# Si/SiC Hybrid Module – EliteSiC, I-Type NPC 1000 V, 350 A IGBT, 1200 V, 100 A SiC Diode, Q2 Package

# NXH350N100H4Q2F2P1G, NXH350N100H4Q2F2S1G, NXH350N100H4Q2F2S1G-R, NXH350N100H4Q2F2P1G-R

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
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

### Typical Applications

- Solar Inverters
- Uninterruptable Power Supplies Systems

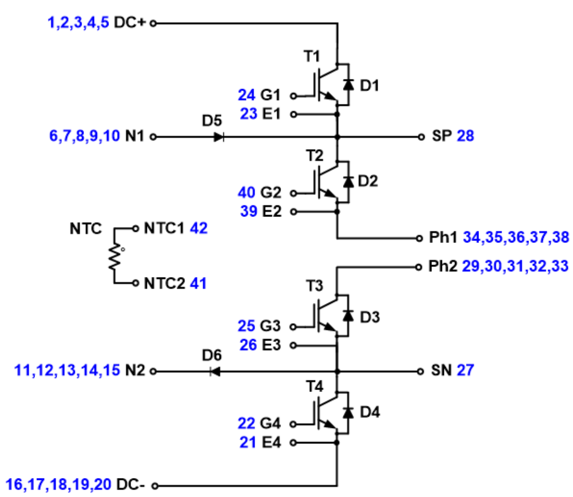
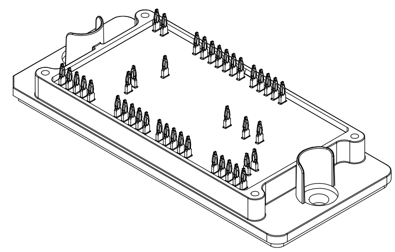
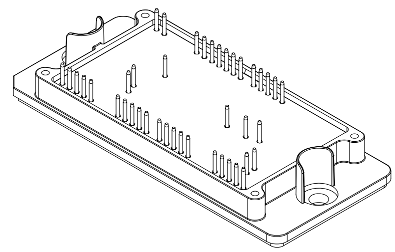



**Figure 1. NXH350N100H4Q2F2P1G/S1G/S1G−R/P1G−R Schematic Diagram**

### PACKAGE PICTURE

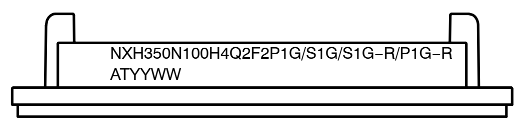


**Q2PACK INPC PRESS FIT PINS**
**CASE 180BH**



**Q2PACK INPC SOLDER PINS**
**CASE 180BS**

### MARKING DIAGRAM




G = Pb−Free Package
AT = Assembly & Test Site Code
YYWW = Year and Work Week Code

