**DATA SHEET**
www.onsemi.com

# Three Level ANPC Q2Pack Module

# NXH800A100L4Q2F2S1G/P1G, NXH800A100L4Q2F2S2G/P2G

This high−density, integrated power module combines high−performance IGBTs with rugged anti−parallel diodes.

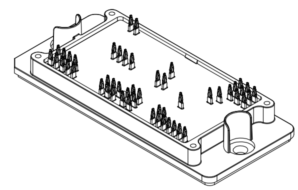
### Features

- Extremely Efficient Trench with Field Stop Technology
- Low Switching Loss Reduces System Power Dissipation
- Module Design Offers High Power Density
- Low Inductive Layout
- Low Package Height
- This is a Pb−Free Device

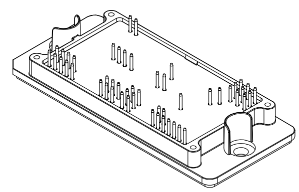
### Typical Applications

- Solar Inverters
- Uninterruptable Power Supplies Systems

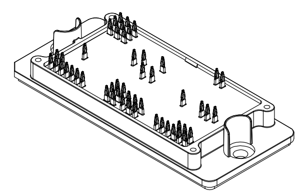
**PACKAGE PICTURE**



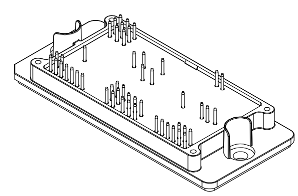
**Q2PACK POSITIVE PRESS FIT PINS**
**CASE 180HG**



**Q2PACK POSITIVE SOLDER PINS**
**CASE 180HH**



**Q2PACK NEGATIVE PRESS FIT PINS**
**CASE 180CQ**



**Q2PACK NEGATIVE SOLDER PINS**
**CASE 180BM**

### MARKING DIAGRAMS

See detailed marking diagrams on page 2 of this data sheet.

### PIN CONNECTIONS

See detailed pin connections on page 2 of this data sheet.

### ORDERING INFORMATION

See detailed ordering and shipping information on page 8 of this data sheet.

## SCHEMATICS

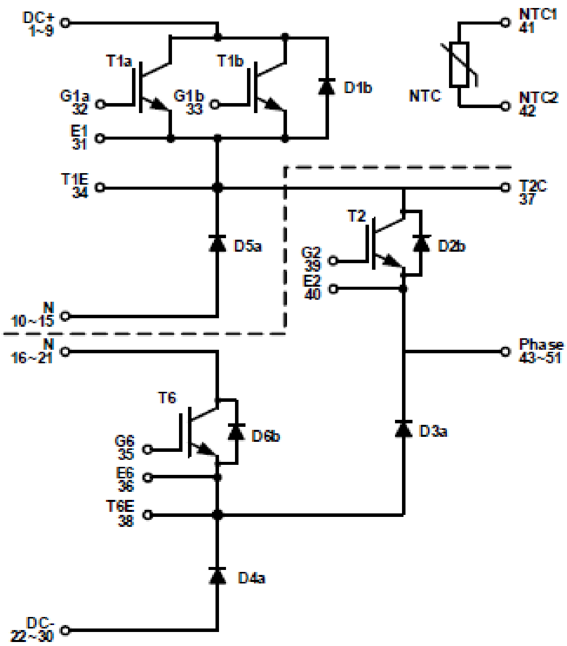



Figure 1. NXH800A100L4Q2F2X1G Schematic Diagram

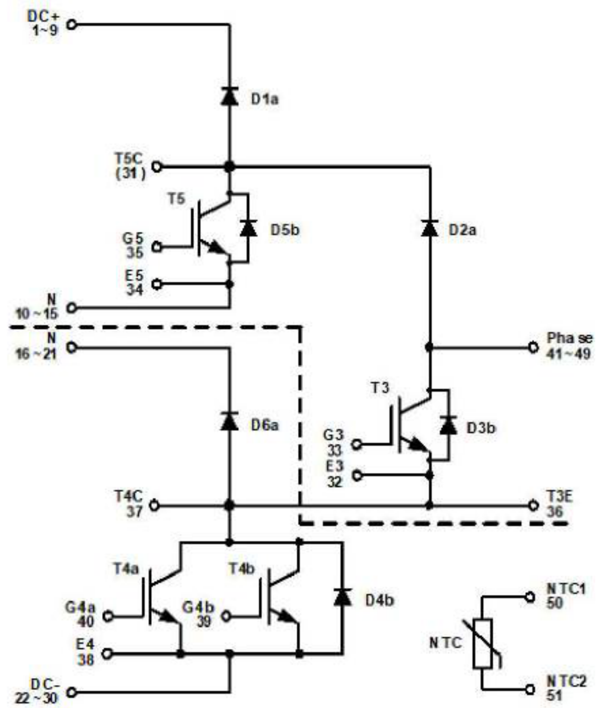
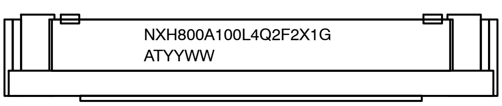


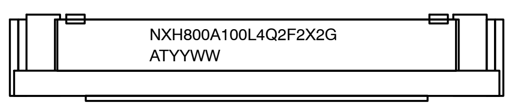

Figure 2. NXH800A100L4Q2F2X2G Schematic Diagram

## MARKING DIAGRAMS




| | |
|---|---|
| NXH800A100L4Q2F2 | = Specific Device Code |
| X | = P or S |
| G | = Pb−Free Package |
| AT | = Assembly & Test Site Code |
| YYWW | = Year and Work Week Code |

Figure 3. NXH800A100L4Q2F2X1G Marking Diagram




| | |
|---|---|
| NXH800A100L4Q2F2 | = Specific Device Code |
| X | = P or S |
| G | = Pb−Free Package |
| AT | = Assembly & Test Site Code |
| YYWW | = Year and Work Week Code |

Figure 4. NXH800A100L4Q2F2X2G Marking Diagram

## PIN CONNECTIONS

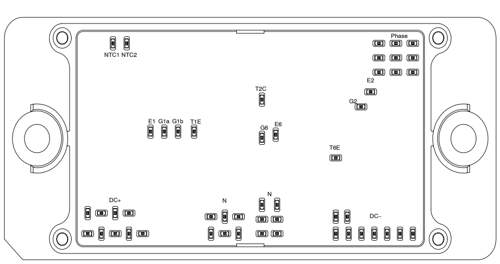


Figure 5. NXH800A100L4Q2F2X1G Pin Connection

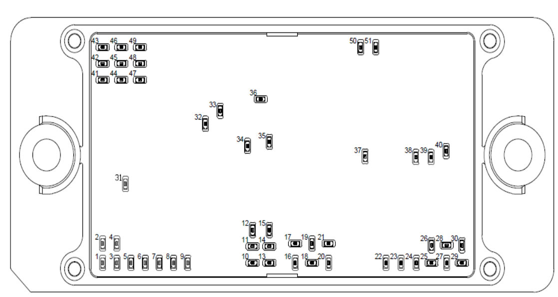


Figure 6. NXH800A100L4Q2F2X2G Pin Connection

**Table 1. ABSOLUTE MAXIMUM RATINGS** ($T_J$ = 25°C unless otherwise noted)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| **OUTER IGBT (T1a, T1b, T4a, T4b)** | | | |
| Collector-Emitter Voltage | $V_{CES}$ | 1000 | V |
| Gate-Emitter Voltage<br>Positive Transient Gate−Emitter Voltage ($T_{pulse}$ = 5 μs, D < 0.10) | $V_{GE}$ | ±20<br>30 | V |
| Continuous Collector Current @ $T_C$ = 80°C | $I_C$ | 309 | A |
| Pulsed Peak Collector Current @ $T_C$ = 80°C ($T_J$ = 175°C) | $I_{C(Pulse)}$ | 927 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 714 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature (Note 1) | $T_{JMAX}$ | 175 | °C |
| **INNER IGBT (T2, T3)** | | | |
| Collector-Emitter Voltage | $V_{CES}$ | 1000 | V |
| Gate-Emitter Voltage<br>Positive Transient Gate−Emitter Voltage ($T_{pulse}$ = 5 μs, D < 0.10) | $V_{GE}$ | ±20<br>30 | V |
| Continuous Collector Current @ $T_C$ = 80°C | $I_C$ | 413 | A |
| Pulsed Peak Collector Current @ $T_C$ = 80°C ($T_J$ = 175°C) | $I_{C(Pulse)}$ | 1239 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 990 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature (Note 1) | $T_{JMAX}$ | 175 | °C |
| **NEUTRAL POINT IGBT (T5, T6)** | | | |
| Collector−Emitter Voltage | $V_{CES}$ | 1000 | V |
| Gate-Emitter Voltage<br>Positive Transient Gate−Emitter Voltage ($T_{pulse}$ = 5 μs, D < 0.10) | $V_{GE}$ | ±20<br>30 | V |
| Continuous Collector Current @ $T_C$ = 80°C | $I_C$ | 224 | A |
| Pulsed Peak Collector Current @ $T_C$ = 80°C ($T_J$ = 175°C) | $I_{C(Pulse)}$ | 672 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 543 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature (Note 1) | $T_{JMAX}$ | 175 | °C |
| **IGBT INVERSE DIODE (D1b, D2b, D3b, D4b, D5b, D6b)** | | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | 1000 | V |
| Continuous Forward Current @ $T_C$ = 80°C | $I_F$ | 61 | A |
| Repetitive Peak Forward Current ($T_J$ = 175°C) | $I_{FRM}$ | 183 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 151 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 175 | °C |
| **DIODES (D1a, D2a, D3a, D4a)** | | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | 1000 | V |
| Continuous Forward Current @ $T_C$ = 80°C | $I_F$ | 177 | A |
| Repetitive Peak Forward Current ($T_J$ = 175°C) | $I_{FRM}$ | 531 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 446 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 175 | °C |

**Table 1. ABSOLUTE MAXIMUM RATINGS** ($T_J$ = 25°C unless otherwise noted) (continued)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| **NEUTRAL POINT DIODES (D5a, D6a)** | | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | 1000 | V |
| Continuous Forward Current @ $T_C$ = 80°C | $I_F$ | 238 | A |
| Repetitive Peak Forward Current ($T_J$ = 175°C) | $I_{FRM}$ | 714 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 565 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 175 | °C |

**Table 2. THERMAL AND INSULATION PROPERTIES** ($T_J$ = 25°C unless otherwise noted)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| **THERMAL PROPERTIES** | | | |
| Operating Temperature under Switching Condition | $T_{VJOP}$ | −40 to +150 | °C |
| Storage Temperature Range | $T_{stg}$ | −40 to +125 | °C |
| **INSULATION PROPERTIES** | | | |
| Isolation Test Voltage, t = 1 s, 50 Hz | $V_{is}$ | 4000 | $V_{RMS}$ |
| Creepage Distance | | 12.7 | mm |
| Comparative Tracking Index | CTI | > 600 | |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Refer to ELECTRICAL CHARACTERISTICS, RECOMMENDED OPERATING RANGES and/or APPLICATION INFORMATION for Safe Operating parameters.

**ELECTRICAL CHARACTERISTICS** ($T_J$ = 25°C unless otherwise specified)

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **IGBT (T1a, T1b, T4a, T4b) CHARACTERISTICS** | | | | | | |
| Collector-Emitter Cutoff Current | $V_{GE}$ = 0 V, $V_{CE}$ = 1000 V | $I_{CES}$ | – | – | 20 | μA |
| Collector-Emitter Saturation Voltage | $V_{GE}$ = 15 V, $I_C$ = 400 A, $T_J$ = 25°C | $V_{CE(sat)}$ | – | 1.69 | 2.3 | V |
| | $V_{GE}$ = 15 V, $I_C$ = 400 A, $T_J$ = 175°C | | – | 1.95 | – | |
| Gate-Emitter Threshold Voltage | $V_{GE}$ = $V_{CE}$, $I_C$ = 400 mA | $V_{GE(TH)}$ | 3.4 | 4.92 | 6.7 | V |
| Gate Leakage Current | $V_{GE}$ = ±20 V, $V_{CE}$ = 0 V | $I_{GES}$ | – | – | ±2 | μA |
| Turn-on Delay Time | $T_J$ = 25°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V<br>$R_{Goff}$ = 23 Ω, $R_{Gon}$ = 15 Ω<br>(T1a, T1b tested together) | $t_{d(on)}$ | – | 189.93 | – | ns |
| Rise Time | | $t_r$ | – | 52.06 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 970.3 | – | |
| Fall Time | | $t_f$ | – | 22.56 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 7.71 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 8.12 | – | |
| Turn-on Delay Time | $T_J$ = 125°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V<br>$R_{Goff}$ = 23 Ω, $R_{Gon}$ = 15 Ω<br>(T1a, T1b tested together) | $t_{d(on)}$ | – | 164.22 | – | ns |
| Rise Time | | $t_r$ | – | 59.58 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 1088.34 | – | |
| Fall Time | | $t_f$ | – | 33.6 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 11.57 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 10.77 | – | |
| Input Capacitance | $V_{CE}$ = 20 V, $V_{GE}$ = 0 V, f = 100 kHz<br>(T1a, T1b tested together) | $C_{ies}$ | – | 49700 | – | pF |
| Output Capacitance | | $C_{oes}$ | – | 1530 | – | |
| Reverse Transfer Capacitance | | $C_{res}$ | – | 308 | – | |
| Total Gate Charge | $V_{CE}$ = 600 V, $I_C$ = 300 A,<br>$V_{GE}$ = −15 V~15 V<br>(T1a, T1b tested together) | $Q_g$ | – | 3040 | – | nC |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease,<br>Thickness = 2.1 Mil ±2%<br>λ = 2.9 W/mK | $R_{thJH}$ | – | 0.225 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.133 | – | K/W |
| **IGBT INVERSE DIODE (D1b, D2b, D3b, D4b, D5b, D6b) CHARACTERISTICS** | | | | | | |
| Diode Forward Voltage | $I_F$ = 100 A, $T_J$ = 25°C | $V_F$ | – | 2.73 | 3.7 | V |
| | $I_F$ = 100 A, $T_J$ = 175°C | | – | 2.39 | – | |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease,<br>Thickness = 2.1 Mil ±2%<br>λ = 2.9 W/mK | $R_{thJH}$ | – | 0.770 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.63 | – | K/W |

**ELECTRICAL CHARACTERISTICS** ($T_J$ = 25°C unless otherwise specified) (continued)

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **IGBT (T2, T3) CHARACTERISTICS** | | | | | | |
| Collector-Emitter Cutoff Current | $V_{GE}$ = 0 V, $V_{CE}$ = 1000 V | $I_{CES}$ | – | – | 20 | μA |
| Collector-Emitter Saturation Voltage | $V_{GE}$ = 15 V, $I_C$ = 600 A, $T_J$ = 25°C | $V_{CE(sat)}$ | – | 1.75 | 2.3 | V |
| | $V_{GE}$ = 15 V, $I_C$ = 600 A, $T_J$ = 175°C | | – | 2.15 | – | |
| Gate-Emitter Threshold Voltage | $V_{GE}$ = $V_{CE}$, $I_C$ = 600 mA | $V_{GE(TH)}$ | 3.4 | 4.83 | 6.7 | V |
| Gate Leakage Current | $V_{GE}$ = ±20 V, $V_{CE}$ = 0 V | $I_{GES}$ | – | – | ±2 | μA |
| Turn-on Delay Time | $T_J$ = 25°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V<br>$R_{Gon}$ = 11 Ω, $R_{Goff}$ = 23 Ω | $t_{d(on)}$ | – | 233.73 | – | ns |
| Rise Time | | $t_r$ | – | 68 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 1364.18 | – | |
| Fall Time | | $t_f$ | – | 79.12 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 7.83 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 16.73 | – | |
| Turn-on Delay Time | $T_J$ = 125°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V<br>$R_{Gon}$ = 11 Ω, $R_{Goff}$ = 23 Ω | $t_{d(on)}$ | – | 213.78 | – | ns |
| Rise Time | | $t_r$ | – | 75.99 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 1514.94 | – | |
| Fall Time | | $t_f$ | – | 47.53 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 10.87 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 17.39 | – | |
| Input Capacitance | $V_{CE}$ = 20 V, $V_{GE}$ = 0 V, f = 100 kHz | $C_{ies}$ | – | 38100 | – | pF |
| Output Capacitance | | $C_{oes}$ | – | 1230 | – | |
| Reverse Transfer Capacitance | | $C_{res}$ | – | 226 | – | |
| Total Gate Charge | $V_{CE}$ = 600 V, $I_C$ = 300 A,<br>$V_{GE}$ = 15 V | $Q_g$ | – | 2230 | – | nC |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease,<br>Thickness = 2.1 Mil ±2%<br>λ = 2.9 W/mK | $R_{thJH}$ | – | 0.168 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.096 | – | K/W |
| **DIODES (D1a, D2a, D3a, D4a) CHARACTERISTICS** | | | | | | |
| Diode Forward Voltage | $I_F$ = 300 A, $T_J$ = 25°C | $V_F$ | – | 2.76 | 3.7 | V |
| | $I_F$ = 300 A, $T_J$ = 175°C | | – | 2.43 | – | |
| Reverse Recovery Time | $T_J$ = 25°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V, $R_G$ = 11 Ω | $t_{rr}$ | – | 105.26 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 4.344 | – | μC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 106.04 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 3.242 | – | A/ns |
| Reverse Recovery Energy | | $E_{rr}$ | – | 1.304 | – | mJ |
| Reverse Recovery Time | $T_J$ = 125°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V, $R_G$ = 11 Ω | $t_{rr}$ | – | 176.9 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 12.771 | – | μC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 154.24 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 2.795 | – | A/ns |
| Reverse Recovery Energy | | $E_{rr}$ | – | 4.318 | – | mJ |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease,<br>Thickness = 2.1 Mil ±2%<br>λ = 2.9 W/mK | $R_{thJH}$ | – | 0.315 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.213 | – | K/W |

