

| | | |
|------|--------------|-------|
| VRRM | IF (TC≤135℃) | QC |
| 650V | 48A | 102nC |

Applications:

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station

Features:

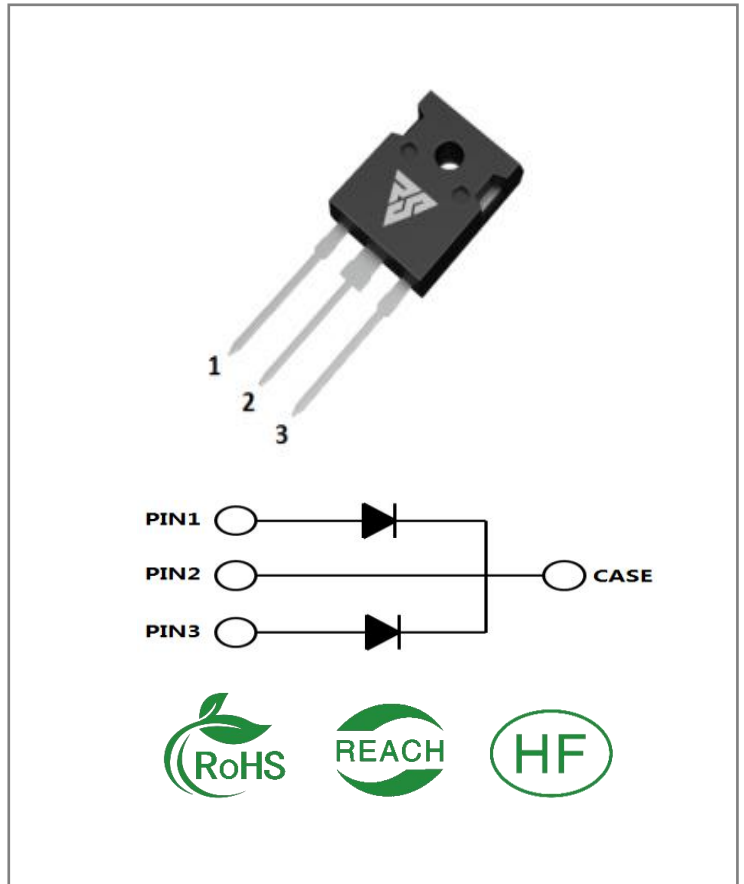
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on VF
- Temperature-independent Switching
- 175°C Operating Junction Temperature

Benefits:

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Ordering Information

| Part Number | Package | Marking | Packing | Qty. |
|-------------|----------|-----------|---------|--------|
| RSS40120K | TO-247-3 | RSS40120K | Tube | 30 PCS |



Maximum Ratings (T_J= 25°C unless otherwise specified)

| Symbol | Parameter | Value | Unit | Test Conditions | Note |
|-------------|--|-----------------------|------|---------------------------------------|-------|
| VRRM | Repetitive Peak Reverse Voltage | 1200 | V | TC = 25°C | |
| VRSM | Surge Peak Reverse Voltage | 1200 | V | TC = 25°C | |
| VR | DC Blocking Voltage | 1200 | V | TC = 25°C | |
| IF | Forward Current | 52*22 4*2 20/40 | A | TC ≤ 25°C TC ≤ 135°C TC ≤ 146°C | |
| IFRM | Repetitive Peak Forward Surge Current | 180*2 | A | TC = 25°C, tp =8.3ms, Half Sine Wave | |
| Ptot | Power Dissipation | 230*2 | W | TC = 25°C | Fig.3 |
| TC | Maximum Case Temperature | 146 | °C | | |
| TJ,TST G | Operating Junction and Storage Temperature | -55 to175 | °C | | |

Electrical Characteristics (T_J= 25°C unless otherwise specified)

