



General Description

This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

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

Applications

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



| Part Number | Package | Marking |
|-------------|-----------|---------|
| SCS105KGC | TO-220-2L | S105CBK |



TO-220-2L



AEC-Q101 Qualified

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

| Symbol | Parameter | Value | Unit | Test Conditions |
|----------------|--|----------------|----------------------|---|
| V_{RRM} | Repetitive Peak Reverse Voltage | 1200 | V | |
| V_{RSM} | Surge Peak Reverse Voltage | 1200 | V | |
| V_R | DC Blocking Voltage | 1200 | V | |
| I_F | Continuous Forward Current | 18 9 5 | A | $T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=153^\circ\text{C}$ |
| I_{FRM} | Repetitive Peak Forward Surge Current | 31 23 | A | $T_c=25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave $T_c=110^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave |
| I_{FSM} | Non-Repetitive Peak Forward Surge Current | 45 35 | A | $T_c=25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave $T_c=110^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave |
| $\int i^2 dt$ | $i^2 dt$ value | 10 6 | A^2s | $T_c = 25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse $T_c = 110^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Pulse |
| P_{tot} | Power Dissipation | 97 42 | W | $T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$ |
| T_J, T_{stg} | Operating Junction and Storage Temperature | -55 to +175 | $^\circ\text{C}$ | |



Electrical Characteristics

| Parameter | Symbol | Value | | | Unit | Test Condition |
|-------------------------|--------|-------|------|------|---------|---|
| | | min. | typ. | max. | | |
| Forward Voltage | V_F | - | 1.4 | 1.7 | V | $I_F=5A$ $T_j=25^{\circ}C$ $T_j=175^{\circ}C$ |
| Reverse Current | I_R | - | - | 100 | μA | $V_R=1200V$ $T_j=25^{\circ}C$ $T_j=175^{\circ}C$ |
| Total Capacitive Charge | Q_C | - | 24 | - | nC | $V_R=800V, T_j=25^{\circ}C$ $Q_C = \int_0^{V_R} \alpha(V) dV$ |
| Total Capacitance | C | - | 336 | - | pF | $T_j=25^{\circ}C, f=1MHz$ $V_R=0V$ $V_R=400V$ $V_R=800V$ |

Thermal Characteristics

| Symbol | Parameter | Typ. | Unit |
|-----------------|--|------|---------------|
| $R_{\theta JC}$ | Thermal Resistance from Junction to Case | 1.55 | $^{\circ}C/W$ |

