

Features

- Low conduction loss due to low V_F
- Extremely low switching loss by tiny Q_C
- Highly rugged due to better surge current
- Industrial standard quality and reliability

HF

Applications

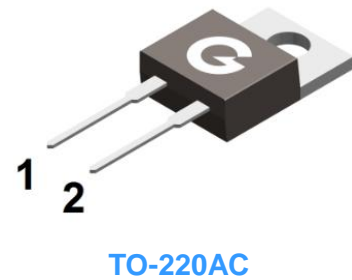
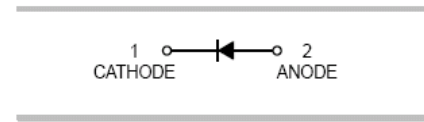
- UPS
- Power Inverter
- High performance SMPS
- Power factor correction

Mechanical Data

- Case: TO-220AC
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Key performance parameters

| | |
|---------------------------|------------|
| Type | GSC2D05120 |
| V_{DC} | 1200V |
| $I_F @ 161^\circ\text{C}$ | 5A |
| $Q_C @ 400\text{V}$ | 24nC |
| T_J | 175°C |



Ordering Information

| Part Number | Package | Shipping Quantity | Marking Code |
|-------------|----------|-------------------|--------------|
| GSC2D05120 | TO-220AC | 50 pcs / Tube | GSC2D05120 |

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

| Parameter | Symbol | Value | Unit |
|---|---------------|-------|----------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 1200 | V |
| Surge Peak Reverse Voltage | V_{RSM} | 1200 | V |
| DC Peak Reverse Voltage | V_R | 1200 | V |
| Continuous Forward Current ($T_C = 25^\circ\text{C}$) | I_F | 18 | A |
| Continuous Forward Current ($T_C = 135^\circ\text{C}$) | I_F | 9 | A |
| Continuous Forward Current ($T_C = 161^\circ\text{C}$) | I_F | 5 | A |
| Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 25^\circ\text{C}$) | I_{FSM} | 40 | A |
| Non-Repetitive Forward Surge Current (10ms single half sine-wave, $T_C = 110^\circ\text{C}$) | | 30 | A |
| Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 25^\circ\text{C}$) | I_{FRM} | 26 | A |
| Repetitive Peak Forward Surge Current (10ms half sine-wave, $T_C = 110^\circ\text{C}$) | | 18 | A |
| i^2dt value (10ms single half sine-wave, $T_C = 25^\circ\text{C}$) | $\int i^2 dt$ | 8 | A^2s |
| i^2dt value (10ms single half sine-wave, $T_C = 110^\circ\text{C}$) | | 4.5 | A^2s |

Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|--------------------|
| Power Dissipation ($T_C = 25^\circ\text{C}$) | P_D | 97 | W |
| Power Dissipation ($T_C = 110^\circ\text{C}$) | | 42 | |
| Thermal Resistance Junction-to-Case | $R_{\theta JC}$ | 1.55 | $^\circ\text{C/W}$ |
| Operating junction Temperature | T_J | -55 ~ +175 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

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

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|------------------------------|--------|--|------|------|------|---------------|
| Forward Voltage | V_F | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$ | - | 1.4 | 1.7 | V |
| | | $I_F = 5\text{A}, T_J = 175^\circ\text{C}$ | - | 2 | - | V |
| Maximum Peak Reverse Current | I_R | $V_R = 1200\text{V}, T_J = 25^\circ\text{C}$ | - | - | 100 | μA |
| | | $V_R = 1200\text{V}, T_J = 175^\circ\text{C}$ | - | - | 200 | μA |
| Total Capacitive Charge | Q_C | $V_R = 800\text{V}, di/dt = 100\text{A}/\mu\text{s}$ | - | 24 | - | nC |
| Total Capacitance | C_J | $V_R = 0\text{V}, f = 1\text{MHz}$ | - | 336 | - | pF |
| | | $V_R = 400\text{V}, f = 1\text{MHz}$ | - | 23 | - | |
| | | $V_R = 800\text{V}, f = 1\text{MHz}$ | - | 18 | - | |

Ratings and Characteristics Curves (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