### PIN CONNECTIONS

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

### ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

## PIN CONNECTIONS

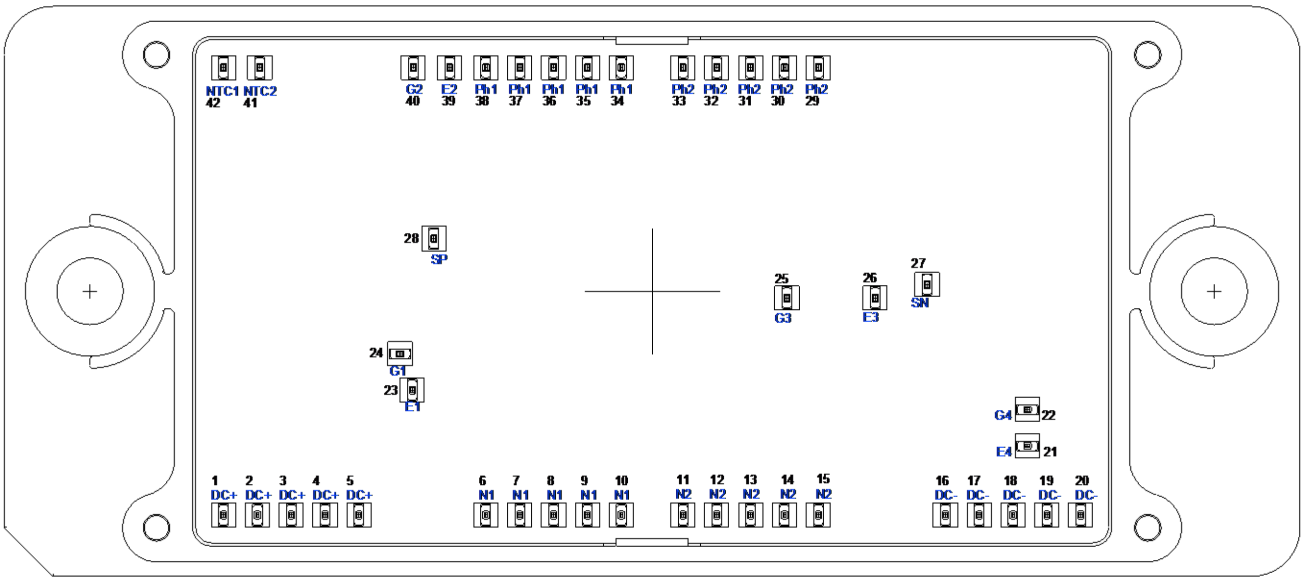



**Figure 2. Pin Connections**

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

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| **OUTER IGBT (T1, T4)** | | | |
| 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 | $I_C$ | 303 | A |
| Pulsed Peak Collector Current @ $T_C$ = 80°C ($T_J$ = 150°C) | $I_{C(Pulse)}$ | 909 | A |
| Maximum Power Dissipation ($T_J$ = 150°C) | $P_{tot}$ | 592 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 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 | $I_C$ | 298 | A |
| Pulsed Peak Collector Current @ $T_C$ = 80°C ($T_J$ = 150°C) | $I_{C(Pulse)}$ | 894 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 731 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 175 | °C |
| **IGBT INVERSE DIODE (D1, D2, D3, D4)** | | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | 1000 | V |
| Continuous Forward Current @ $T_C$ = 80°C | $I_F$ | 133 | A |
| Repetitive Peak Forward Current ($T_J$ = 175°C) | $I_{FRM}$ | 399 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 276 | W |

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

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| **IGBT INVERSE DIODE (D1, D2, D3, D4)** | | | |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 175 | °C |
| **NEUTRAL POINT DIODE (D5, D6)** | | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | 1200 | V |
| Continuous Forward Current @ $T_C$ = 80°C | $I_F$ | 98 | A |
| Repetitive Peak Forward Current ($T_J$ = 175°C) | $I_{FRM}$ | 294 | A |
| Maximum Power Dissipation ($T_J$ = 175°C) | $P_{tot}$ | 239 | W |
| Minimum Operating Junction Temperature | $T_{JMIN}$ | −40 | °C |
| Maximum Operating Junction Temperature | $T_{JMAX}$ | 175 | °C |
| **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 (Note 2) | $V_{is}$ | 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 and/or APPLICATION INFORMATION for Safe Operating parameters.
2. 4000 $VAC_{RMS}$ for 1 second duration is equivalent to 3333 $VAC_{RMS}$ for 1 minute duration.