**ELECTRICAL CHARACTERISTICS** ($T_J$ = 25°C unless otherwise specified) (continued)

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **IGBT (T5, T6) CHARACTERISTICS** | | | | | | |
| Collector-Emitter Cutoff Current | $V_{GE}$ = 0 V, $V_{CE}$ = 1000 V | $I_{CES}$ | – | – | 20 | μA |
| Collector-Emitter Saturation Voltage | $V_{GE}$ = 15 V, $I_C$ = 300 A, $T_J$ = 25°C | $V_{CE(sat)}$ | – | 1.70 | 2.3 | V |
| | $V_{GE}$ = 15 V, $I_C$ = 300 A, $T_J$ = 175°C | | – | 2.05 | – | |
| Gate-Emitter Threshold Voltage | $V_{GE}$ = $V_{CE}$, $I_C$ = 300 mA | $V_{GE(TH)}$ | 4.1 | 5.03 | 6.0 | V |
| Gate Leakage Current | $V_{GE}$ = ±20 V, $V_{CE}$ = 0 V | $I_{GES}$ | – | – | ±2 | μA |
| Turn-on Delay Time | $T_J$ = 25°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V,<br>$R_{Gon}$ = 11 Ω, $R_{Goff}$ = 23 Ω | $t_{d(on)}$ | – | 120.19 | – | ns |
| Rise Time | | $t_r$ | – | 50.18 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 682.65 | – | |
| Fall Time | | $t_f$ | – | 39.56 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 8.58 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 7.82 | – | |
| Turn-on Delay Time | $T_J$ = 125°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V,<br>$R_{Gon}$ = 11 Ω, $R_{Goff}$ = 23 Ω | $t_{d(on)}$ | – | 112.48 | – | ns |
| Rise Time | | $t_r$ | – | 57.46 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 747.87 | – | |
| Fall Time | | $t_f$ | – | 23.765 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 13.77 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 10.41 | – | |
| Input Capacitance | $V_{CE}$ = 20 V, $V_{GE}$ = 0 V, f = 100 kHz | $C_{ies}$ | – | 17400 | – | pF |
| Output Capacitance | | $C_{oes}$ | – | 654 | – | |
| Reverse Transfer Capacitance | | $C_{res}$ | – | 101 | – | |
| Total Gate Charge | $V_{CE}$ = 600 V, $I_C$ = 300 A, $V_{GE}$ = 15 V | $Q_g$ | – | 1004 | – | nC |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease,<br>Thickness = 2.1 Mil ±2%<br>λ = 2.9 W/mK | $R_{thJH}$ | – | 0.264 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.175 | – | K/W |
| **DIODES (D5a, D6a) CHARACTERISTICS** | | | | | | |
| Diode Forward Voltage | $I_F$ = 400 A, $T_J$ = 25°C | $V_F$ | – | 2.83 | 3.7 | V |
| | $I_F$ = 400 A, $T_J$ = 175°C | | – | 2.42 | – | |
| Reverse Recovery Time | $T_J$ = 25°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V, $R_G$ = 15 Ω | $t_{rr}$ | – | 92.74 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 5.66 | – | μC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 136.18 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 3.14 | – | A/ns |
| Reverse Recovery Energy | | $E_{rr}$ | – | 2.03 | – | mJ |
| Reverse Recovery Time | $T_J$ = 125°C<br>$V_{CE}$ = 600 V, $I_C$ = 200 A<br>$V_{GE}$ = −9 V, 15 V, $R_G$ = 15 Ω | $t_{rr}$ | – | 159.63 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 17.00 | – | μC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 223.97 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 2.71 | – | A/ns |
| Reverse Recovery Energy | | $E_{rr}$ | – | 6.80 | – | mJ |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease,<br>Thickness = 2.1 Mil ±2%<br>λ = 2.9 W/mK | $R_{thJH}$ | – | 0.244 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.168 | – | K/W |

**ELECTRICAL CHARACTERISTICS** ($T_J$ = 25°C unless otherwise specified) (continued)

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **THERMISTOR CHARACTERISTICS** | | | | | | |
| Nominal Resistance | T = 25°C | $R_{25}$ | – | 22 | – | kΩ |
| Nominal Resistance | T = 100°C | $R_{100}$ | – | 1504 | – | Ω |
| Deviation of R25 | | ΔR/R | –1 | – | 1 | % |
| Power Dissipation | | $P_D$ | – | 187.5 | – | mW |
| Power Dissipation Constant | | | – | 1.5 | – | mW/K |
| B-value | B(25/100), tolerance ±3% | | – | 3980 | – | K |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## ORDERING INFORMATION

| Part Number | Marking | Package | Shipping |
|---|---|---|---|
| NXH800A100L4Q2F2S1G | NXH800A100L4Q2F2S1G | Q2PACK – Case 180HH (Pb−Free/Halide−Free) | 12 Units / Blister Tray |
| NXH800A100L4Q2F2P1G | NXH800A100L4Q2F2P1G | Q2PACK – Case 180HG (Pb−Free/Halide−Free) | 12 Units / Blister Tray |
| NXH800A100L4Q2F2S2G | NXH800A100L4Q2F2S2G | Q2PACK – Case 180BM (Pb−Free/Halide−Free) | 12 Units / Blister Tray |
| NXH800A100L4Q2F2P2G | NXH800A100L4Q2F2P2G | Q2PACK – Case 180CQ (Pb−Free/Halide−Free) | 12 Units / Blister Tray |