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions | Note |
|--------|-------------------------|------------------|------------|------|--|-------|
| VF | Forward Voltage | 1.55 2.2 | 1.8 2.5 | V | IF = 20A, T _J = 25°C IF = 20A, T _J = 175°C | Fig.1 |
| IR | Reverse Current | 5 30 | 20 200 | μA | VR = 1200V, T _J = 25°C VR = 1200V, T _J = 175°C | Fig.2 |
| C | Total Capacitance | 1280 95 77 | / | pF | VR = 1V, T _J = 25°C, f = 1MHz VR = 400V, T _J = 25°C, f = 1MHz VR = 800V, T _J = 25°C, f = 1MHz | Fig.5 |
| QC | Total Capacitive Charge | 51 | / | nC | VR =800V, | Fig.4 |

Thermal Characteristics (T_J= 25°C unless otherwise specified)

| Symbol | Parameter | Typ. | Unit | Note |
|--------|--|------|------|-------|
| RθJC | Thermal Resistance from Junction to Case | 0.65 | °C/W | Fig.6 |

Typical Feature Curve

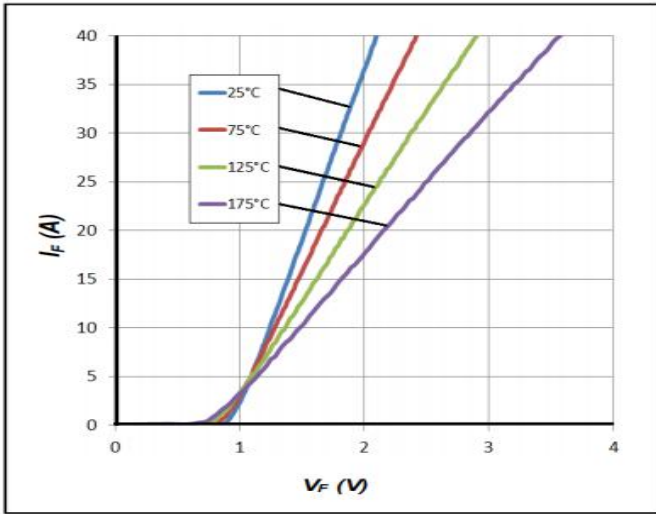


Figure 1. Forward Characteristics

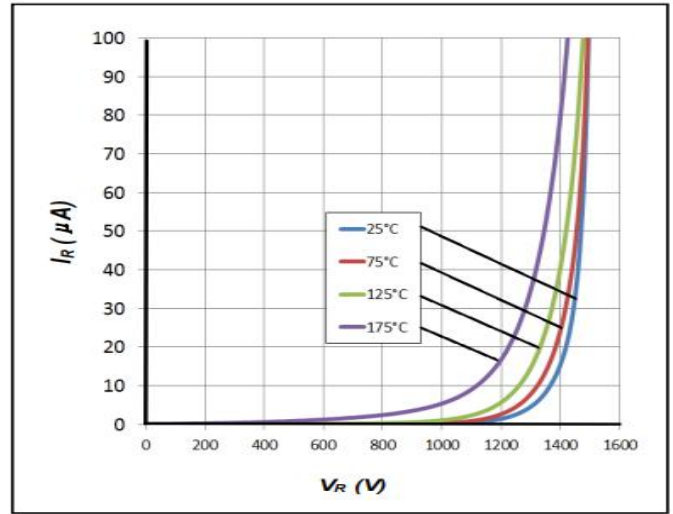


Figure 2. Reverse Characteristics

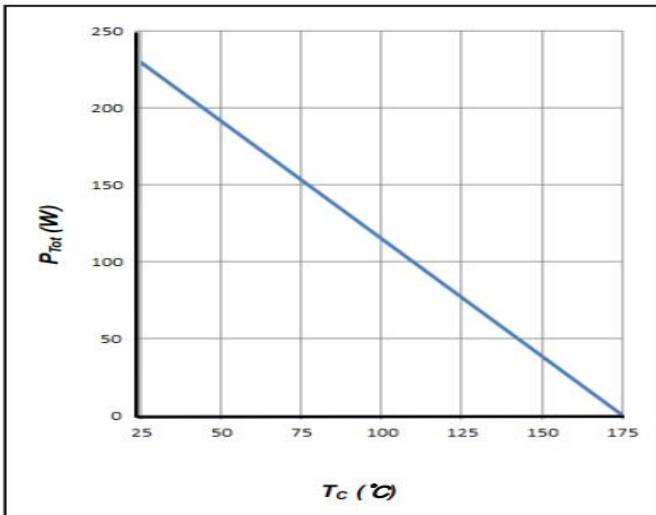


Figure 3. Power Derating

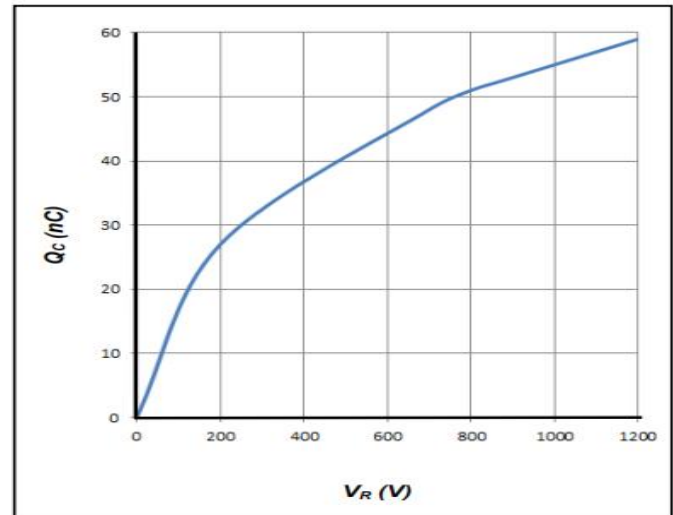


Figure 4. Total Capacitive Charge vs. Reverse Voltage

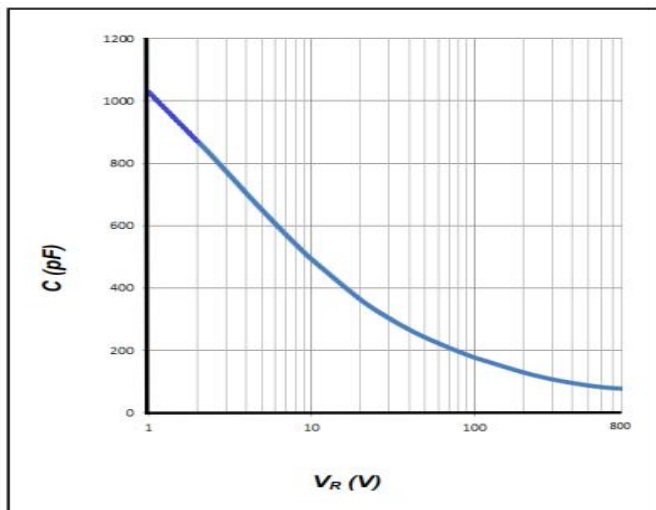


Figure 5. Total Capacitance vs. Reverse Voltage

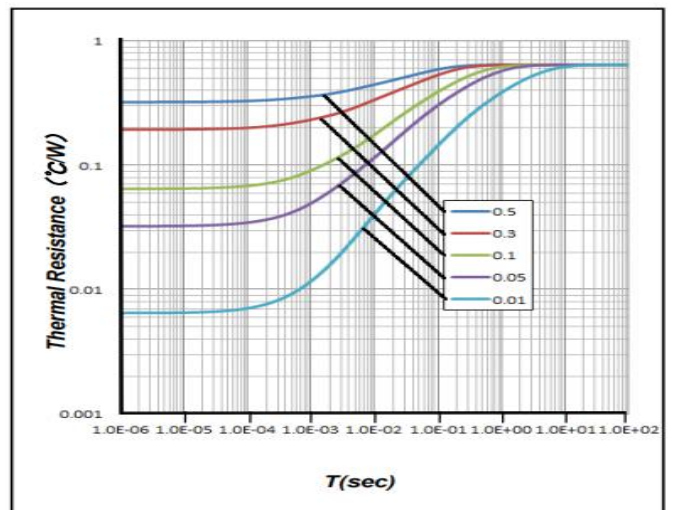
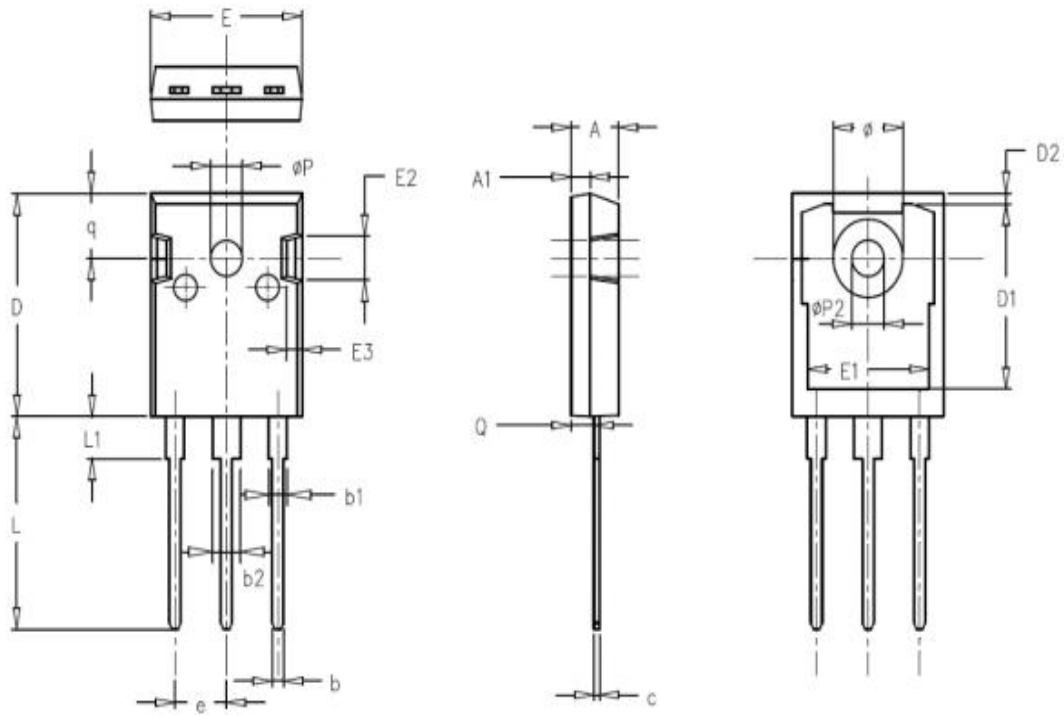


Figure 6. Transient Thermal Impedance

Package outline drawing(TO-247-3 Unit: mm)



| SYMBOL | MILLIMETERS | | | N OTES | SYMBOL | MILLIMETERS | | | N OTES |
|--------|-------------|-------|-------|--------|-----------|-------------|-------|-------|--------|