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

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OUTER IGBT (T1, T4) CHARACTERISTICS** | | | | | | |
| Collector-Emitter Cutoff Current | $V_{GE}$ = 0 V, $V_{CE}$ = 1000 V | $I_{CES}$ | – | – | 1000 | µA |
| Collector-Emitter Saturation Voltage | $V_{GE}$ = 15 V, $I_C$ = 375 A, $T_J$ = 25°C | $V_{CE(sat)}$ | – | 1.63 | 2.3 | V |
| | $V_{GE}$ = 15 V, $I_C$ = 375 A, $T_J$ = 150°C | | – | 1.92 | – | |
| Gate-Emitter Threshold Voltage | $V_{GE}$ = $V_{CE}$, $I_C$ = 375 mA | $V_{GE(TH)}$ | 3.8 | 4.84 | 6.1 | V |
| Gate Leakage Current | $V_{GE}$ = ±20 V, $V_{CE}$ = 0 V | $I_{GES}$ | – | – | ±2000 | nA |
| Turn-on Delay Time | $T_J$ = 25°C<br>$V_{CE}$ = 600 V, $I_C$ = 150 A<br>$V_{GE}$ = −9 V, 15 V, $R_G$ = 6 Ω | $t_{d(on)}$ | – | 85 | – | ns |
| Rise Time | | $t_r$ | – | 27 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 319 | – | |
| Fall Time | | $t_f$ | – | 52 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 2.5 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 4.9 | – | |
| Turn-on Delay Time | $T_J$ = 125°C<br>$V_{CE}$ = 600 V, $I_C$ = 150 A<br>$V_{GE}$ = −9 V, 15 V, $R_G$ = 6 Ω | $t_{d(on)}$ | – | 80 | – | ns |
| Rise Time | | $t_r$ | – | 31 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 355 | – | |
| Fall Time | | $t_f$ | – | 70 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 3.1 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 7.3 | – | |

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

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OUTER IGBT (T1, T4) CHARACTERISTICS** | | | | | | |
| Input Capacitance | $V_{CE}$ = 20 V, $V_{GE}$ = 0 V, f = 1 MHz | $C_{ies}$ | – | 24146 | – | pF |
| Output Capacitance | | $C_{oes}$ | – | 1027 | – | |
| Reverse Transfer Capacitance | | $C_{res}$ | – | 106 | – | |
| Total Gate Charge | $V_{CE}$ = 600 V, $I_C$ = 375 A, $V_{GE}$ = −15 V~15 V | $Q_g$ | – | 1249 | – | nC |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK | $R_{thJH}$ | – | 0.22 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.12 | – | K/W |
| **NEUTRAL POINT DIODE (D5, D6) CHARACTERISTICS** | | | | | | |
| Diode Forward Voltage | $I_F$ = 100 A, $T_J$ = 25°C | $V_F$ | – | 1.50 | 1.85 | V |
| | $I_F$ = 100 A, $T_J$ = 150°C | | – | 2.07 | – | |
| Reverse Recovery Time | $T_J$ = 25°C $V_{CE}$ = 600 V, $I_C$ = 150 A $V_{GE}$ = −8 V, 15 V, $R_G$ = 6 Ω | $t_{rr}$ | – | 19 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 229 | – | nC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 19 | – | A |
| Reverse Recovery Energy | | $E_{rr}$ | – | 164 | – | μJ |
| Reverse Recovery Time | $T_J$ = 125°C $V_{CE}$ = 600 V, $I_C$ = 150 A $V_{GE}$ = −8 V, 15 V, $R_G$ = 6 Ω | $t_{rr}$ | – | 34 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 359 | – | nC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 17 | – | A |
| Reverse Recovery Energy | | $E_{rr}$ | – | 211 | – | μJ |
| Thermal Resistance – Chip-to-Heatsink | Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK | $R_{thJH}$ | – | 0.42 | – | K/W |
| Thermal Resistance – Chip-to-Case | | $R_{thJC}$ | – | 0.29 | – | K/W |
| **INNER IGBT (T2, T3) CHARACTERISTICS** | | | | | | |
| Collector-Emitter Cutoff Current | $V_{GE}$ = 0 V, $V_{CE}$ = 1000 V | $I_{CES}$ | – | – | 500 | μA |
| Collector-Emitter Saturation Voltage | $V_{GE}$ = 15 V, $I_C$ = 400 A, $T_J$ = 25°C | $V_{CE(sat)}$ | – | 1.75 | 2.3 | V |
| | $V_{GE}$ = 15 V, $I_C$ = 400 A, $T_J$ = 150°C | | – | 2.11 | – | |
| Gate-Emitter Threshold Voltage | $V_{GE}$ = $V_{CE}$, $I_C$ = 400 mA | $V_{GE(TH)}$ | 4.1 | 5 | 6.1 | V |
| Gate Leakage Current | $V_{GE}$ = ±20 V, $V_{CE}$ = 0 V | $I_{GES}$ | – | – | ±2000 | nA |
| Turn-on Delay Time | $T_J$ = 25°C $V_{CE}$ = 600 V, $I_C$ = 150 A $V_{GE}$ = −9 V, 15 V, $R_G$ = 11 Ω | $t_{d(on)}$ | – | 70 | – | ns |
| Rise Time | | $t_r$ | – | 31 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 423 | – | |
| Fall Time | | $t_f$ | – | 74 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 6.4 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 4.2 | – | |
| Turn-on Delay Time | $T_J$ = 125°C $V_{CE}$ = 600 V, $I_C$ = 150 A $V_{GE}$ = −9 V, 15 V, $R_G$ = 11 Ω | $t_{d(on)}$ | – | 66 | – | ns |
| Rise Time | | $t_r$ | – | 31 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 509 | – | |
| Fall Time | | $t_f$ | – | 88 | – | |
| Turn-on Switching Loss per Pulse | | $E_{on}$ | – | 9.7 | – | mJ |
| Turn-off Switching Loss per Pulse | | $E_{off}$ | – | 8.2 | – | |
| Input Capacitance | $V_{CE}$ = 20 V, $V_{GE}$ = 0 V, f = 1 MHz | $C_{ies}$ | – | 26093 | – | pF |
| Output Capacitance | | $C_{oes}$ | – | 1012 | – | |
| Reverse Transfer Capacitance | | $C_{res}$ | – | 104 | – | |