## TYPICAL CHARACTERISTICS – IGBT T1/T4 AND D5a/D6a DIODE

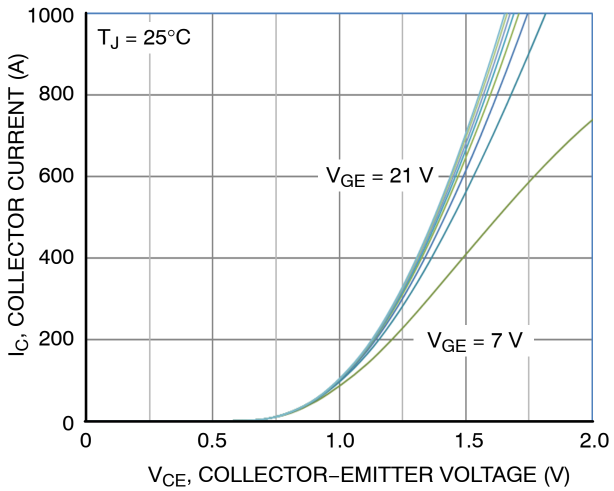



**Figure 7. Typical Output Characteristics**

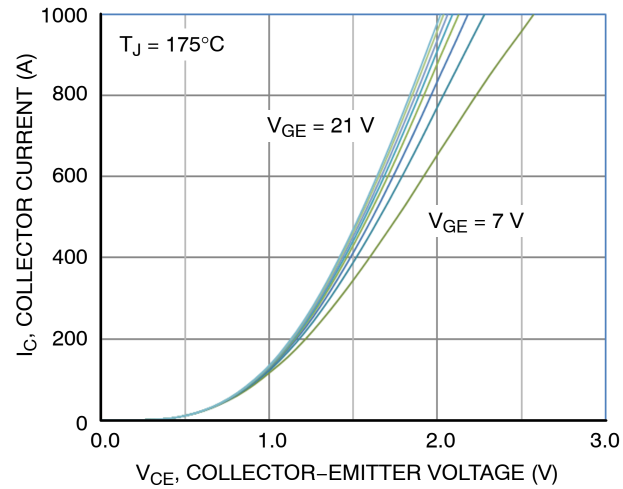



**Figure 8. Typical Output Characteristics**

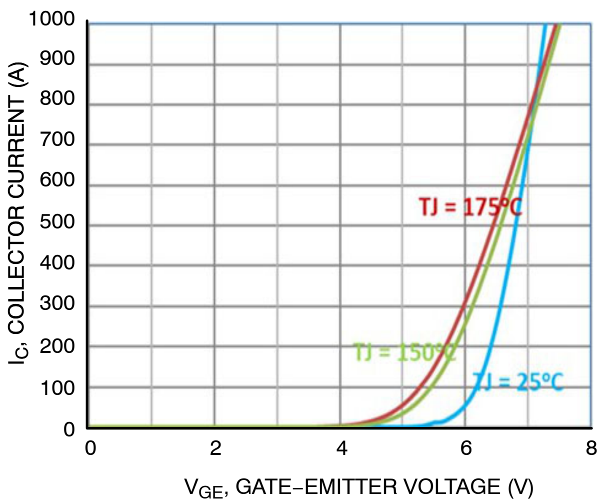



**Figure 9. Transfer Characteristics**

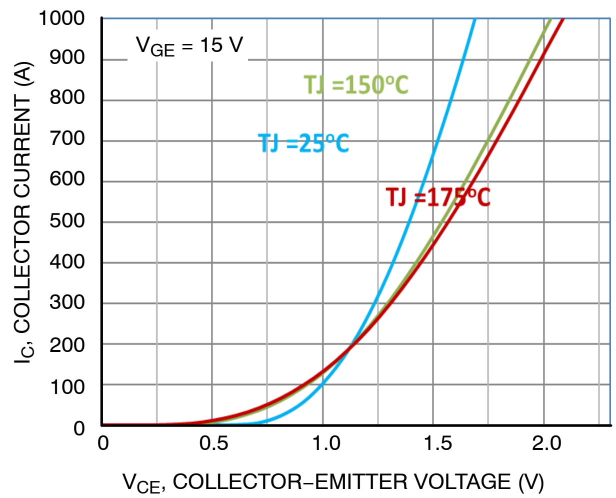



**Figure 10. Saturation Voltage Characteristics**

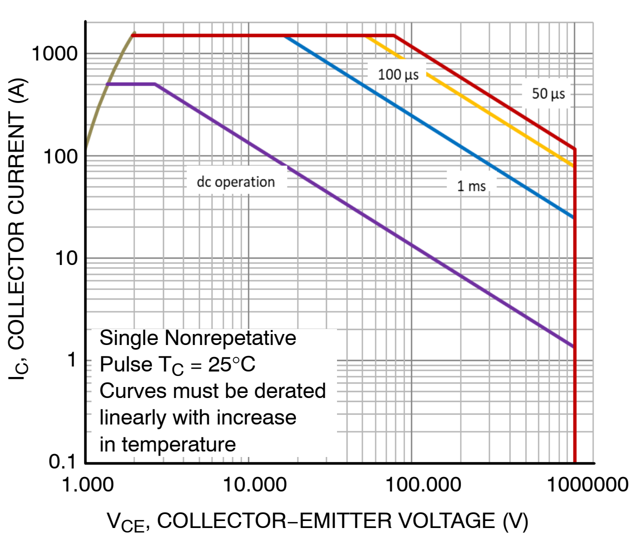



**Figure 11. FBSOA**

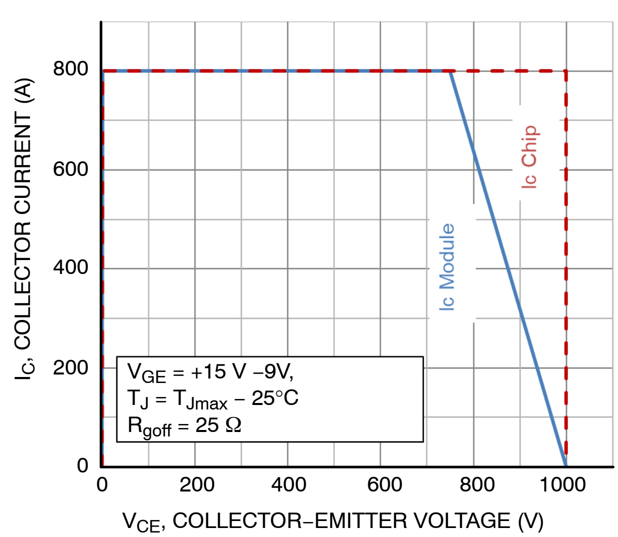



**Figure 12. RBSOA**

## TYPICAL CHARACTERISTICS – IGBT T1/T4 AND D5a/D6a DIODE (continued)

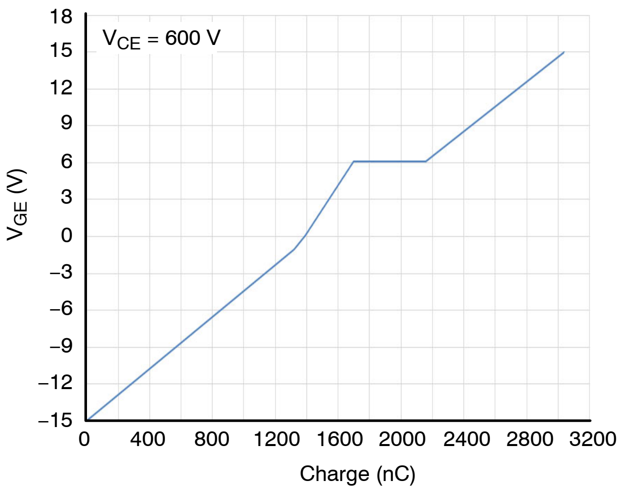



**Figure 13. Gate Voltage vs. Gate Charge (T1a +T1b)**

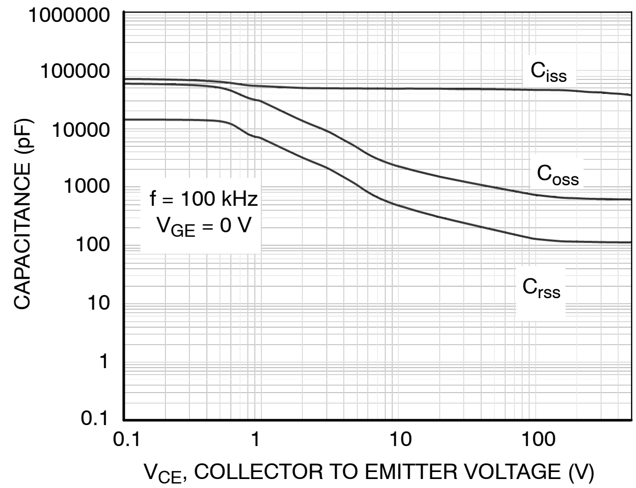



**Figure 14. Capacitance (T1, T4)**

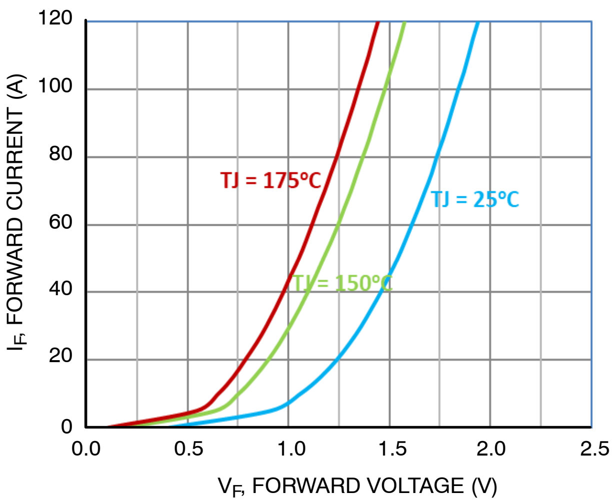



**Figure 15. Diode Forward Characteristics**

## TYPICAL CHARACTERISTICS – IGBT T2/T3 AND D1a/D4a, D2a/D3a DIODE

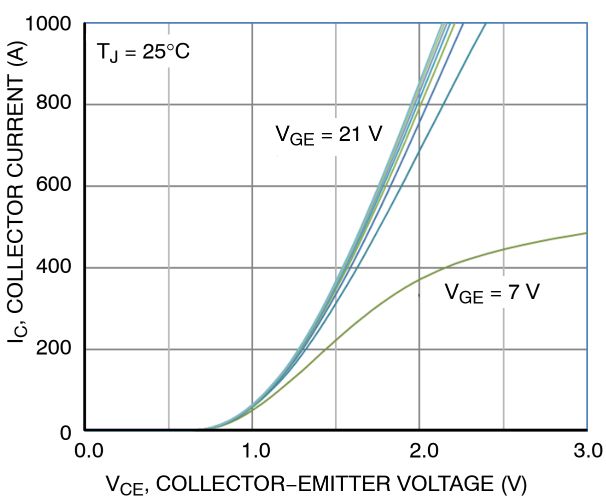



**Figure 16. Typical Output Characteristics**

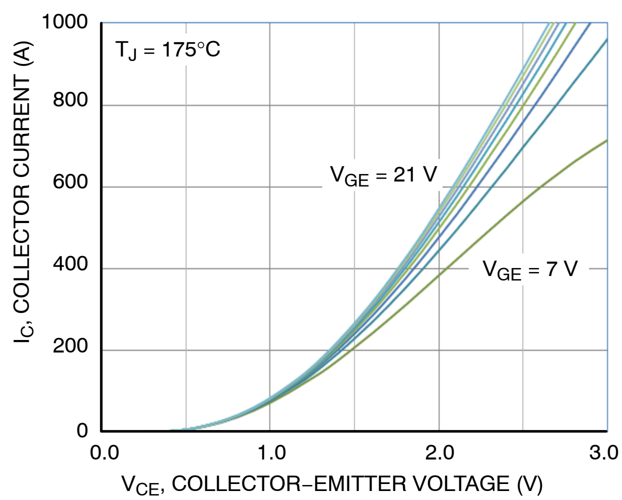



**Figure 17. Typical Output Characteristics**

## TYPICAL CHARACTERISTICS – IGBT T2/T3 AND D1a/D4a, D2a/D3a DIODE (continued)

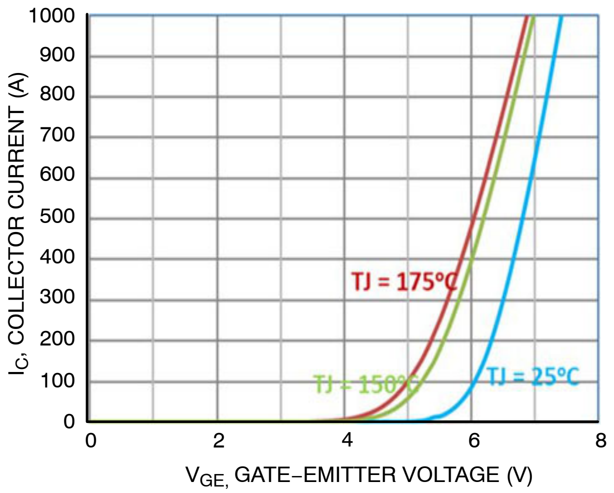



**Figure 18. Transfer Characteristics**

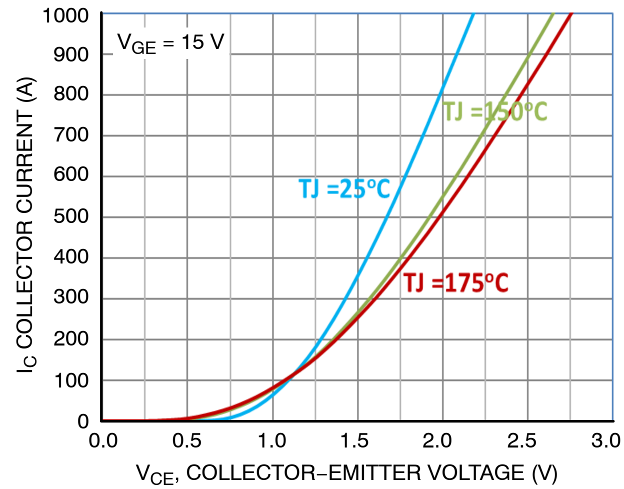



**Figure 19. Saturation Voltage Characteristic**

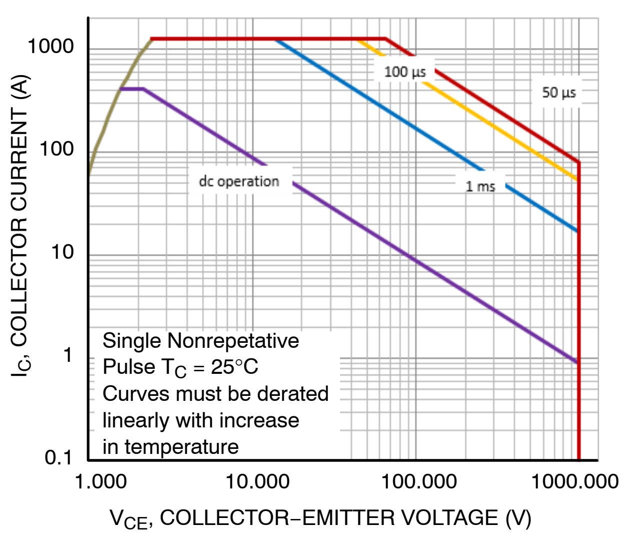



**Figure 20. FBSOA**

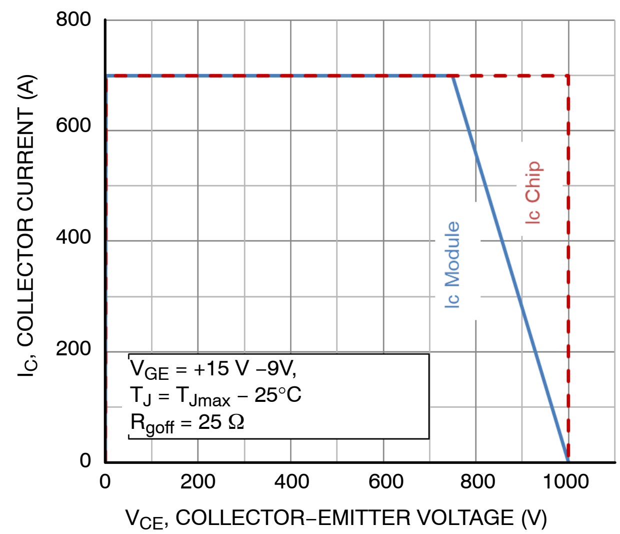



**Figure 21. RBSOA**

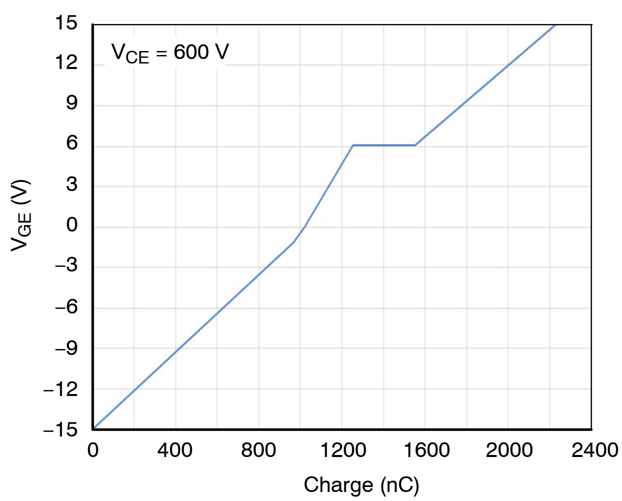



**Figure 22. Gate Voltage vs. Gate Charge**

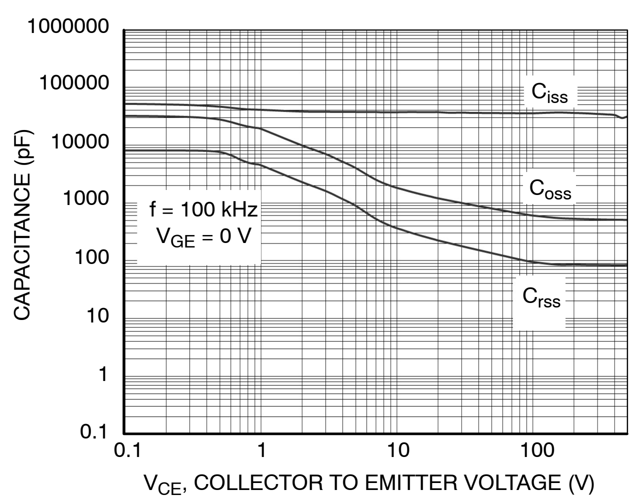



**Figure 23. Capacitance**

## TYPICAL CHARACTERISTICS – IGBT T2/T3 AND D1a/D4a, D2a/D3a DIODE (continued)

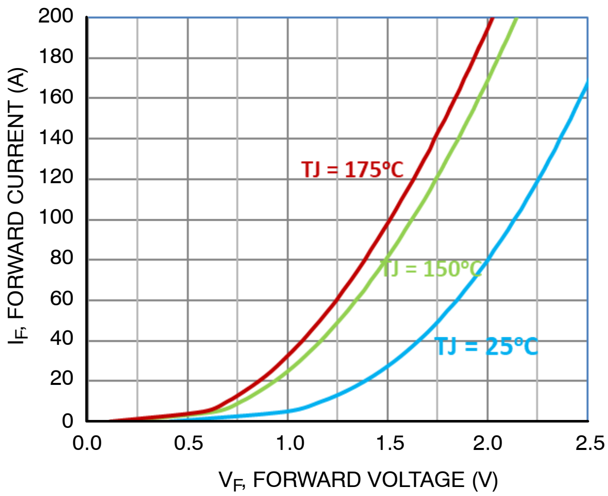



**Figure 24. Diode Forward Characteristics**

## TYPICAL CHARACTERISTICS – IGBT T5/T6 AND D1b/D2b/D6b, D3b/D4b/D5b DIODE (continued)

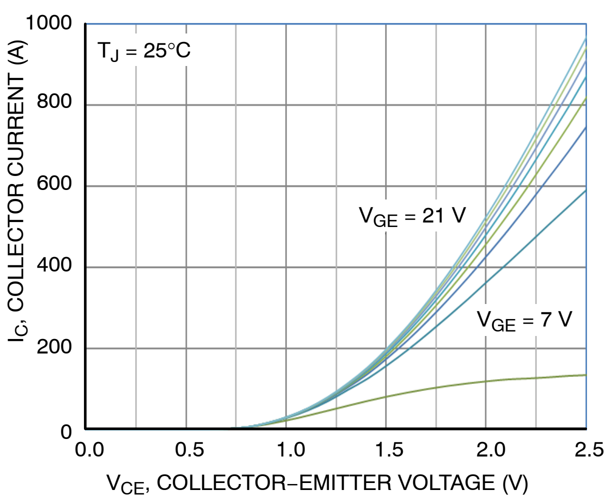



**Figure 25. Typical Output Characteristics**

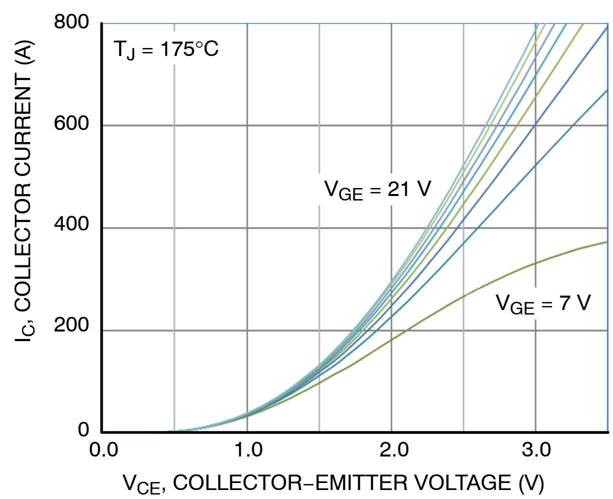



**Figure 26. Typical Output Characteristics**

## TYPICAL CHARACTERISTICS – IGBT T5/T6 AND D1b/D2b/D6b, D3b/D4b/D5b DIODE (continued)

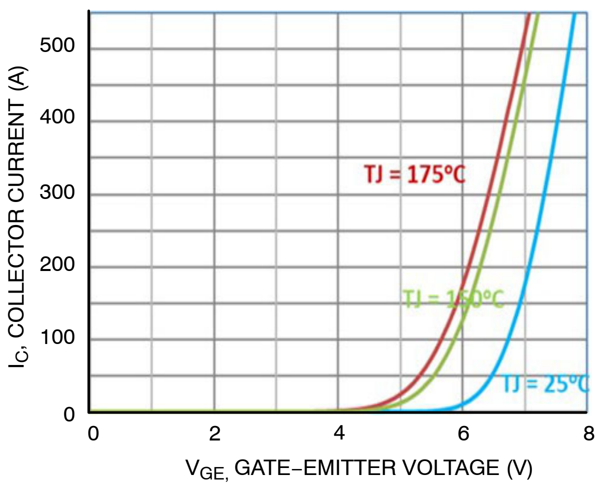



**Figure 27. Transfer Characteristics**

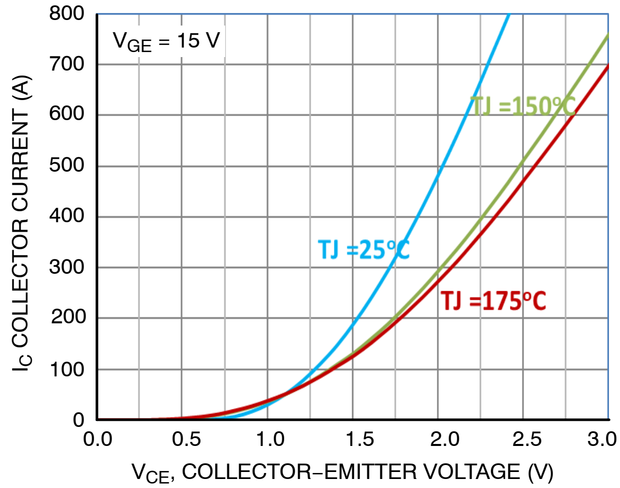



**Figure 28. Saturation Voltage Characteristic**

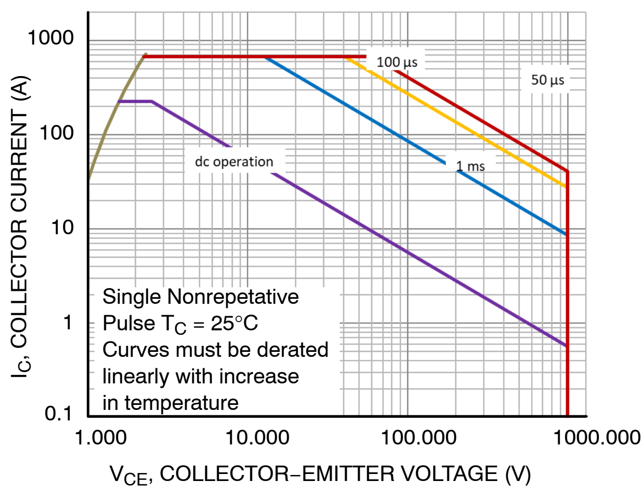