Characteristics Curve

Fig 1: Forward Characteristics

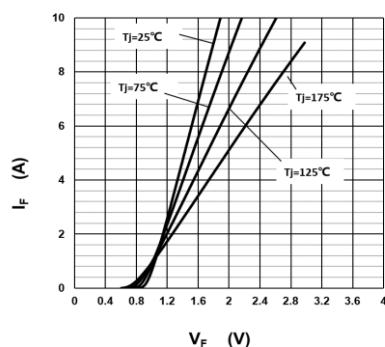


Fig 2: Reverse Characteristics

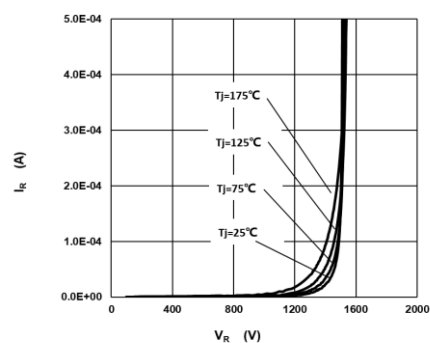




Fig 3: Current Derating

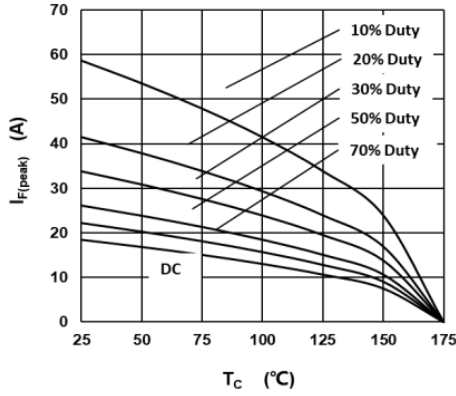


Fig 4: Power Derating

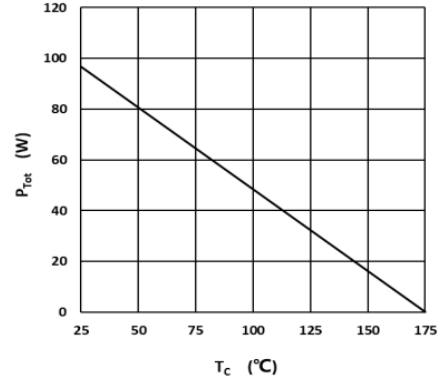


Fig 5: Capacitance vs. Reverse Voltage

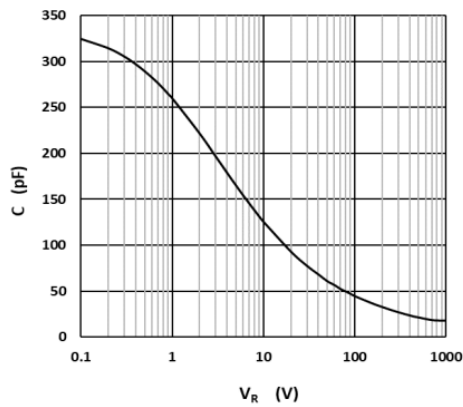


Fig 6: Reverse Charge vs. Reverse Voltage

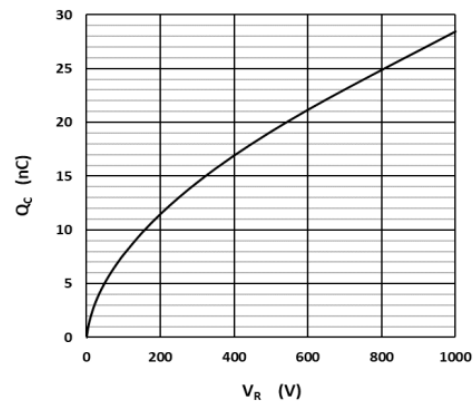


Fig 7: Typical Capacitance Stored Energy

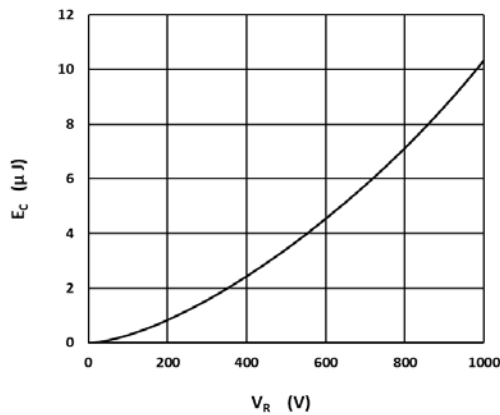
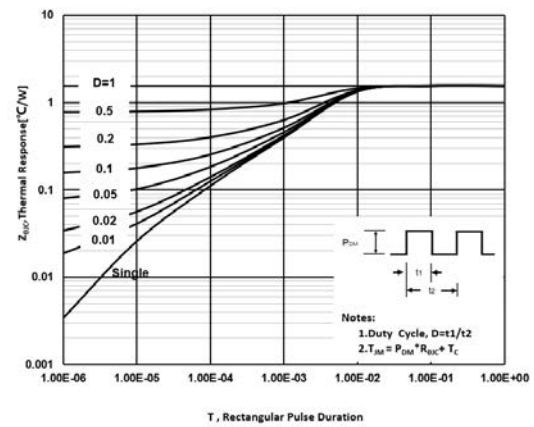
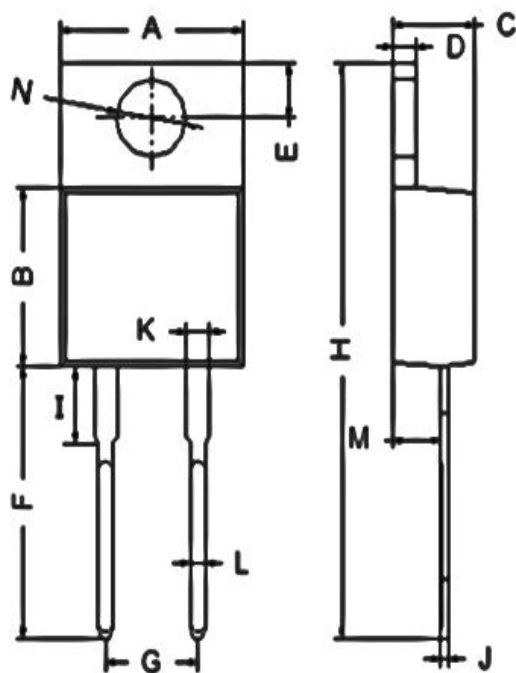


Fig 8: Transient Thermal Impandance





Package Information
TO-220-2L



| POS | Millimeters | |
|-----|-------------|-------|
| | Min. | Max. |
| A | 9.80 | 10.50 |
| B | 8.60 | 9.20 |
| C | 4.37 | 4.77 |
| D | 1.07 | 1.47 |
| E | 2.40 | 3.00 |
| F | 13.14 | 14.20 |
| G | 4.90 | 5.24 |
| H | 28.00 | 29.20 |
| I | 3.50 | 4.00 |
| J | 0.28 | 0.50 |
| K | 1.20 | 1.50 |
| L | 0.70 | 0.90 |
| M | 2.40 | 2.90 |
| N | 3.70 | 4.00 |



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