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

| Characteristic | Test Conditions | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **INNER IGBT (T2, T3) CHARACTERISTICS** | | | | | | |
| Internal Gage Resistor | | $R_{gint}$ | – | 1.25 | – | Ω |
| Total Gate Charge | $V_{CE}$ = 600 V, $I_C$ = 400 A, $V_{GE}$ = −15 V~15 V | $Q_g$ | – | 1304 | – | nC |
| Thermal Resistance − Chip-to-Heatsink | Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK | $R_{thJH}$ | – | 0.24 | – | K/W |
| Thermal Resistance − Chip-to-Case | | $R_{thJC}$ | – | 0.13 | – | K/W |
| **IGBT INVERSE DIODE (D1, D2, D3, D4) CHARACTERISTICS** | | | | | | |
| Diode Forward Voltage | $I_F$ = 150 A, $T_J$ = 25°C | $V_F$ | – | 2.06 | 2.6 | V |
| | $I_F$ = 150 A, $T_J$ = 150°C | | – | 1.77 | – | |
| Reverse Recovery Time | $T_J$ = 25°C $V_{CE}$ = 600 V, $I_C$ = 150 A $V_{GE}$ = −8 V, 15 V, $R_G$ = 6 Ω | $t_{rr}$ | – | 105 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 4179 | – | nC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 97 | – | A |
| Reverse Recovery Energy | | $E_{rr}$ | – | 4665 | – | μJ |
| Reverse Recovery Time | $T_J$ = 125°C $V_{CE}$ = 600 V, $I_C$ = 150 A $V_{GE}$ = −8 V, 15 V, $R_G$ = 6 Ω | $t_{rr}$ | – | 179 | – | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | – | 11900 | – | nC |
| Peak Reverse Recovery Current | | $I_{RRM}$ | – | 133 | – | A |
| Reverse Recovery Energy | | $E_{rr}$ | – | 3783 | – | μJ |
| Thermal Resistance − Chip-to-Heatsink | Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK | $R_{thJH}$ | – | 0.39 | – | K/W |
| Thermal Resistance − Chip-to-Case | | $R_{thJC}$ | – | 0.25 | – | K/W |
| **THERMISTOR CHARACTERISTICS** | | | | | | |
| Nominal Resistance | T = 25°C | $R_{25}$ | – | 22 | – | kΩ |
| Nominal Resistance | T = 100°C | $R_{100}$ | – | 1486 | – | kΩ |
| Deviation of R25 | | ΔR/R | −5 | – | 5 | % |
| Power Dissipation | | $P_D$ | – | 200 | – | mW |
| Power Dissipation Constant | | | – | 2 | – | mW/K |
| B-value | B(25/50), tolerance ±3% | | – | 3950 | – | K |
| B-value | B(25/100), tolerance ±3% | | – | 3998 | – | 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 |
|---|---|---|---|
| NXH350N100H4Q2F2P1G, NXH350N100H4Q2F2P1G−R PRESS FIT PINS | NXH350N100H4Q2F2P1G, NXH350N100H4Q2F2P1G−R | Q2PACK (Pb−Free/Halide−Free) | 12 Units / Blister Tray |
| NXH350N100H4Q2F2S1G, NXH350N100H4Q2F2S1G−R SOLDER PINS | NXH350N100H4Q2F2S1G, NXH350N100H4Q2F2S1G−R | Q2PACK (Pb−Free/Halide−Free) | 12 Units / Blister Tray |