**Figure 29. FBSOA**

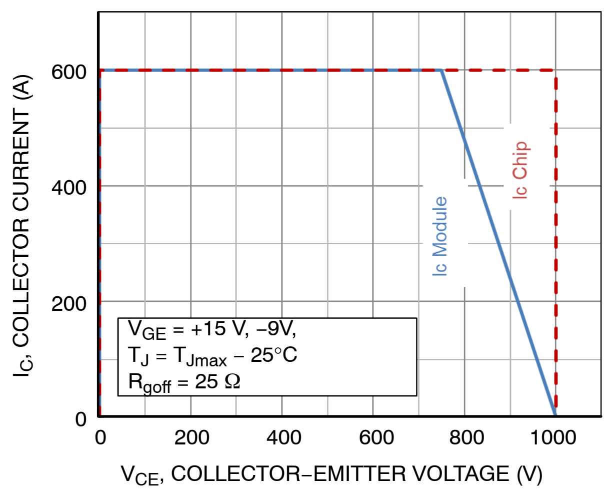



**Figure 30. RBSOA**

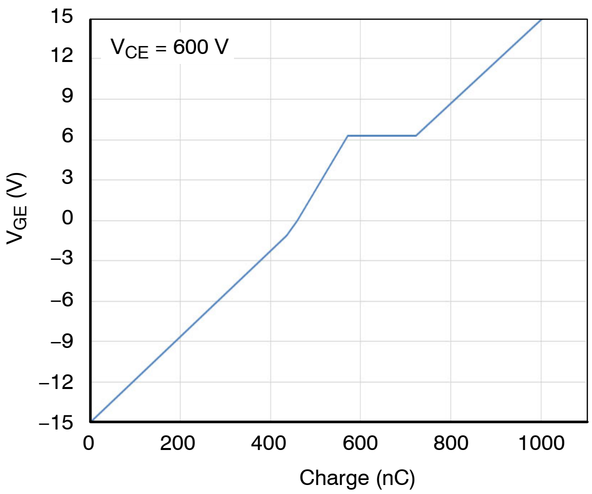



**Figure 31. Gate Voltage vs. Gate Charge**

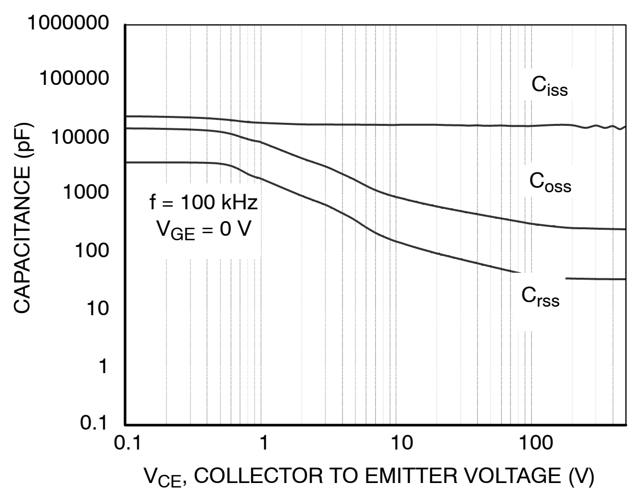



**Figure 32. Capacitance**

## TYPICAL CHARACTERISTICS – IGBT T5/T6 AND D1b/D2b/D6b, D3b/D4b/D5b DIODE (continued)

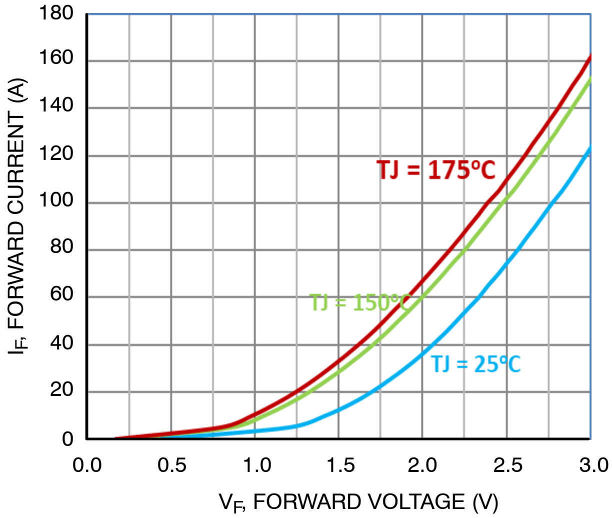



**Figure 33. Diode Forward Characteristics**

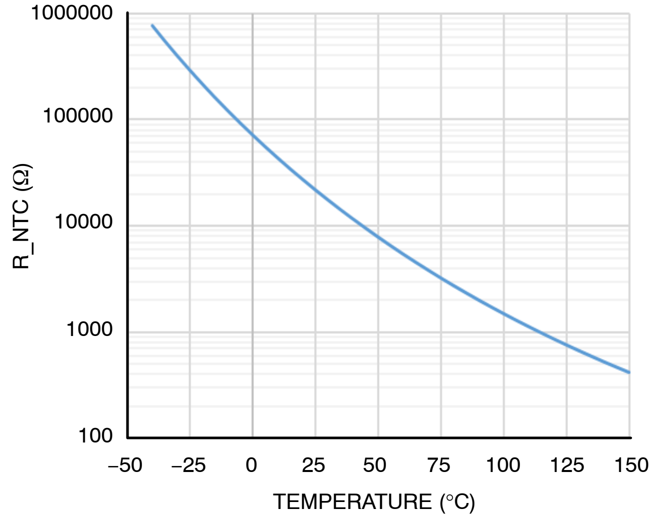



**Figure 34. Temperature vs. NTC Value**

## TYPICAL CHARACTERISTICS – IGBT AND DIODE

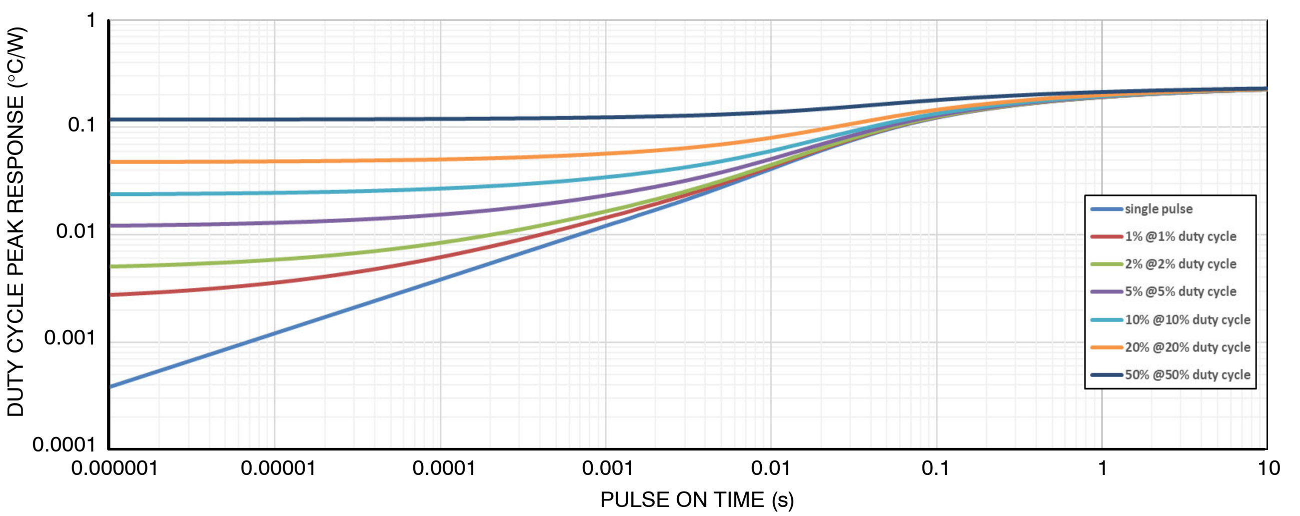



**Figure 35. Transient Thermal Impedance (T1a, T1b, T4a, T4b)**

## TYPICAL CHARACTERISTICS – IGBT AND DIODE (continued)

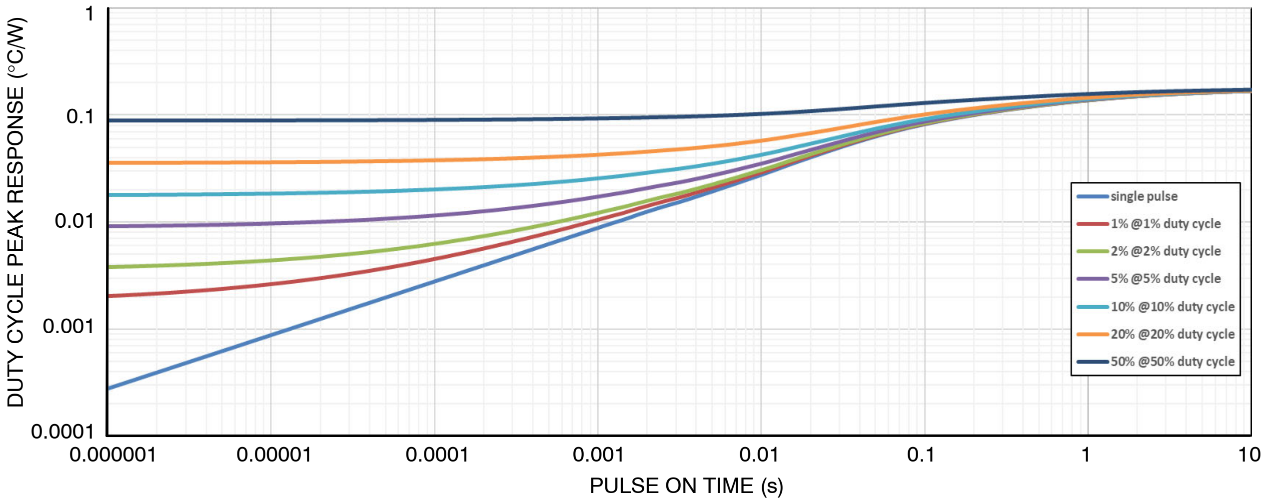



**Figure 36. Transient Thermal Impedance (T2, T3)**

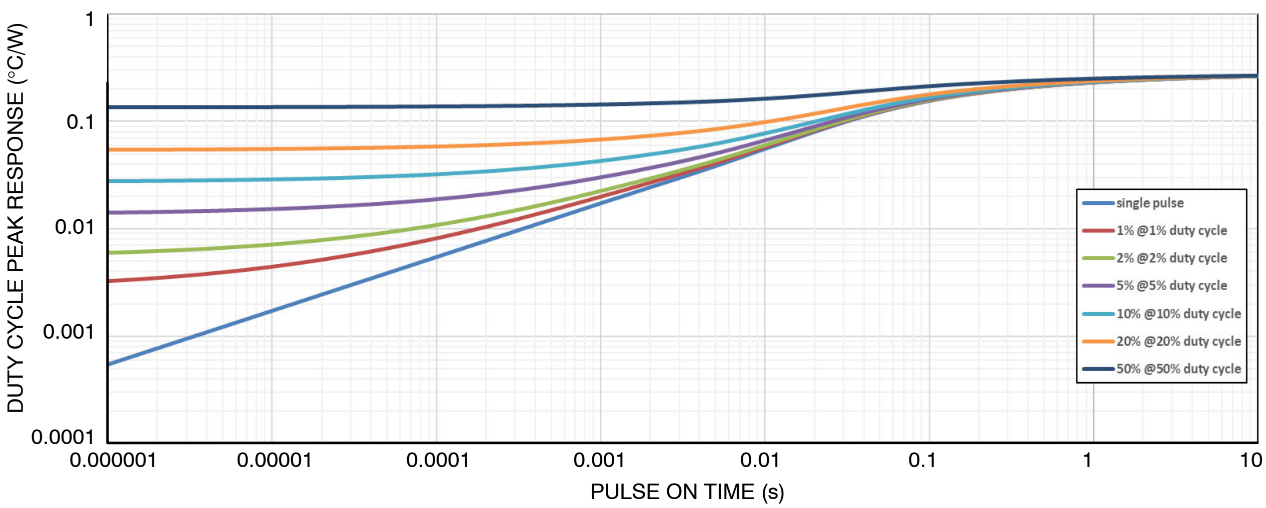



**Figure 37. Transient Thermal Impedance (T5, T6)**

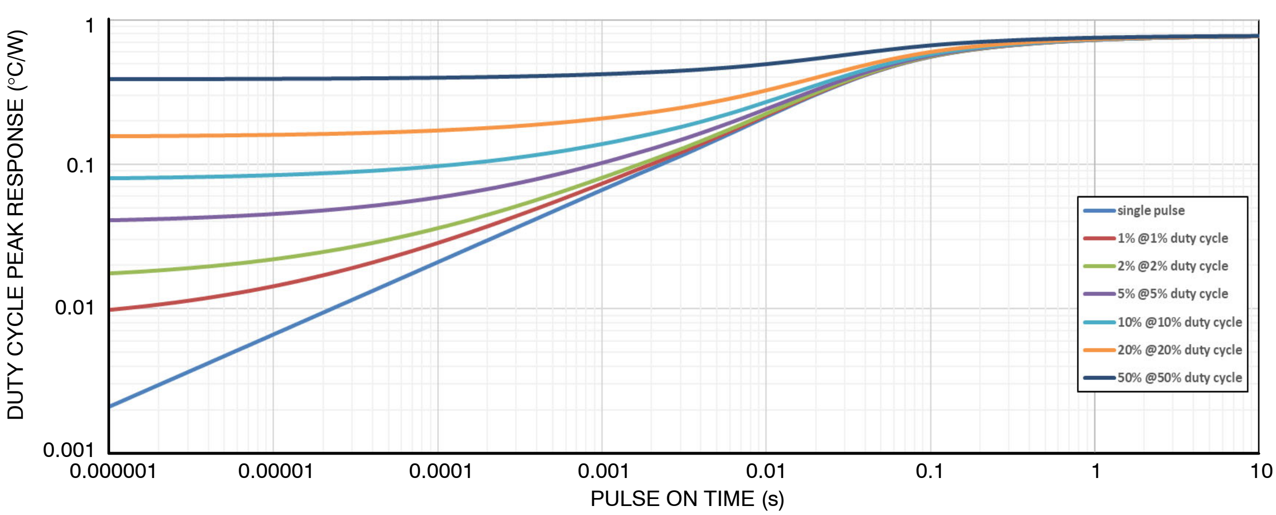



**Figure 38. Transient Thermal Impedance (D1b, D2b, D3b, D4b, D5b, D6b)**

## TYPICAL CHARACTERISTICS – IGBT AND DIODE (continued)

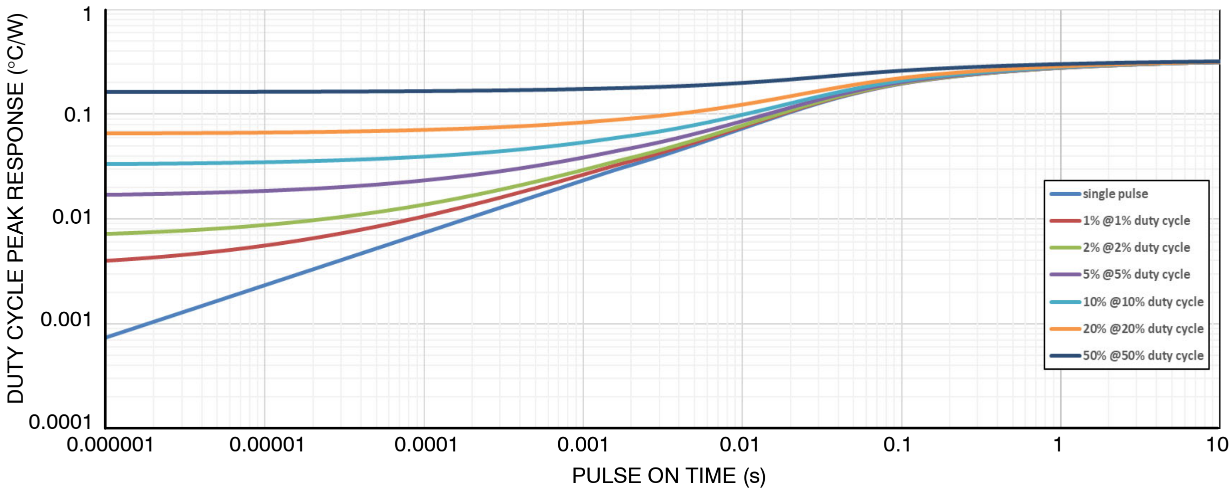



**Figure 39. Transient Thermal Impedance (D1a, D2a, D3a, D4a)**

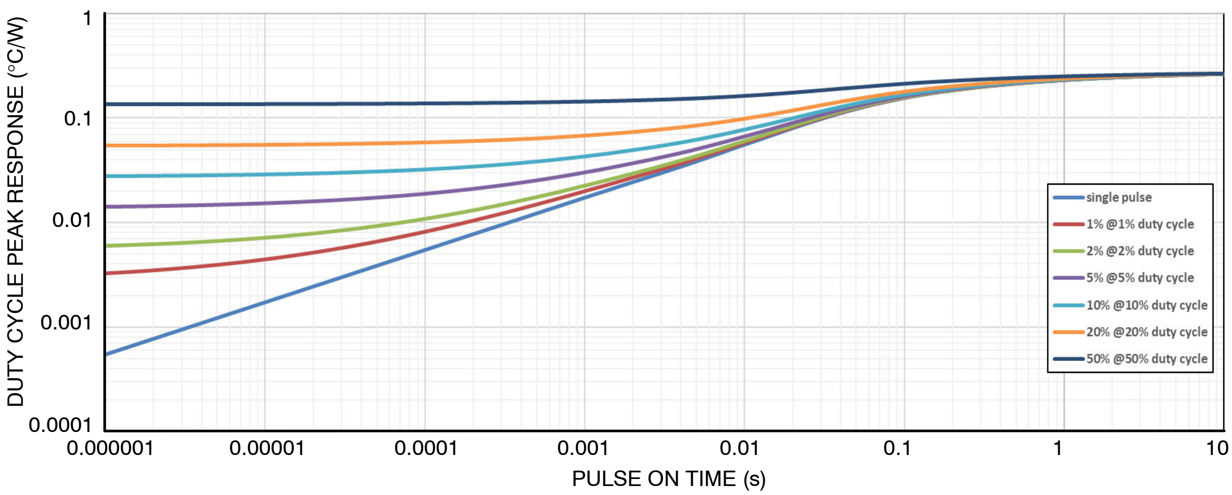



**Figure 40. Transient Thermal Impedance (D5a, D6a)**

## TYPICAL CHARACTERISTICS – T1‖D5a or T4‖D6a

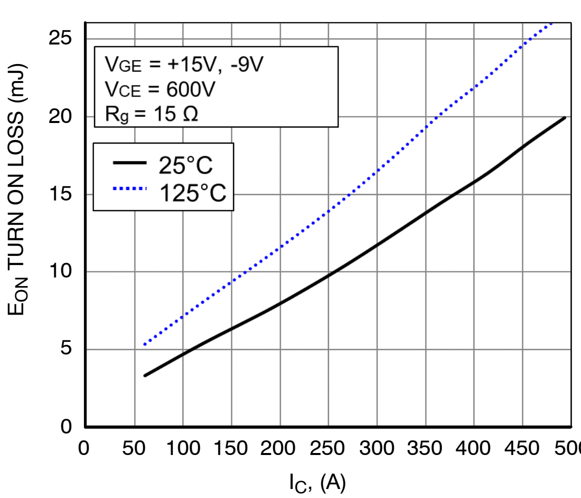



**Figure 41. Typical Turn On Loss vs. $I_C$**

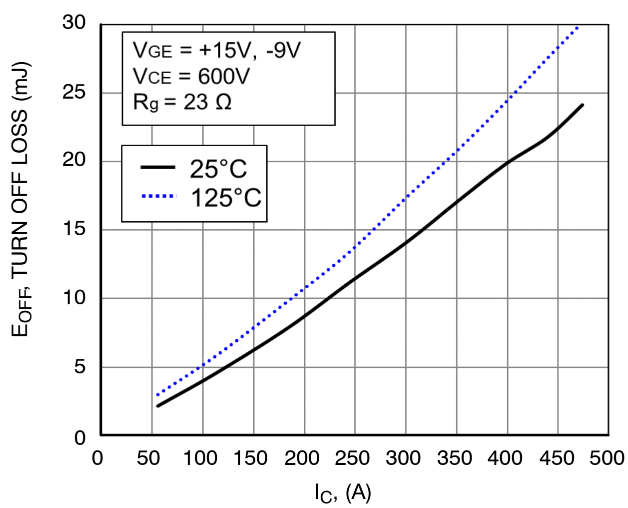



**Figure 42. Typical Turn Off Loss vs. $I_C$**

## TYPICAL CHARACTERISTICS – T1‖D5a or T4‖D6a (continued)

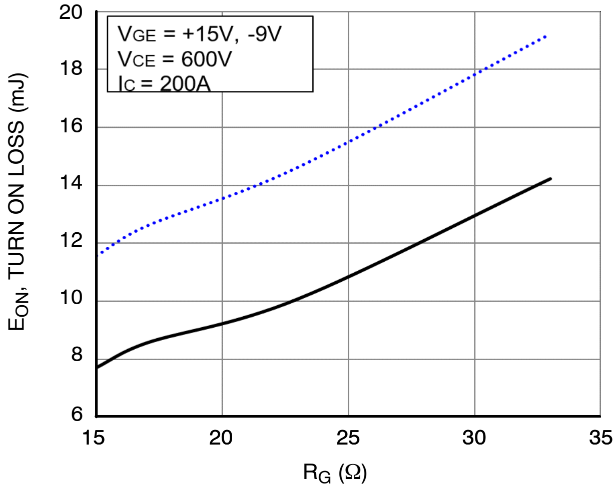



**Figure 43. Typical Turn On Loss vs. $R_G$**

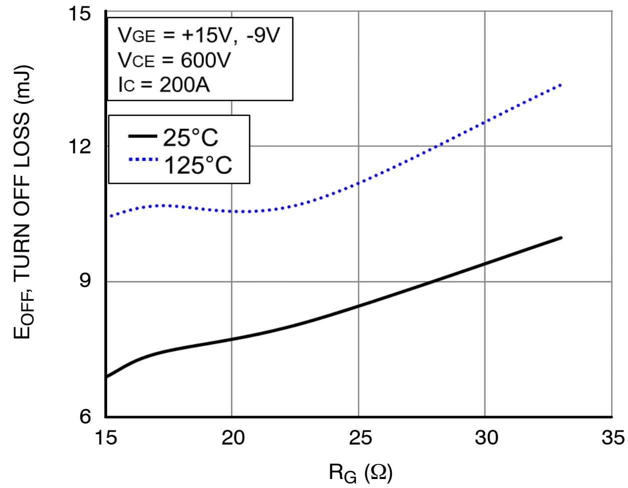



**Figure 44. Typical Turn Off Loss vs. $R_G$**

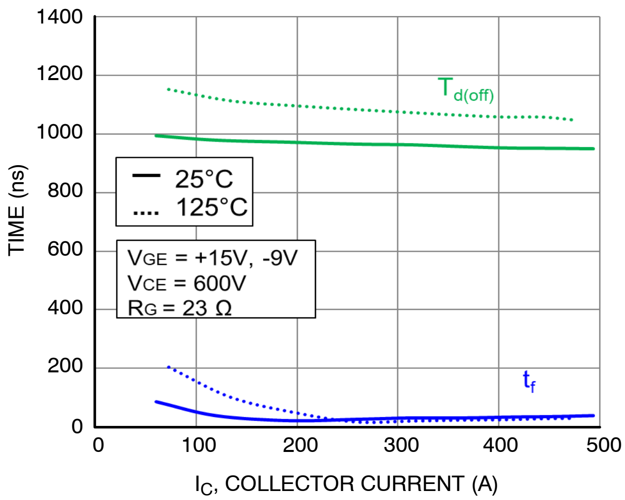



**Figure 45. Typical Turn−Off Switching Time vs. $I_C$**

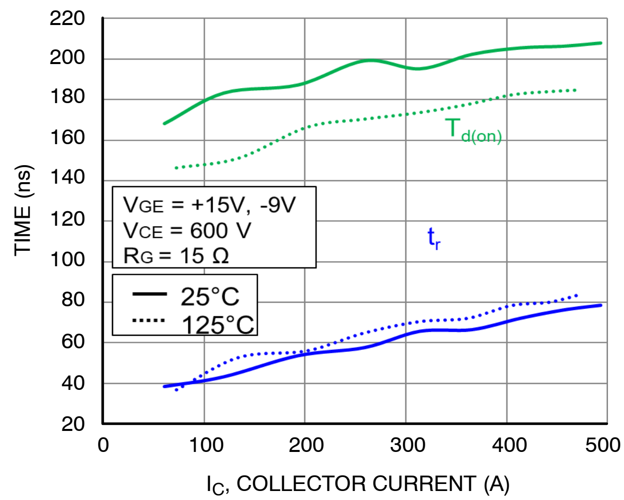



**Figure 46. Typical Turn−On Switching Time vs. $I_C$**

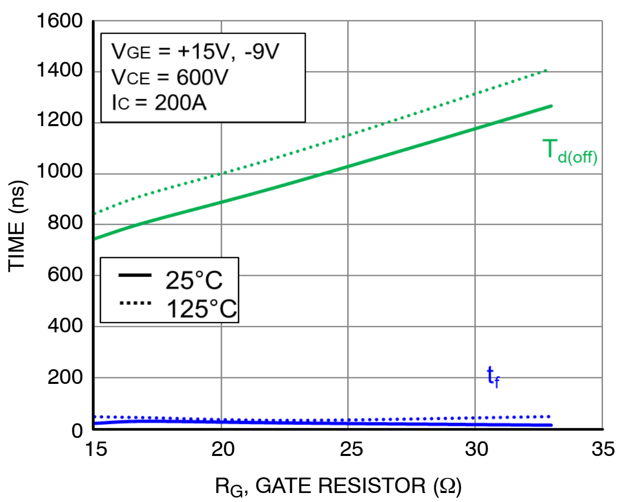



**Figure 47. Typical Turn−Off Switching Time vs. $R_G$**

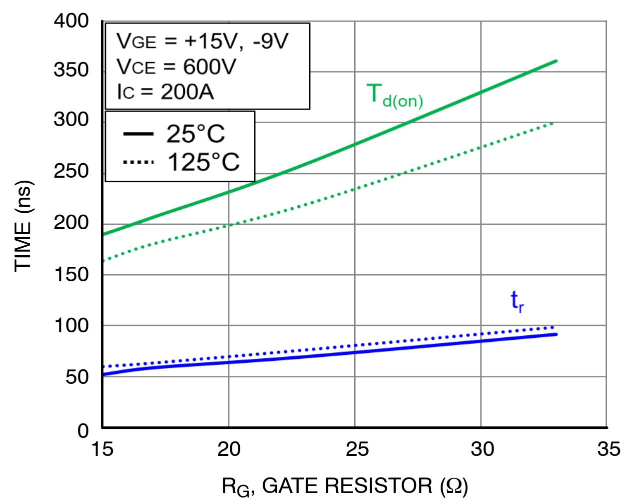



**Figure 48. Typical Turn−On Switching Time vs. $R_G$**

## TYPICAL CHARACTERISTICS – T1||D5a or T4||D6a (continued)

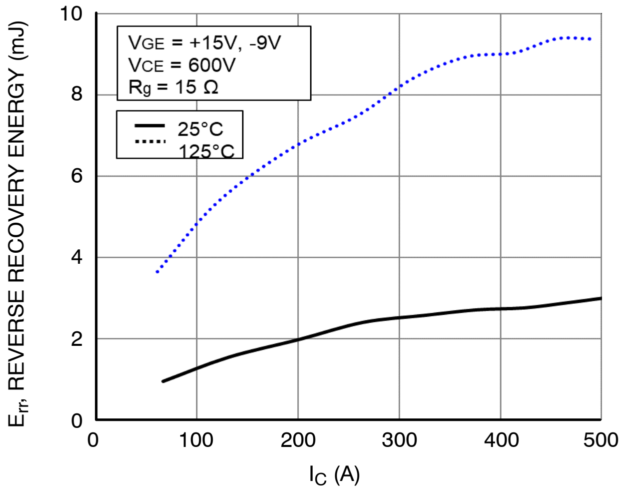



**Figure 49. Typical Reverse Recovery Energy Loss vs. $I_C$**

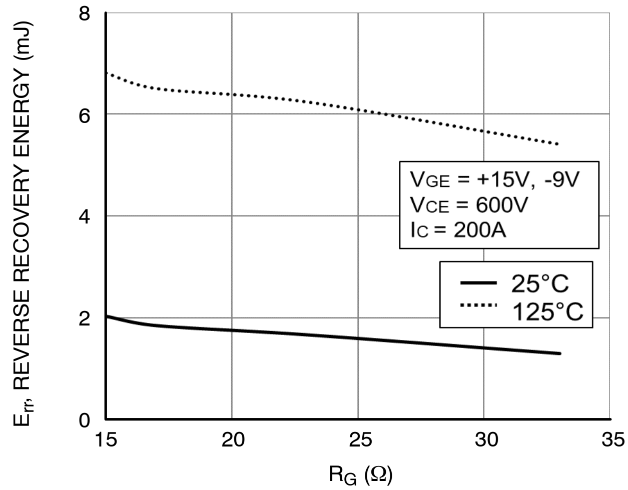