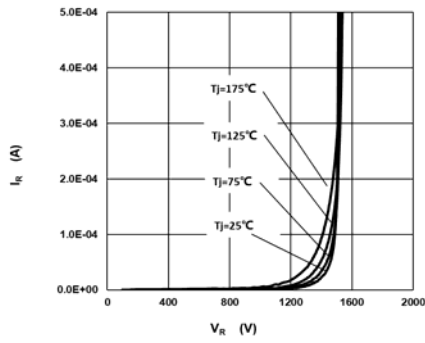


Fig 1 Typical Reverse Characteristic

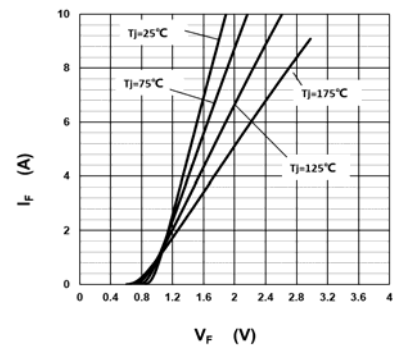


Fig 2 Typical Forward Characteristics

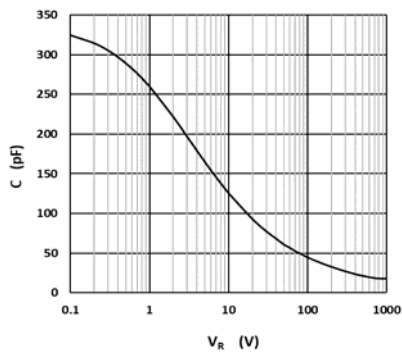


Fig 3 Capacitance vs. Reverse Voltage

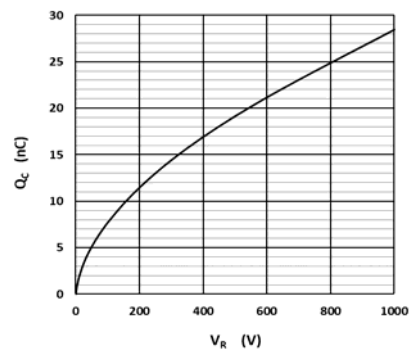


Fig 4 Reverse Charge vs. Reverse Voltage

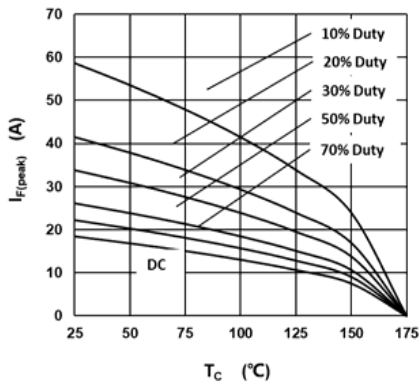


