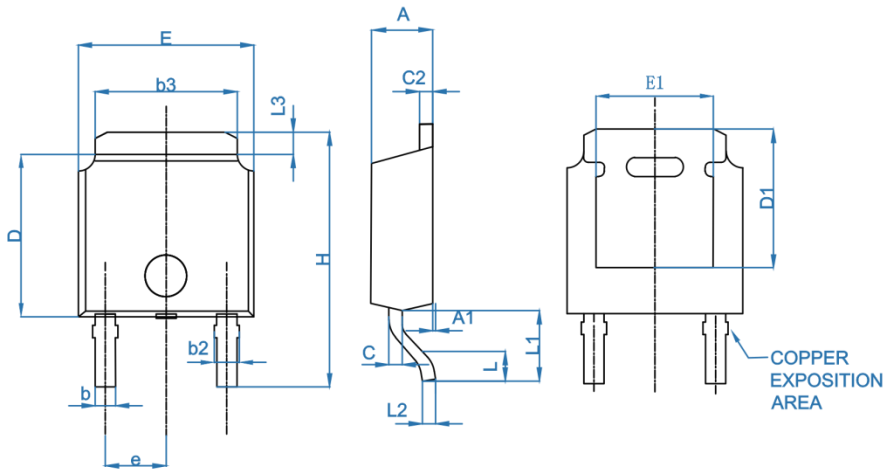


Figure 8. Transient Thermal Impedance



## Package Dimensions

Unit: mm



Note:

- 1.All Dimension Are In mm
- 2.Package Body Sizes Exclude Mold Flash,Protrusion Or Gate Burrs.  
Mold Flash,Protrusion Or Gate Burrs Shall Not Exceed 0.10mm Per Side.
- 3.Package Body Sizes Determined At The Outermost Extremes  
Of The Plastic Body Exclusive Of Mold Flash,  
Gate Burrs And Interlead Flash,  
But Including Any Mismatch Between  
The Top And Bottom Of The Plastic Body.
- 4.The Package Top May Be Smaller Than The Package Bottom.
- 5.Dimension "b" Does Not Include Dambar Protrusion.  
Allowable Dambar Protrusion Shall Be 0.10mm  
Total In Excess Of "b" Dimension At Maximun Material Condition.  
The Dambar Cannot Be Located On The Lower Radius Of The Foot.

| Symbol | DIMENSIONAL REQMTS |       |       |
|--------|--------------------|-------|-------|
|        | Min                | Nom   | Max   |
| E      | 6.35               | 6.60  | 6.73  |
| L      | 1.40               | 1.52  | 1.78  |
| L1     | 2.743REF           |       |       |
| L2     | 0.508BSC           |       |       |
| L3     | 0.89               | —     | 1.27  |
| D      | 5.97               | 6.10  | 6.22  |
| H      | 9.40               | 10.00 | 10.40 |
| b      | 0.64               | 0.76  | 0.89  |
| b2     | 0.76               | 0.84  | 1.14  |
| b3     | 4.95               | 5.34  | 5.46  |
| e      | 2.286BSC           |       |       |
| A      | 2.18               | 2.30  | 2.39  |
| A1     | 0.00               | —     | 0.13  |
| c      | 0.46               | 0.50  | 0.61  |
| c2     | 0.46               | 0.50  | 0.60  |
| D1     | 5.21               | —     | —     |
| E1     | 4.32               | —     | —     |

## Ordering Information

| Part Number | Marking   | Package | Packaging Mode |
|-------------|-----------|---------|----------------|
| G3S06506C   | G3S06506C | TO-252  | 2500/Reel      |

## 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

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