| | Normal | MIN. | MAX. | | | Normal | MIN. | MAX. | |
| A | 4.98 | 4.68 | 5.36 | | ϕP | 3.66 | 3.45 | 3.85 | |
| A1 | 1.99 | 1.90 | 2.10 | | e | 5.44 | BSC | | |
| Q | 2.41 | 2.30 | 2.60 | | q | 6.24 | 5.99 | 6.58 | |
| c | 0.60 | 0.48 | 0.72 | | $\phi P2$ | 3.45 | 3.24 | 3.64 | |
| b | 1.20 | 1.00 | 1.40 | | ϕ | 7.14 | 7.10 | 7.30 | |
| b1 | 2.07 | 1.90 | 2.30 | | D1 | 16.56 | 16.10 | 17.10 | |
| b2 | 3.07 | 2.90 | 3.30 | | D2 | 0.98 | 0.80 | 1.36 | |
| D | 21.10 | 20.80 | 21.80 | | E1 | 13.30 | 13.00 | 13.52 | |
| E | 15.98 | 15.38 | 16.20 | | E2 | 5.64 | 5.10 | 6.10 | |
| L | 20.28 | 19.50 | 20.50 | | E3 | 2.33 | 1.90 | 2.70 | |
| L1 | 4.01 | 3.75 | 4.35 | | | | | | |

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