Fig 5 Current Derating

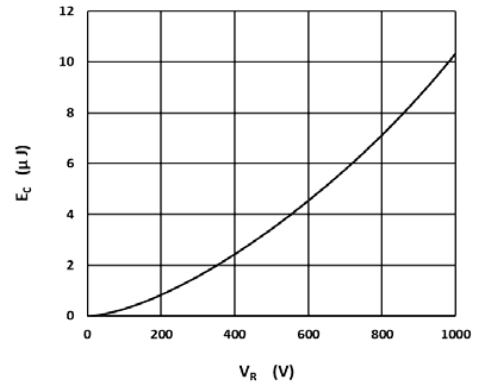


Fig 6 Typical Capacitance Stored Energy

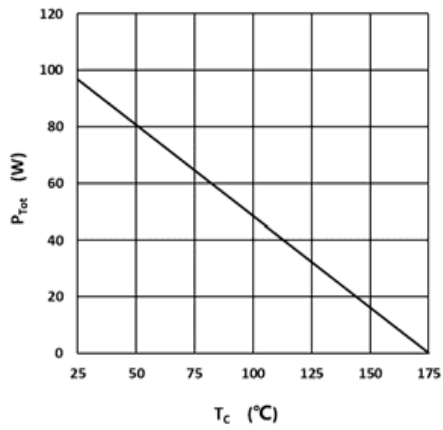


Fig 7 Power Derating

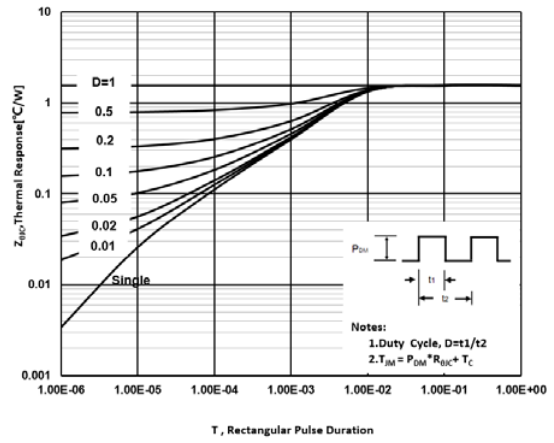
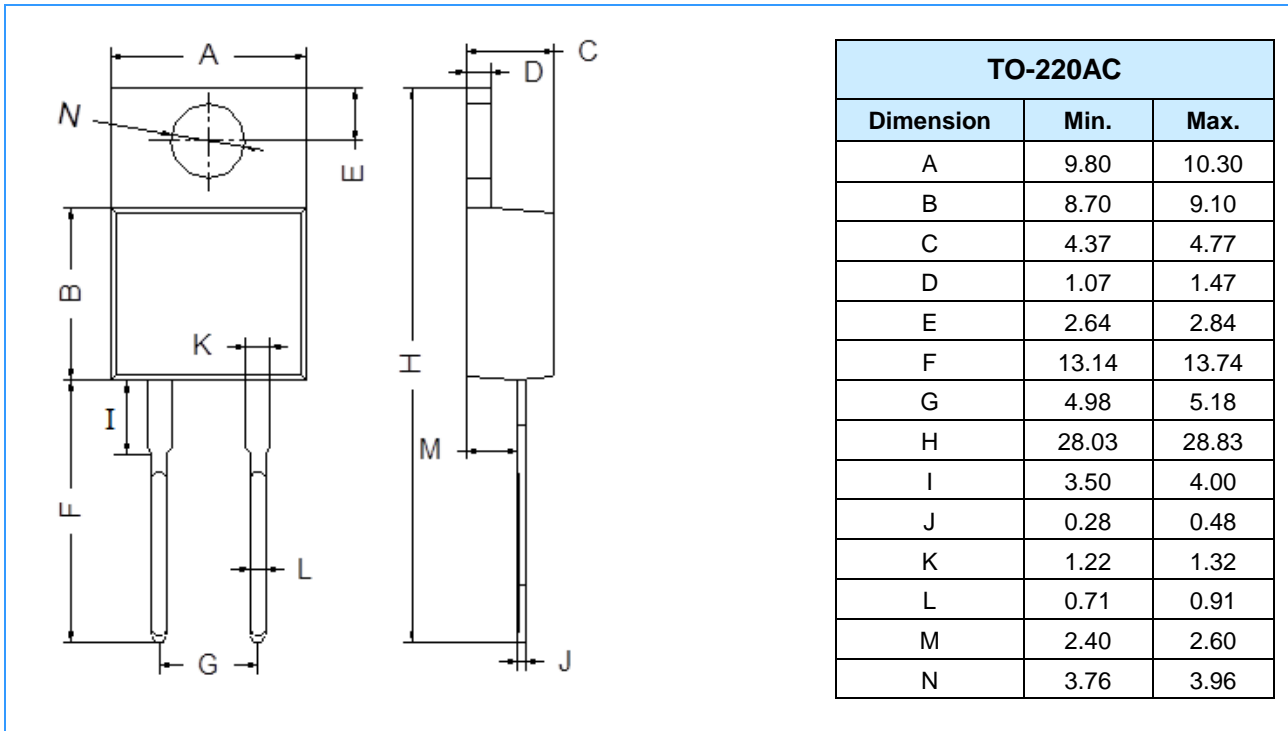


Fig 8 Transient Thermal Impedance

Package Outline Dimensions (Unit: mm)



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