**Figure 50. Typical Reverse Recovery Energy Loss vs. $R_G$**

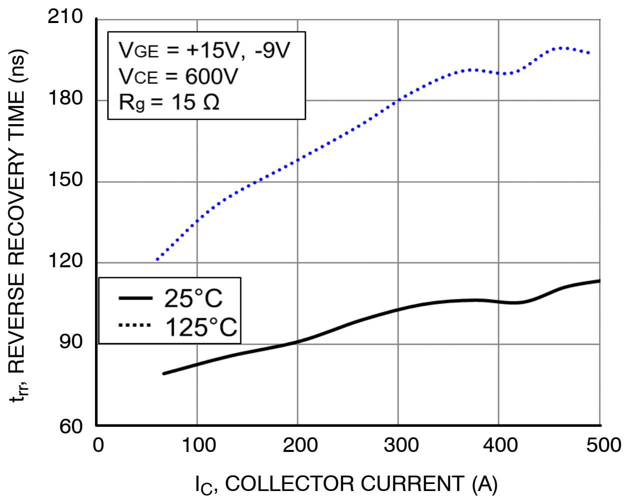



**Figure 51. Typical Reverse Recovery Time vs. $I_C$**

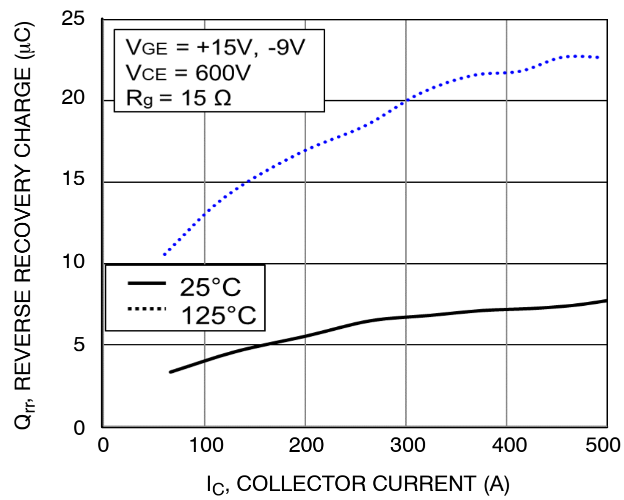



**Figure 52. Typical Reverse Recovery Charge vs. $I_C$**

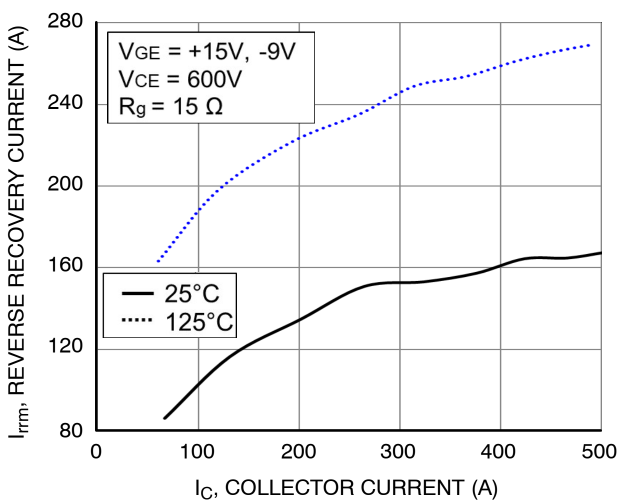



**Figure 53. Typical Reverse Recovery Current vs. $I_C$**

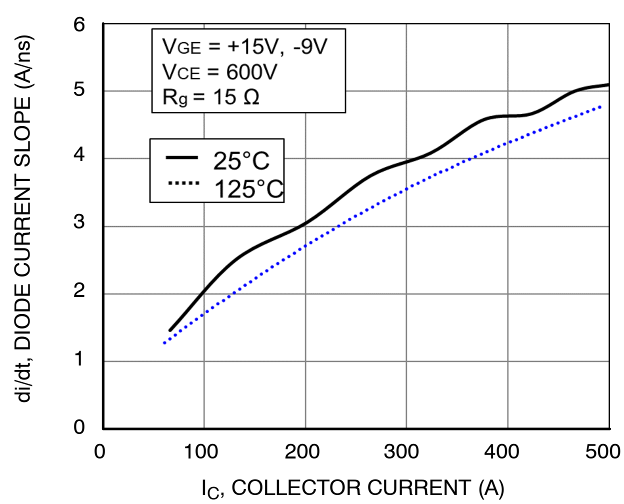



**Figure 54. Typical di/dt vs. $I_C$**

## TYPICAL CHARACTERISTICS – T1||D5a or T4||D6a (continued)

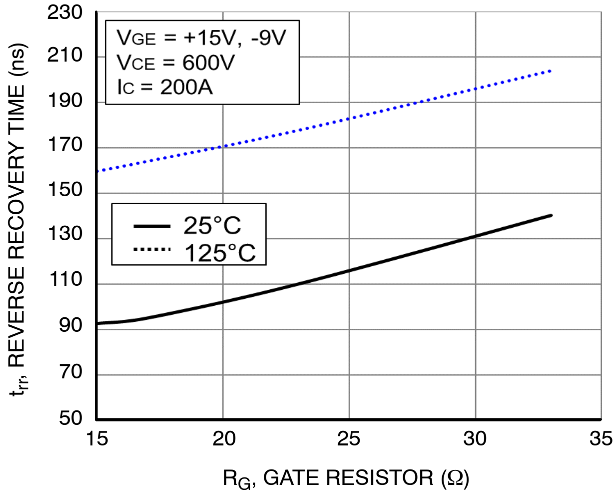



**Figure 55. Typical Reverse Recovery Time vs. $R_G$**

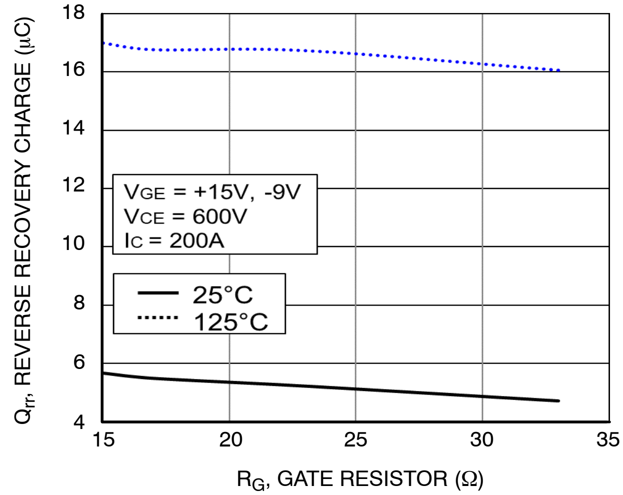



**Figure 56. Typical Reverse Recovery Charge vs. $R_G$**

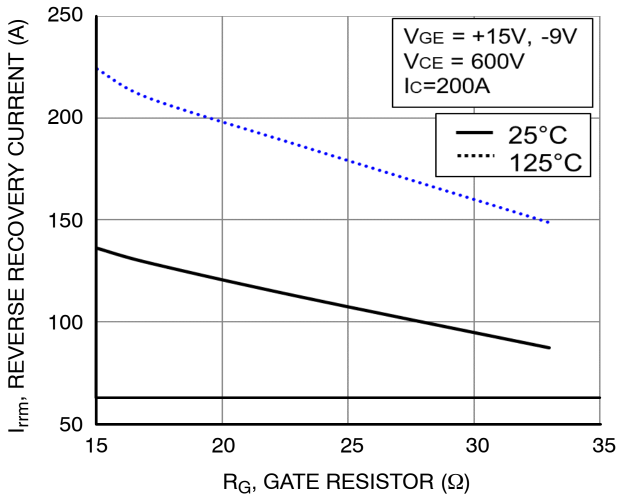



**Figure 57. Typical Reverse Recovery Peak Current vs. $R_G$**

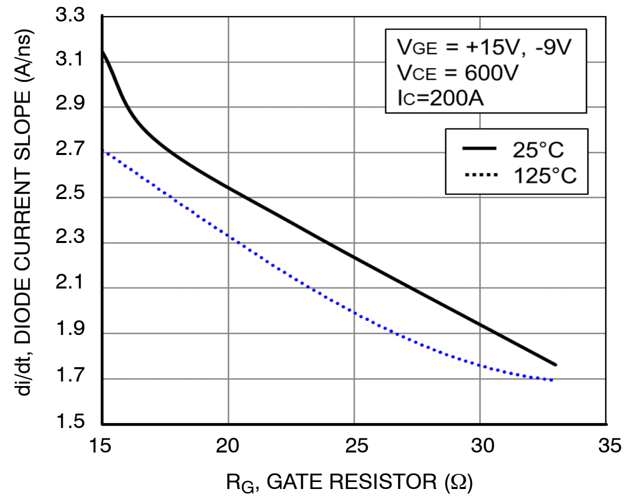



**Figure 58. Typical di/dt vs. $R_G$**

## TYPICAL CHARACTERISTICS – T2||D3a + D4a or T3||D1a + D2a

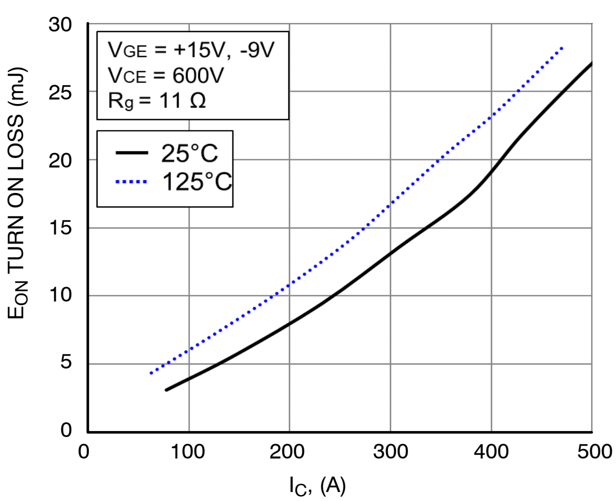



**Figure 59. Typical Turn On Loss vs. $I_C$**

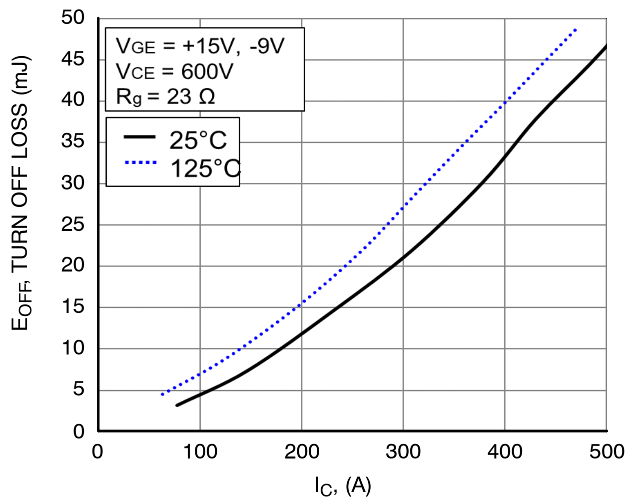



**Figure 60. Typical Turn Off Loss vs. $I_C$**

## TYPICAL CHARACTERISTICS – T2‖D3a + D4a or T3‖D1a + D2a (continued)

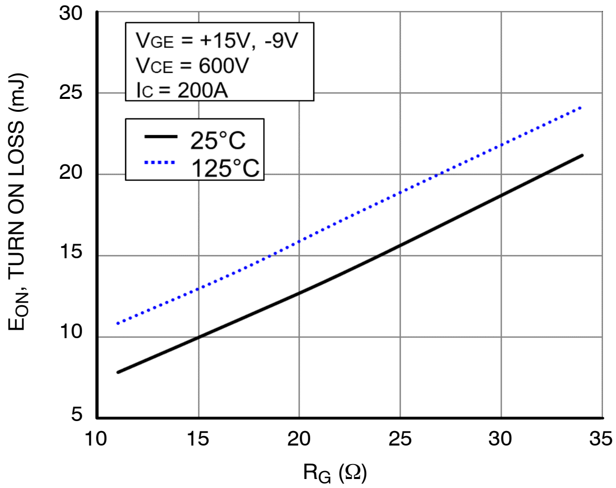



**Figure 61. Typical Turn On Loss vs. $R_G$**

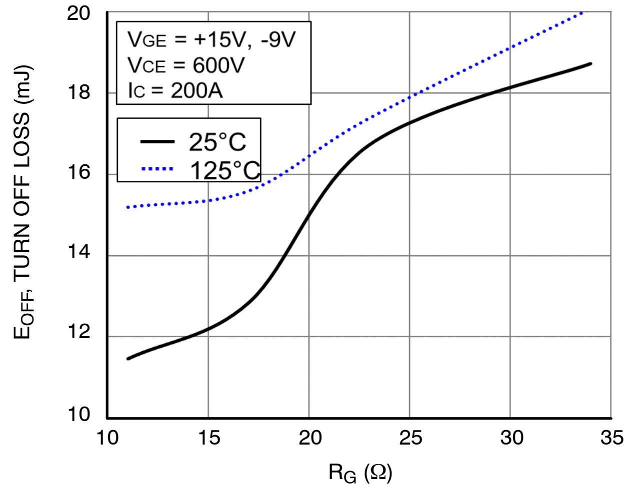



**Figure 62. Typical Turn Off Loss vs. $R_G$**

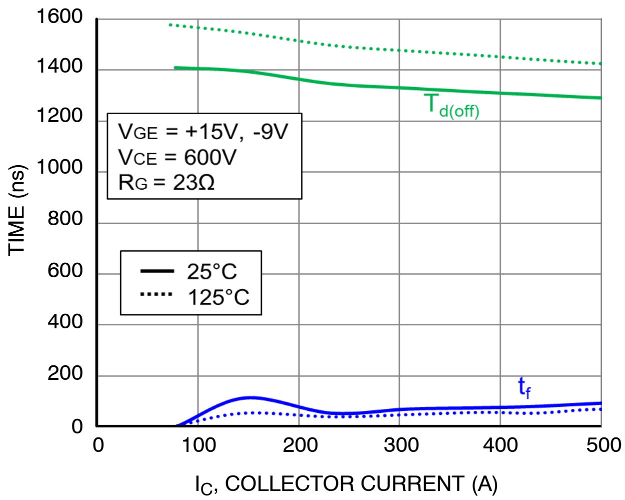



**Figure 63. Typical Turn−Off Switching Time vs. $I_C$**

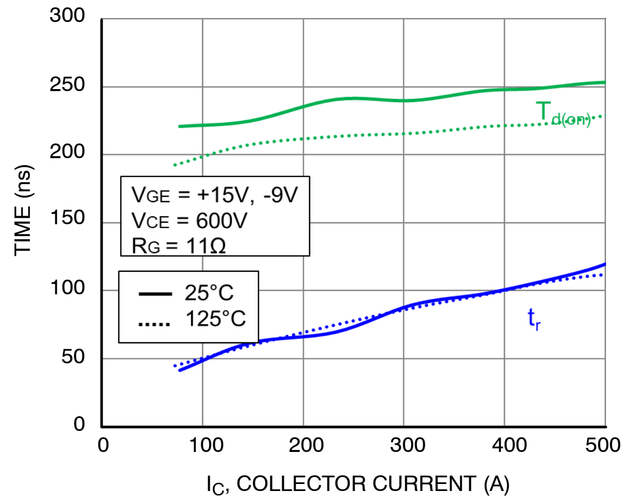



**Figure 64. Typical Turn−On Switching Time vs. $I_C$**

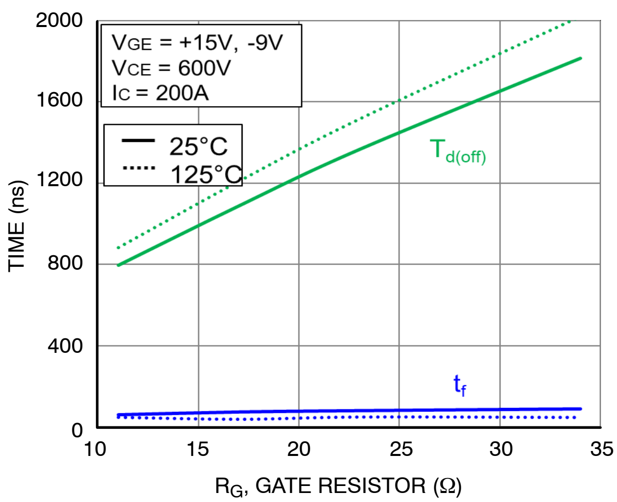



**Figure 65. Typical Turn−Off Switching Time vs. $R_G$**

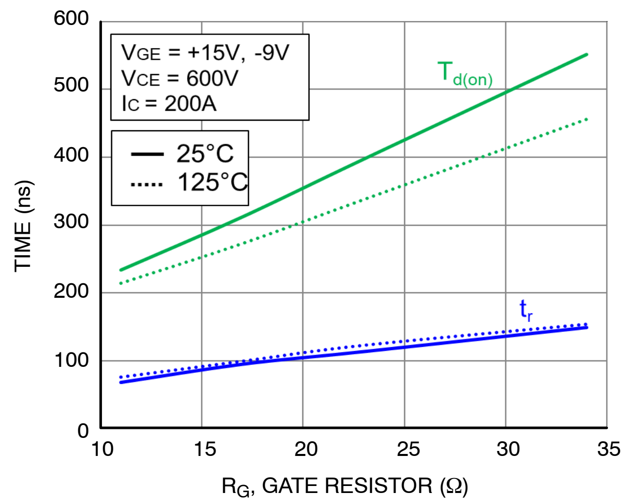



**Figure 66. Typical Turn−On Switching Time vs. $R_G$**

## TYPICAL CHARACTERISTICS – T2‖D3a + D4a or T3‖D1a + D2a (continued)

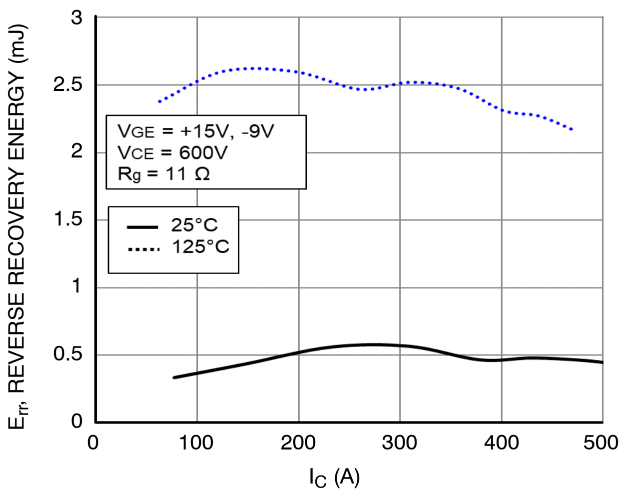



Figure 67. Typical Reverse Recovery Energy Loss vs. $I_C$

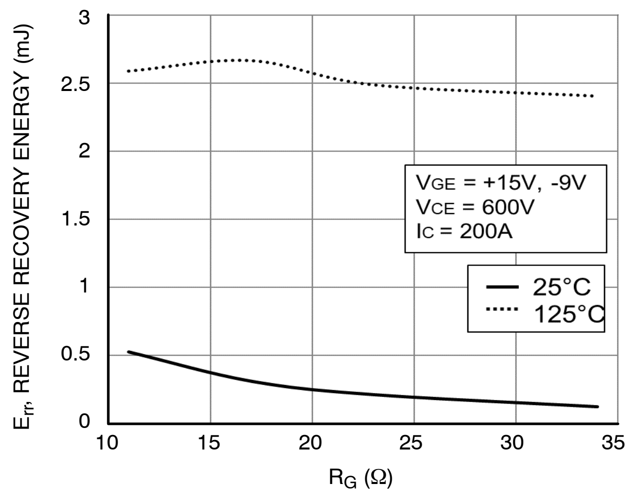



Figure 68. Typical Reverse Recovery Energy Loss vs. $R_G$

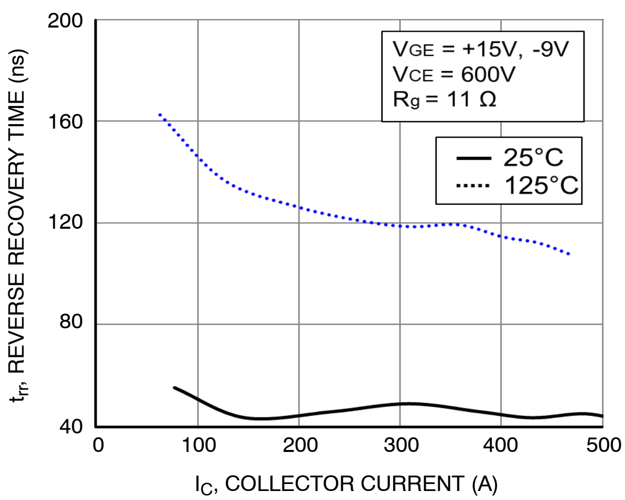



Figure 69. Typical Reverse Recovery Time vs. $I_C$

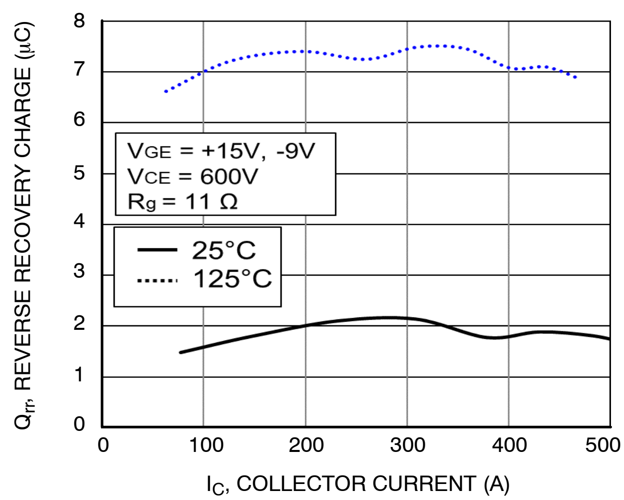



Figure 70. Typical Reverse Recovery Charge vs. $I_C$

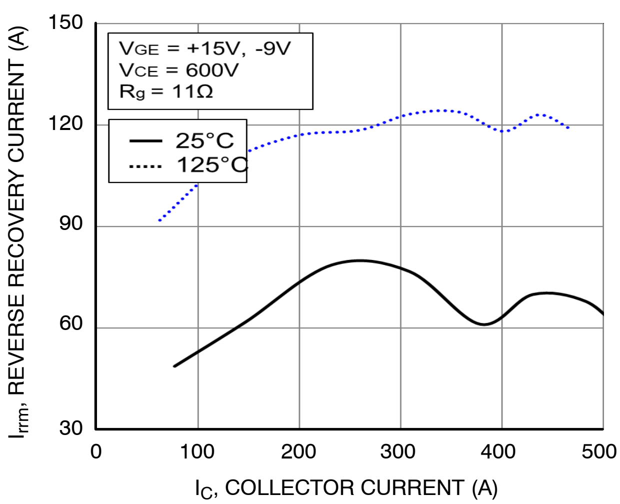



Figure 71. Typical Reverse Recovery Current vs. $I_C$

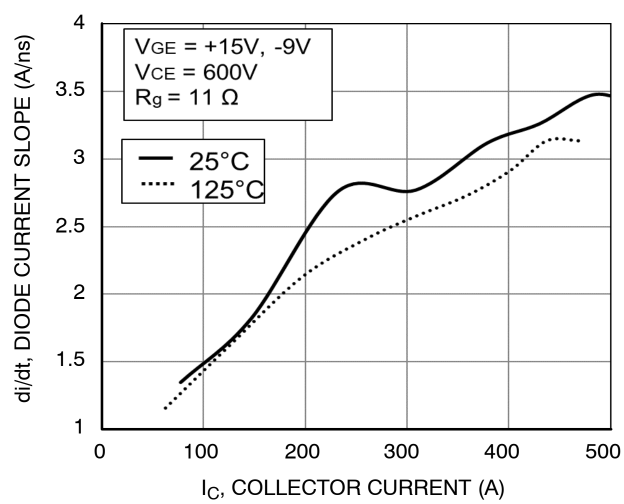



Figure 72. Typical di/dt vs. $I_C$

## TYPICAL CHARACTERISTICS – T2‖D3a + D4a or T3‖D1a + D2a (continued)

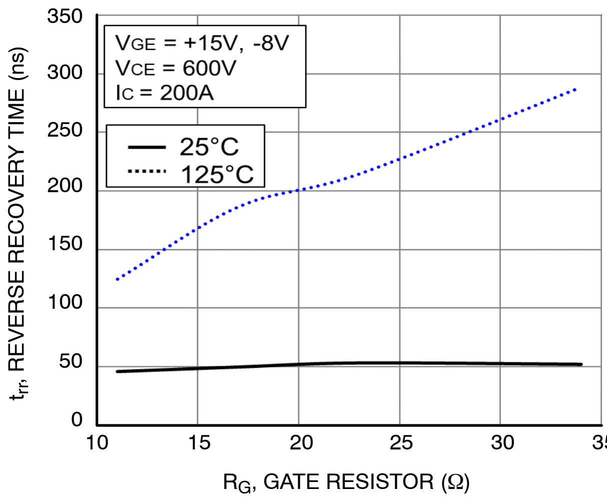



**Figure 73. Typical Reverse Recovery Time vs. $R_G$**

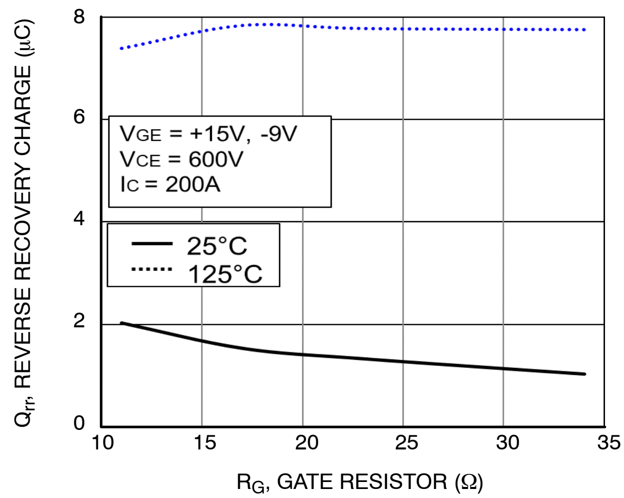



**Figure 74. Typical Reverse Recovery Charge vs. $R_G$**

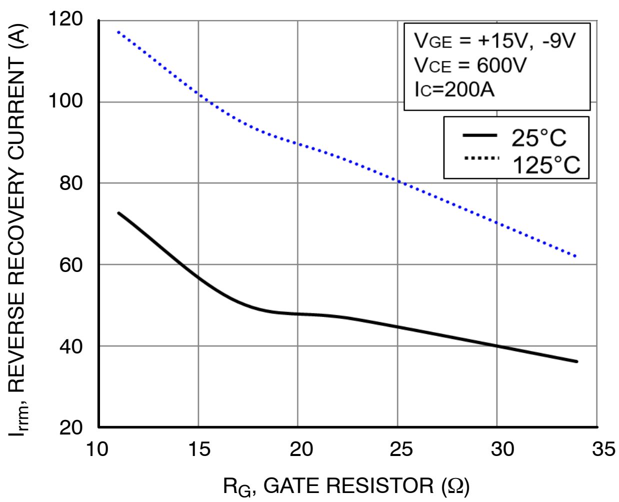



**Figure 75. Typical Reverse Recovery Peak Current vs. $R_G$**

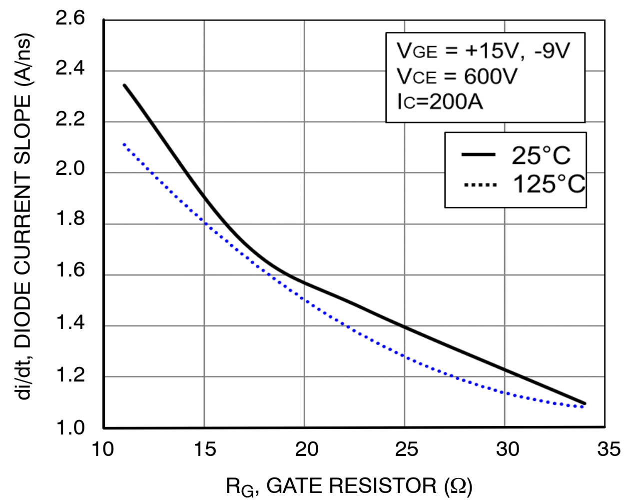



**Figure 76. Typical di/dt vs. $R_G$**

## TYPICAL CHARACTERISTICS – T6‖D4a or T5‖D1a

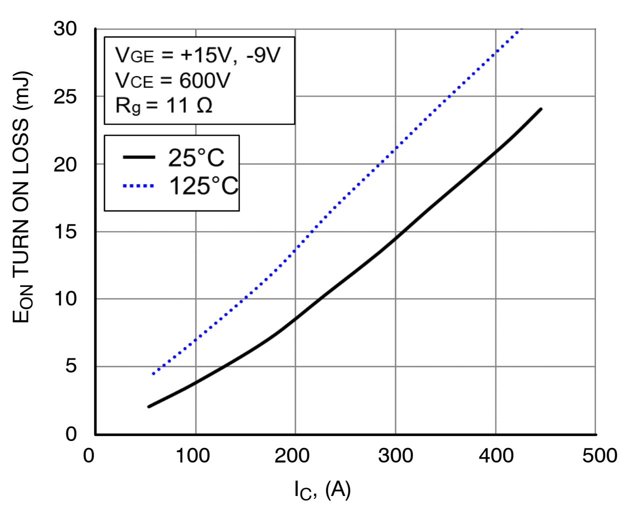



**Figure 77. Typical Turn On Loss vs. $I_C$**

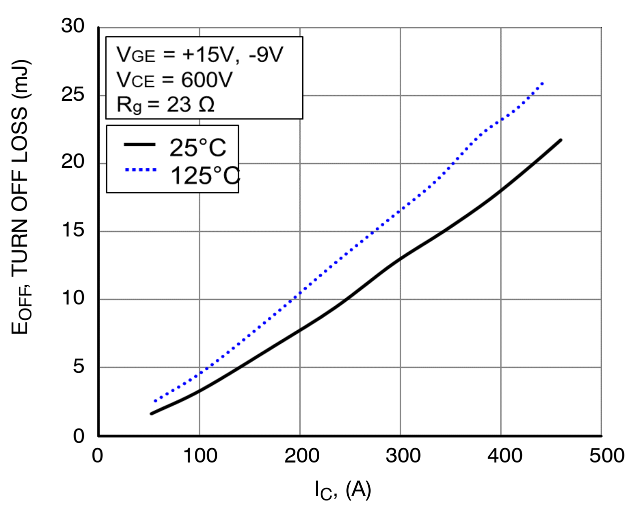



**Figure 78. Typical Turn Off Loss vs. $I_C$**

## TYPICAL CHARACTERISTICS – T6||D4a or T5||D1a (continued)

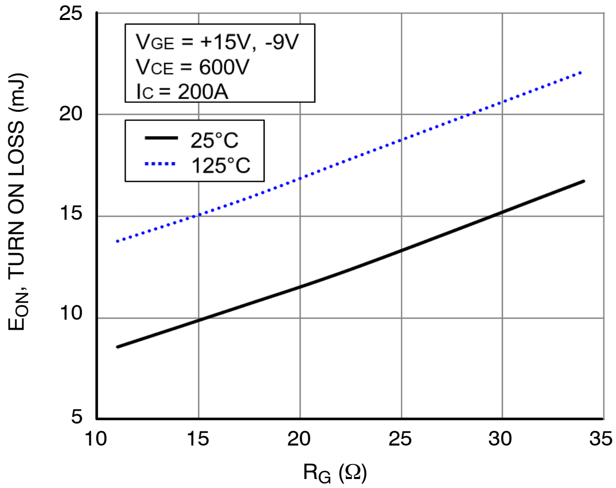



**Figure 79. Typical Turn On Loss vs. $R_G$**

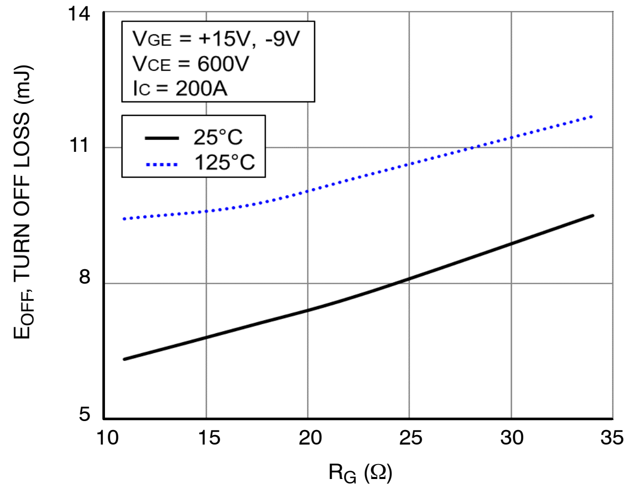



**Figure 80. Typical Turn Off Loss vs. $R_G$**

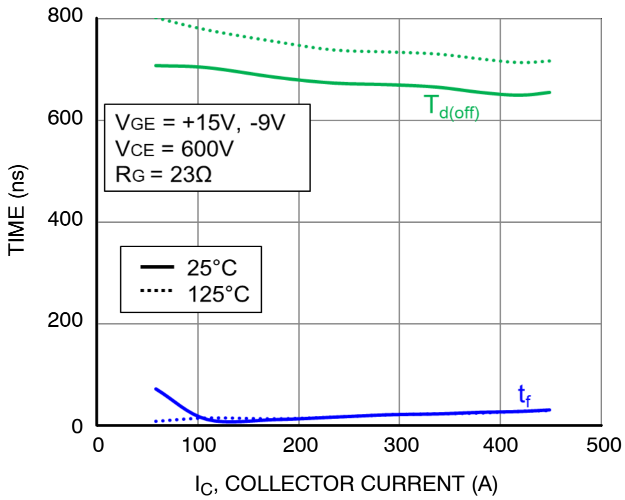



**Figure 81. Typical Turn−Off Switching Time vs. $I_C$**

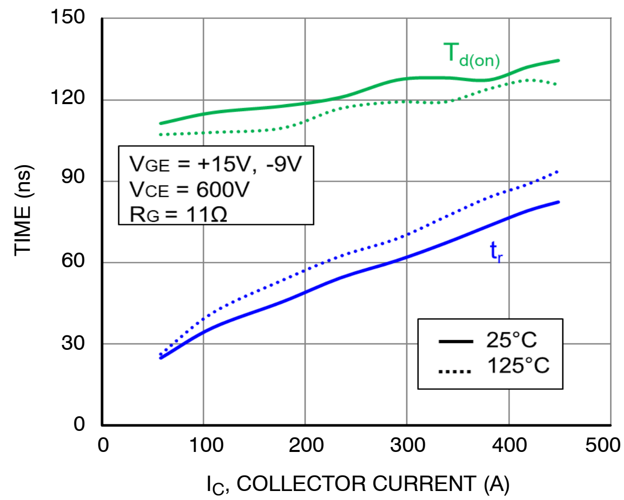



**Figure 82. Typical Turn−On Switching Time vs. $I_C$**

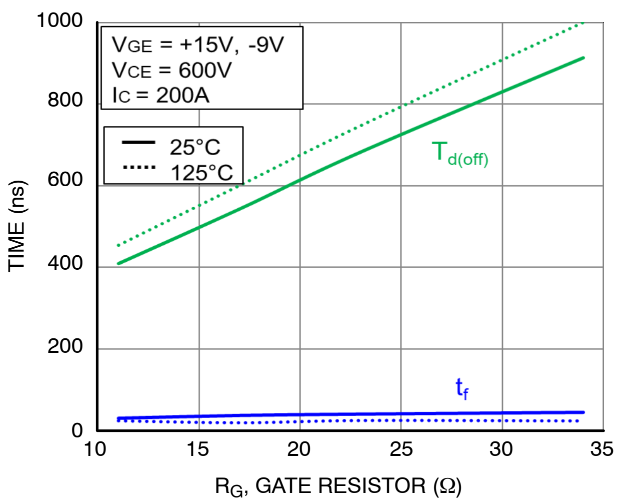



**Figure 83. Typical Turn−Off Switching Time vs. $R_G$**

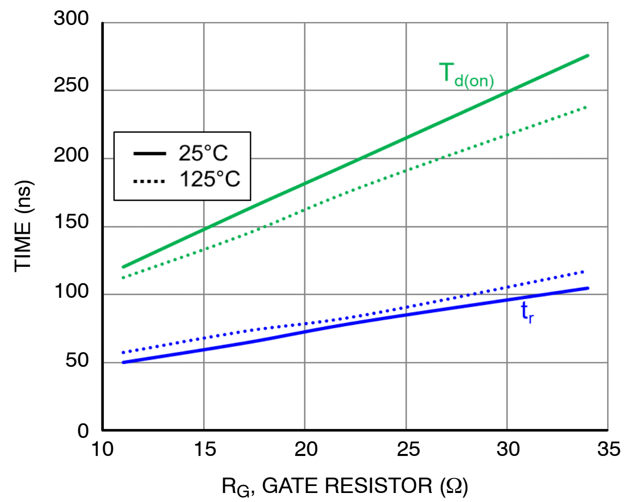



**Figure 84. Typical Turn−On Switching Time vs. $R_G$**

## TYPICAL CHARACTERISTICS – T6‖D4a or T5‖D1a (continued)

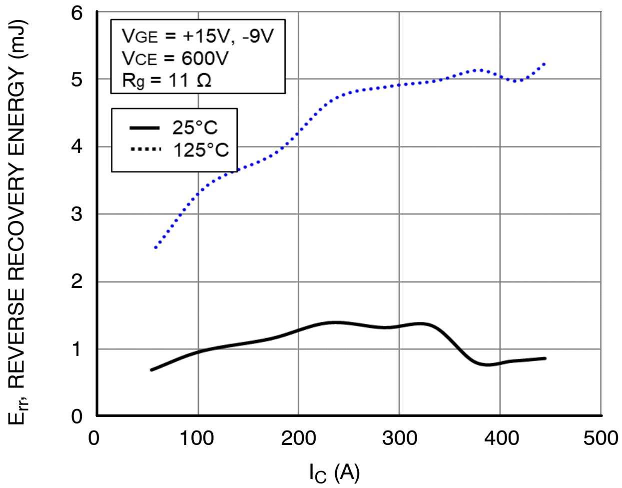



Figure 85. Typical Reverse Recovery Energy Loss vs. $I_C$

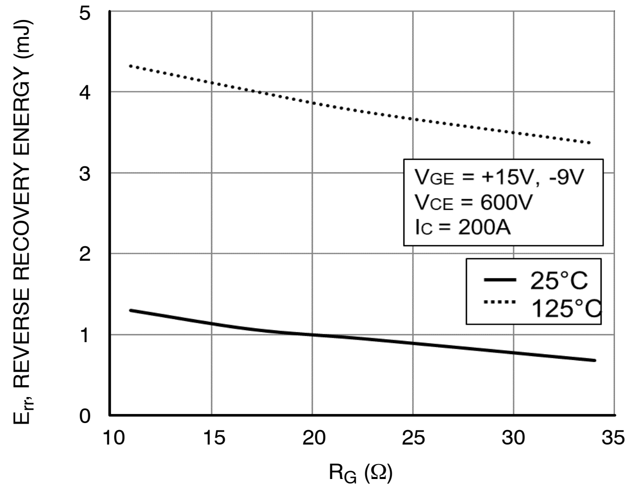



Figure 86. Typical Reverse Recovery Energy Loss vs. $R_G$

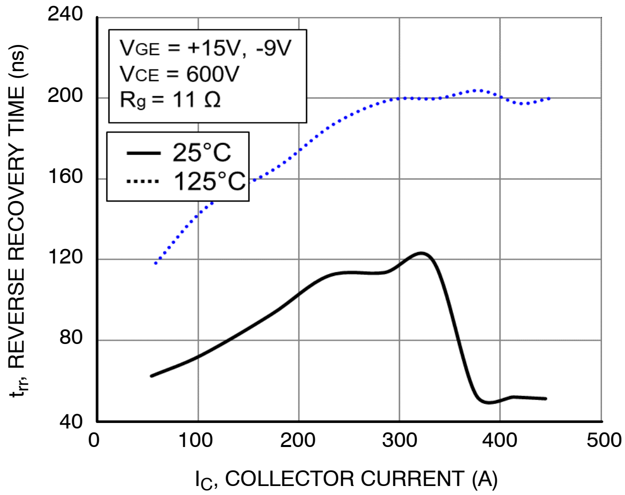



Figure 87. Typical Reverse Recovery Time vs. $I_C$

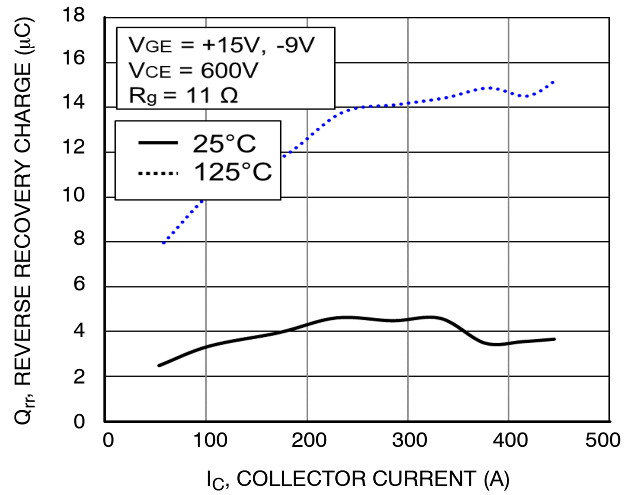



Figure 88. Typical Reverse Recovery Charge vs. $I_C$

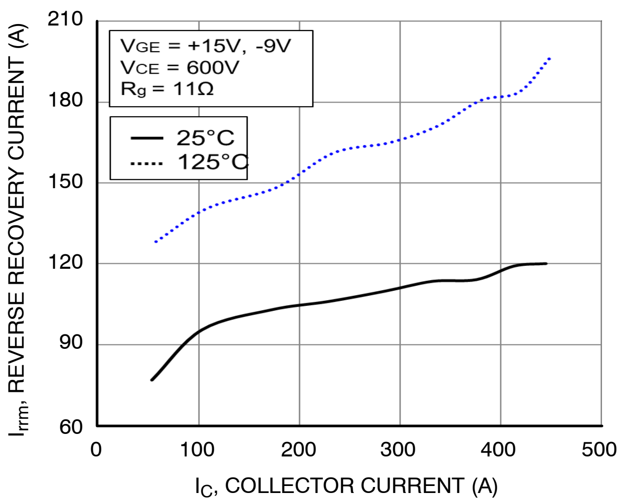



Figure 89. Typical Reverse Recovery Current vs. $I_C$

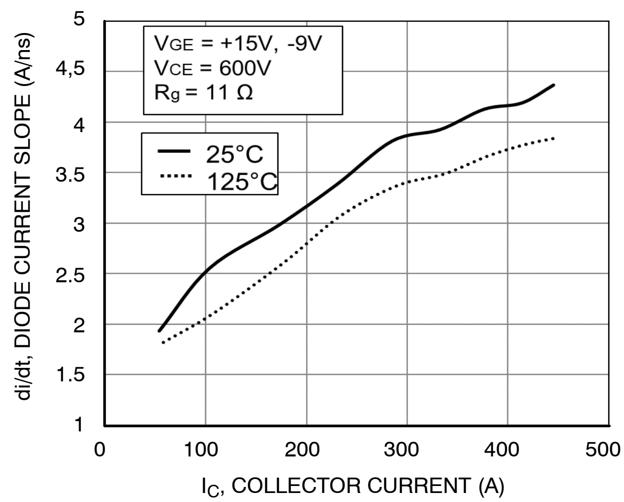



Figure 90. Typical di/dt vs. $I_C$

## TYPICAL CHARACTERISTICS – T6||D4a or T5||D1a (continued)

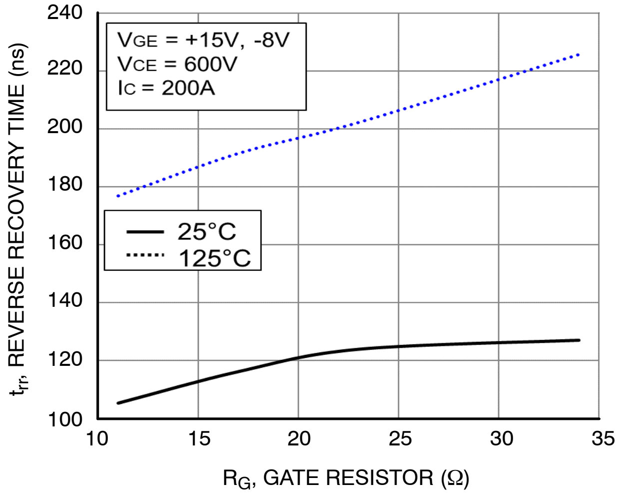



**Figure 91. Typical Reverse Recovery Time vs. $R_G$**

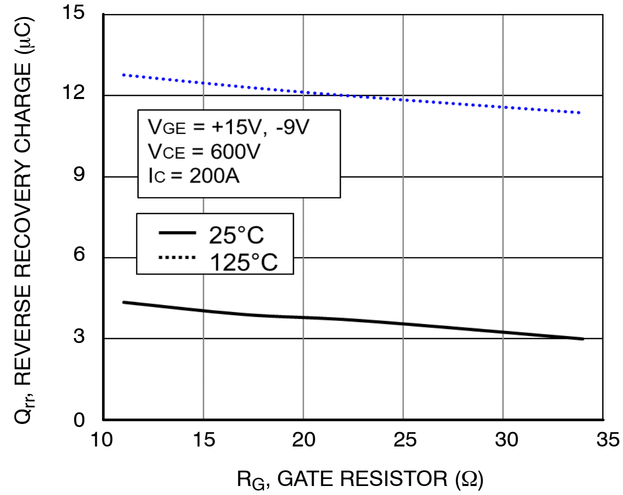



**Figure 92. Typical Reverse Recovery Charge vs. $R_G$**

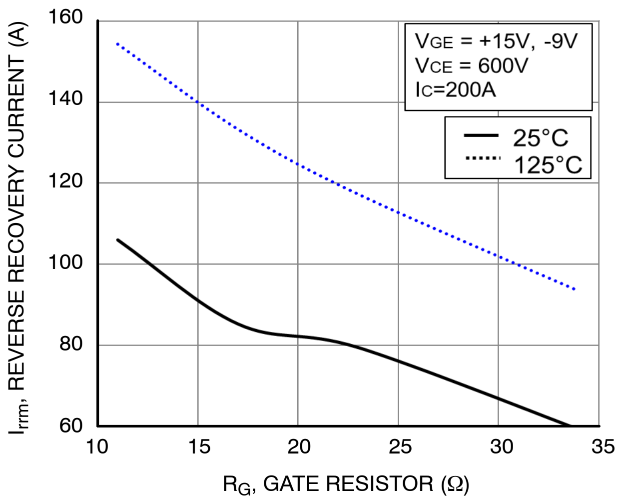



**Figure 93. Typical Reverse Recovery Peak Current vs. $R_G$**

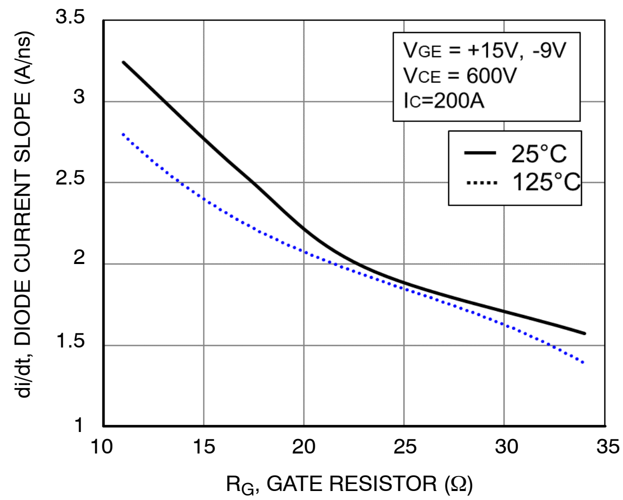
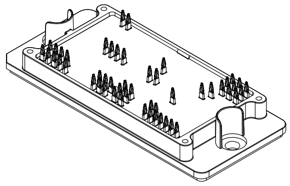
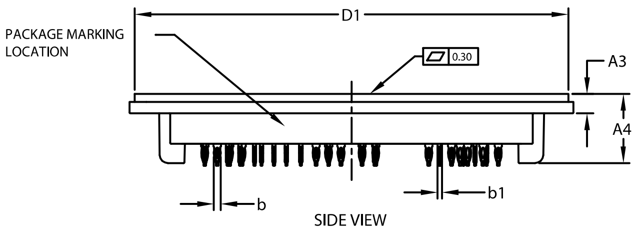
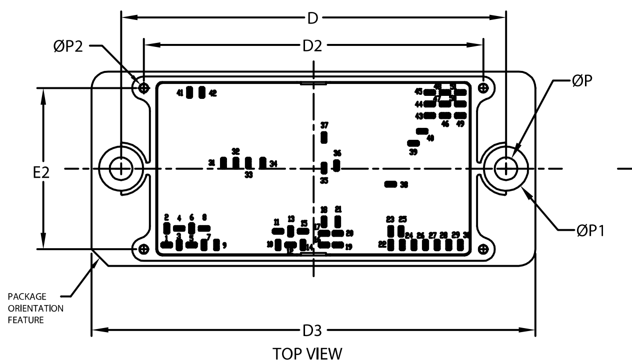


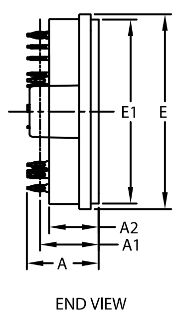

**Figure 94. Typical di/dt vs. $R_G$**



**PIM51, 93x47 (PRESS FIT)**
CASE 180HG
ISSUE O



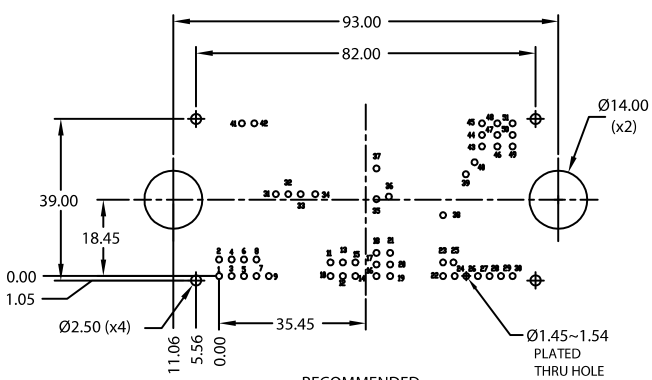




NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009
2. CONTROLLING DIMENSION : MILLIMETERS
3. DIMENSIONS b AND b1 APPLY TO THE PLATED TERMINALS AND ARE MEASURED AT DIMENSION A1
4. PIN POSITION TOLERANCE IS ± 0.4mm
5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES

| DIM | MILLIMETERS MIN. | NOM. | MAX. |
|---|---|---|---|
| A | 16.90 | 17.30 | 17.70 |
| A1 | 14.18(REF) | | |
| A2 | 11.70 | 12.00 | 12.30 |
| A3 | 4.40 | 4.70 | 5.00 |
| A4 | 16.40 | 16.70 | 17.00 |
| b | 1.61 | 1.66 | 1.71 |
| b1 | 0.75 | 0.80 | 0.85 |
| D | 92.90 | 93.00 | 93.10 |
| D1 | 104.45 | 104.75 | 105.05 |
| D2 | 81.80 | 82.00 | 82.20 |
| D3 | 106.90 | 107.20 | 107.50 |
| E | 46.70 | 47.00 | 47.30 |
| E1 | 44.10 | 44.40 | 44.70 |
| E2 | 38.80 | 39.00 | 39.20 |
| P | 5.40 | 5.50 | 5.60 |
| P1 | 10.60 | 10.70 | 10.80 |
| P2 | 1.80 | 2.00 | 2.20 |

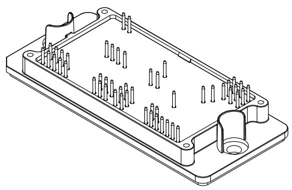



RECOMMENDED MOUNTING PATTERN

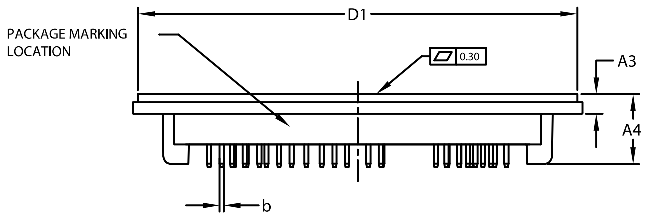
NOTE 4

| PIN | PIN POSITION X | Y |
|---|---|---|
| 1 | 0.00 | 0.00 |
| 2 | 0.00 | 4.00 |
| 3 | 3.00 | 0.00 |
| 4 | 3.00 | 4.00 |
| 5 | 6.00 | 0.00 |
| 6 | 6.00 | 4.00 |
| 7 | 9.00 | 0.00 |
| 8 | 9.00 | 4.00 |
| 9 | 12.00 | 0.00 |
| 10 | 26.90 | 0.00 |
| 11 | 26.90 | 3.30 |
| 12 | 29.90 | 0.00 |
| 13 | 29.90 | 3.30 |
| 14 | 32.90 | 0.00 |
| 15 | 32.90 | 3.30 |
| 16 | 38.00 | 0.00 |
| 17 | 38.00 | 2.80 |
| 18 | 38.00 | 5.60 |
| 19 | 41.30 | 0.00 |
| 20 | 41.30 | 2.80 |
| 21 | 41.30 | 5.60 |
| 22 | 54.10 | 0.00 |
| 23 | 54.10 | 3.30 |
| 24 | 56.90 | 0.00 |
| 25 | 56.60 | 3.30 |
| 26 | 59.70 | 0.00 |

| PIN | PIN POSITION X | Y |
|---|---|---|
| 27 | 62.50 | 0.00 |
| 28 | 65.30 | 0.00 |
| 29 | 68.10 | 0.00 |
| 30 | 70.90 | 0.00 |
| 31 | 13.70 | 19.80 |
| 32 | 16.70 | 19.80 |
| 33 | 19.70 | 19.80 |
| 34 | 23.20 | 19.80 |
| 35 | 38.00 | 18.60 |
| 36 | 41.00 | 19.20 |
| 37 | 38.00 | 26.00 |
| 38 | 54.10 | 14.70 |
| 39 | 59.60 | 24.60 |
| 40 | 61.70 | 27.50 |
| 41 | 5.50 | 36.90 |
| 42 | 8.50 | 36.90 |
| 43 | 63.50 | 31.30 |
| 44 | 63.50 | 34.10 |
| 45 | 63.50 | 36.90 |
| 46 | 67.20 | 31.30 |
| 47 | 67.20 | 34.10 |
| 48 | 67.20 | 36.90 |
| 49 | 70.90 | 31.30 |
| 50 | 70.90 | 34.10 |
| 51 | 70.90 | 36.90 |



## PIM51, 93x47 (SOLDER PIN)
CASE 180HH
ISSUE O

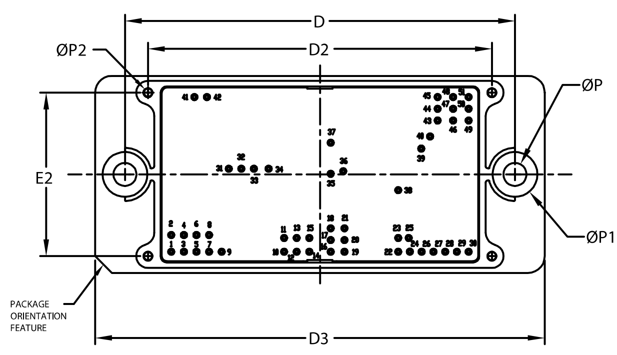



SIDE VIEW

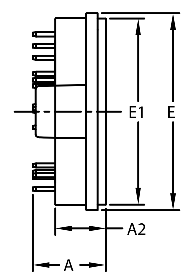
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009
2. CONTROLLING DIMENSION : MILLIMETERS
3. DIMENSIONS b AND b1 APPLY TO THE PLATED TERMINALS AND ARE MEASURED AT DIMENSION A1
4. PIN POSITION TOLERANCE IS ± 0.4mm
5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES

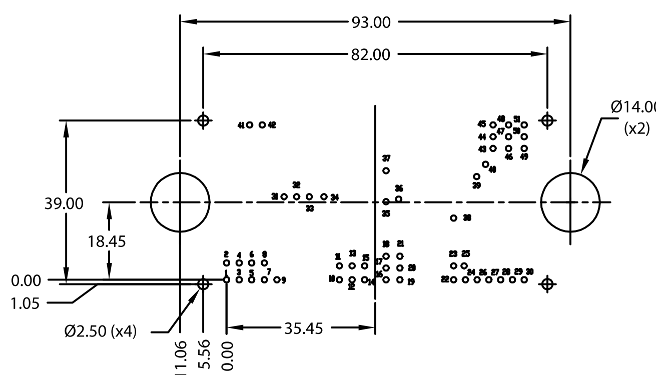
| DIM | MILLIMETERS MIN. | NOM. | MAX. |
|---|---|---|---|
| A | 17.00 | 17.40 | 17.80 |
| A2 | 11.70 | 12.00 | 12.30 |
| A3 | 4.40 | 4.70 | 5.00 |
| A4 | 16.40 | 16.70 | 17.00 |
| b | 0.95 | 1.00 | 1.05 |
| D | 92.90 | 93.00 | 93.10 |
| D1 | 104.45 | 104.75 | 105.05 |
| D2 | 81.80 | 82.00 | 82.20 |
| D3 | 106.90 | 107.20 | 107.50 |
| E | 46.70 | 47.00 | 47.30 |
| E1 | 44.10 | 44.40 | 44.70 |
| E2 | 38.80 | 39.00 | 39.20 |
| P | 5.40 | 5.50 | 5.60 |
| P1 | 10.60 | 10.70 | 10.80 |
| P2 | 1.80 | 2.00 | 2.20 |




TOP VIEW




END VIEW

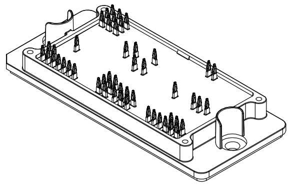



RECOMMENDED MOUNTING PATTERN

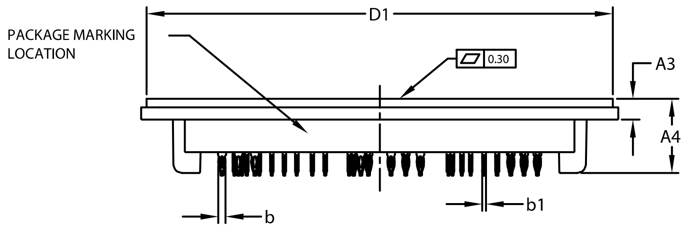
* For additional Information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NOTE 4

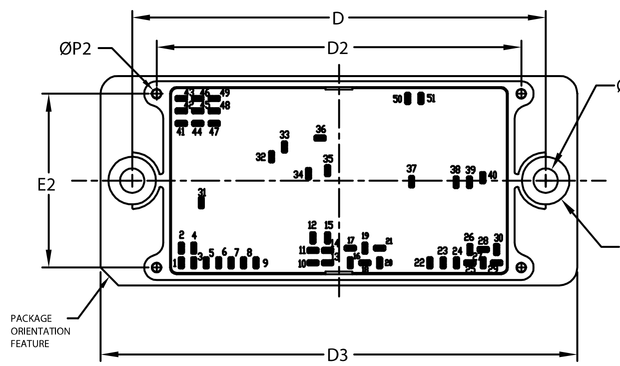
| PIN | PIN POSITION X | Y | PIN | PIN POSITION X | Y |
|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 27 | 62.50 | 0.00 |
| 2 | 0.00 | 4.00 | 28 | 65.30 | 0.00 |
| 3 | 3.00 | 0.00 | 29 | 68.10 | 0.00 |
| 4 | 3.00 | 4.00 | 30 | 70.90 | 0.00 |
| 5 | 6.00 | 0.00 | 31 | 13.70 | 19.80 |
| 6 | 6.00 | 4.00 | 32 | 16.70 | 19.80 |
| 7 | 9.00 | 0.00 | 33 | 19.70 | 19.80 |
| 8 | 9.00 | 4.00 | 34 | 23.20 | 19.80 |
| 9 | 12.00 | 0.00 | 35 | 38.00 | 18.60 |
| 10 | 26.90 | 0.00 | 36 | 41.00 | 19.20 |
| 11 | 26.90 | 3.30 | 37 | 38.00 | 26.00 |
| 12 | 29.90 | 0.00 | 38 | 54.10 | 14.70 |
| 13 | 29.90 | 3.30 | 39 | 59.60 | 24.60 |
| 14 | 32.90 | 0.00 | 40 | 61.70 | 27.50 |
| 15 | 32.90 | 3.30 | 41 | 5.50 | 36.90 |
| 16 | 38.00 | 0.00 | 42 | 8.50 | 36.90 |
| 17 | 38.00 | 2.80 | 43 | 63.50 | 31.30 |
| 18 | 38.00 | 5.60 | 44 | 63.50 | 34.10 |
| 19 | 41.30 | 0.00 | 45 | 63.50 | 36.90 |
| 20 | 41.30 | 2.80 | 46 | 67.20 | 31.30 |
| 21 | 41.30 | 5.60 | 47 | 67.20 | 34.10 |
| 22 | 54.10 | 0.00 | 48 | 67.20 | 36.90 |
| 23 | 54.10 | 3.30 | 49 | 70.90 | 31.30 |
| 24 | 56.90 | 0.00 | 50 | 70.90 | 34.10 |
| 25 | 56.60 | 3.30 | 51 | 70.90 | 36.90 |
| 26 | 59.70 | 0.00 | | | |



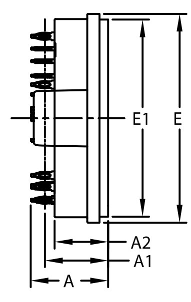
## PIM51, 93x47 (PRESS FIT)
CASE 180CQ
ISSUE O




SIDE VIEW




TOP VIEW

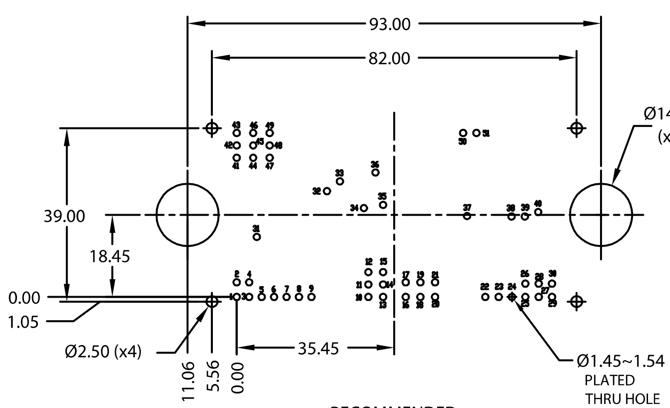



END VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009
2. CONTROLLING DIMENSION : MILLIMETERS
3. DIMENSIONS b AND b1 APPLY TO THE PLATED TERMINALS AND ARE MEASURED AT DIMENSION A1
4. PIN POSITION TOLERANCE IS ± 0.4mm
5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES

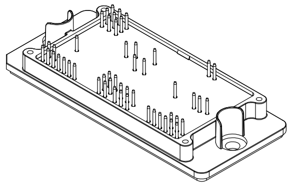
| DIM | MILLIMETERS | | |
|---|---|---|---|
| | MIN. | NOM. | MAX. |
| A | 16.90 | 17.30 | 17.70 |
| A1 | 14.18(REF) | | |
| A2 | 11.70 | 12.00 | 12.30 |
| A3 | 4.40 | 4.70 | 5.00 |
| A4 | 16.40 | 16.70 | 17.00 |
| b | 1.61 | 1.66 | 1.71 |
| b1 | 0.75 | 0.80 | 0.85 |
| D | 92.90 | 93.00 | 93.10 |
| D1 | 104.45 | 104.75 | 105.05 |
| D2 | 81.80 | 82.00 | 82.20 |
| D3 | 106.90 | 107.20 | 107.50 |
| E | 46.70 | 47.00 | 47.30 |
| E1 | 44.10 | 44.40 | 44.70 |
| E2 | 38.80 | 39.00 | 39.20 |
| P | 5.40 | 5.50 | 5.60 |
| P1 | 10.60 | 10.70 | 10.80 |
| P2 | 1.80 | 2.00 | 2.20 |



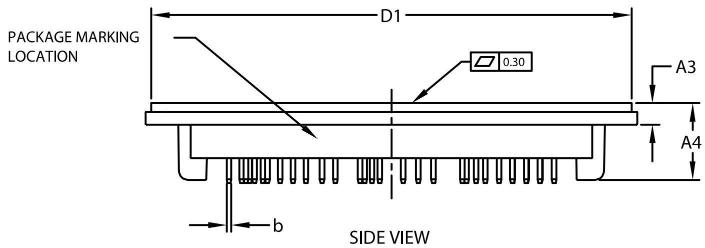

RECOMMENDED
MOUNTING PATTERN

NOTE 4

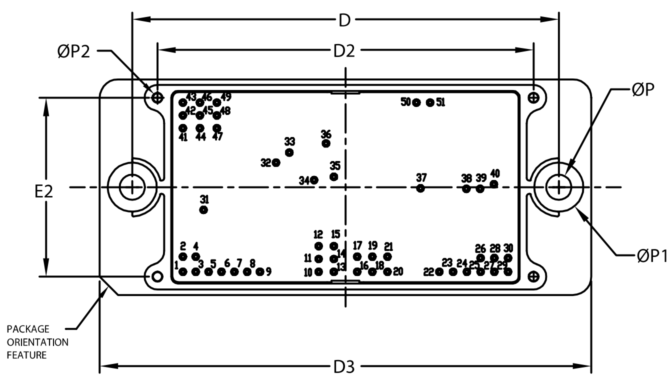
| PIN | PIN POSITION X | Y | PIN | PIN POSITION X | Y |
|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 27 | 67.90 | 0.00 |
| 2 | 0.00 | 3.30 | 28 | 67.90 | 3.00 |
| 3 | 2.80 | 0.00 | 29 | 70.90 | 0.00 |
| 4 | 2.80 | 3.30 | 30 | 70.90 | 3.00 |
| 5 | 5.60 | 0.00 | 31 | 4.50 | 13.50 |
| 6 | 8.40 | 0.00 | 32 | 20.30 | 23.80 |
| 7 | 11.20 | 0.00 | 33 | 23.20 | 26.00 |
| 8 | 14.00 | 0.00 | 34 | 28.60 | 20.00 |
| 9 | 16.80 | 0.00 | 35 | 32.90 | 20.70 |
| 10 | 29.60 | 0.00 | 36 | 31.20 | 28.00 |
| 11 | 29.60 | 2.80 | 37 | 51.80 | 18.20 |
| 12 | 29.60 | 5.60 | 38 | 61.80 | 18.10 |
| 13 | 32.90 | 0.00 | 39 | 64.80 | 18.10 |
| 14 | 32.90 | 2.80 | 40 | 67.80 | 19.10 |
| 15 | 32.90 | 5.60 | 41 | 0.00 | 31.30 |
| 16 | 38.00 | 0.00 | 42 | 0.00 | 34.10 |
| 17 | 38.00 | 3.30 | 43 | 0.00 | 36.90 |
| 18 | 41.30 | 0.00 | 44 | 3.70 | 31.30 |
| 19 | 41.30 | 3.30 | 45 | 3.70 | 34.10 |
| 20 | 44.60 | 0.00 | 46 | 3.70 | 36.90 |
| 21 | 44.60 | 3.30 | 47 | 7.40 | 31.30 |
| 22 | 55.90 | 0.00 | 48 | 7.40 | 34.10 |
| 23 | 58.90 | 0.00 | 49 | 7.40 | 36.90 |
| 24 | 61.90 | 0.00 | 50 | 50.90 | 36.90 |
| 25 | 64.90 | 0.00 | 51 | 53.90 | 36.90 |
| 26 | 64.90 | 3.00 | | | |



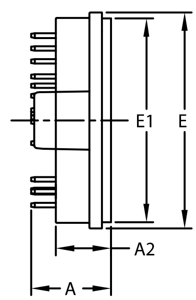
**PIM51, 93x47 (SOLDER PIN)**
CASE 180BM
ISSUE O




SIDE VIEW




TOP VIEW

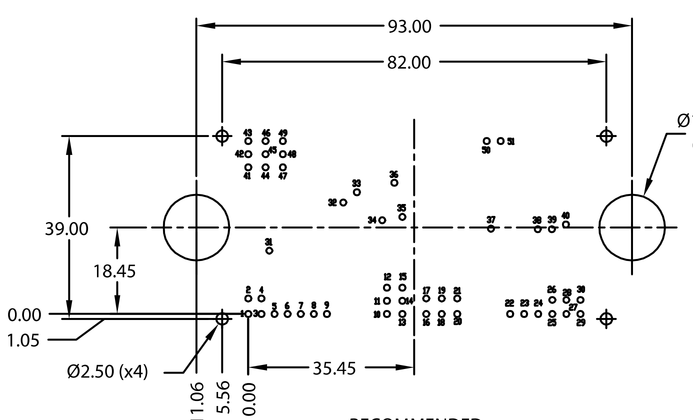



END VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009
2. CONTROLLING DIMENSION : MILLIMETERS
3. DIMENSIONS b AND b1 APPLY TO THE PLATED TERMINALS AND ARE MEASURED AT DIMENSION A1
4. PIN POSITION TOLERANCE IS ± 0.4mm
5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES

| DIM | MILLIMETERS | | |
|---|---|---|---|
| | MIN. | NOM. | MAX. |
| A | 17.00 | 17.40 | 17.80 |
| A2 | 11.70 | 12.00 | 12.30 |
| A3 | 4.40 | 4.70 | 5.00 |
| A4 | 16.40 | 16.70 | 17.00 |
| b | 0.95 | 1.00 | 1.05 |
| D | 92.90 | 93.00 | 93.10 |
| D1 | 104.45 | 104.75 | 105.05 |
| D2 | 81.80 | 82.00 | 82.20 |
| D3 | 106.90 | 107.20 | 107.50 |
| E | 46.70 | 47.00 | 47.30 |
| E1 | 44.10 | 44.40 | 44.70 |
| E2 | 38.80 | 39.00 | 39.20 |
| P | 5.40 | 5.50 | 5.60 |
| P1 | 10.60 | 10.70 | 10.80 |
| P2 | 1.80 | 2.00 | 2.20 |




RECOMMENDED
MOUNTING PATTERN

* For additional Information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NOTE 4

| PIN | PIN POSITION | |
|---|---|---|
| | X | Y |
| 1 | 0.00 | 0.00 |
| 2 | 0.00 | 3.30 |
| 3 | 2.80 | 0.00 |
| 4 | 2.80 | 3.30 |
| 5 | 5.60 | 0.00 |
| 6 | 8.40 | 0.00 |
| 7 | 11.20 | 0.00 |
| 8 | 14.00 | 0.00 |
| 9 | 16.80 | 0.00 |
| 10 | 29.60 | 0.00 |
| 11 | 29.60 | 2.80 |
| 12 | 29.60 | 5.60 |
| 13 | 32.90 | 0.00 |
| 14 | 32.90 | 2.80 |
| 15 | 32.90 | 5.60 |
| 16 | 38.00 | 0.00 |
| 17 | 38.00 | 3.30 |
| 18 | 41.30 | 0.00 |
| 19 | 41.30 | 3.30 |
| 20 | 44.60 | 0.00 |
| 21 | 44.60 | 3.30 |
| 22 | 55.90 | 0.00 |
| 23 | 58.90 | 0.00 |
| 24 | 61.90 | 0.00 |
| 25 | 64.90 | 0.00 |
| 26 | 64.90 | 3.00 |

| PIN | PIN POSITION | |
|---|---|---|
| | X | Y |
| 27 | 67.90 | 0.00 |
| 28 | 67.90 | 3.00 |
| 29 | 70.90 | 0.00 |
| 30 | 70.90 | 3.00 |
| 31 | 4.50 | 13.50 |
| 32 | 20.30 | 23.80 |
| 33 | 23.20 | 26.00 |
| 34 | 28.60 | 20.00 |
| 35 | 32.90 | 20.70 |
| 36 | 31.20 | 28.00 |
| 37 | 51.80 | 18.20 |
| 38 | 61.80 | 18.10 |
| 39 | 64.80 | 18.10 |
| 40 | 67.80 | 19.10 |
| 41 | 0.00 | 31.30 |
| 42 | 0.00 | 34.10 |
| 43 | 0.00 | 36.90 |
| 44 | 3.70 | 31.30 |
| 45 | 3.70 | 34.10 |
| 46 | 3.70 | 36.90 |
| 47 | 7.40 | 31.30 |
| 48 | 7.40 | 34.10 |
| 49 | 7.40 | 36.90 |
| 50 | 50.90 | 36.90 |
| 51 | 53.90 | 36.90 |

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