## TYPICAL CHARACTERISTICS – OUTER IGBT, INNER IGBT

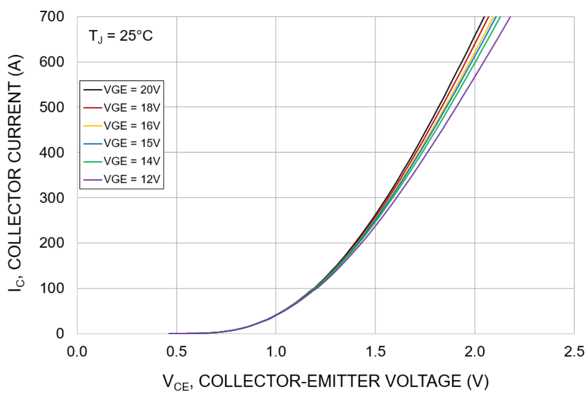



Figure 3. Typical Output Characteristics – Outer IGBT

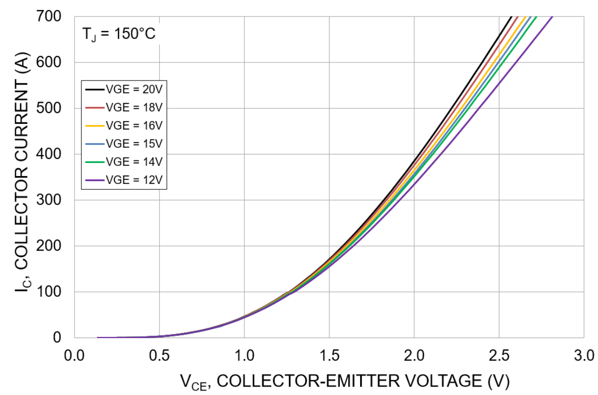



Figure 4. Typical Output Characteristics – Outer IGBT

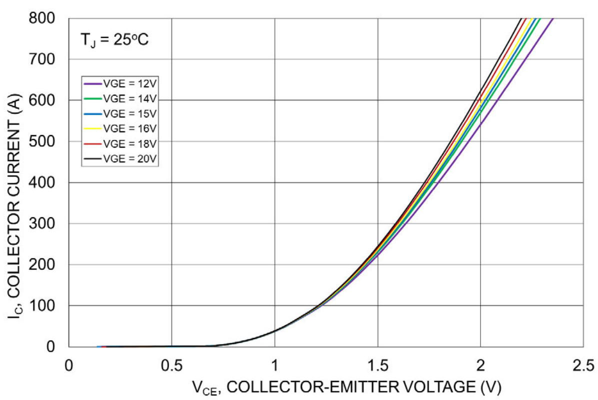



Figure 5. Typical Output Characteristics – Inner IGBT

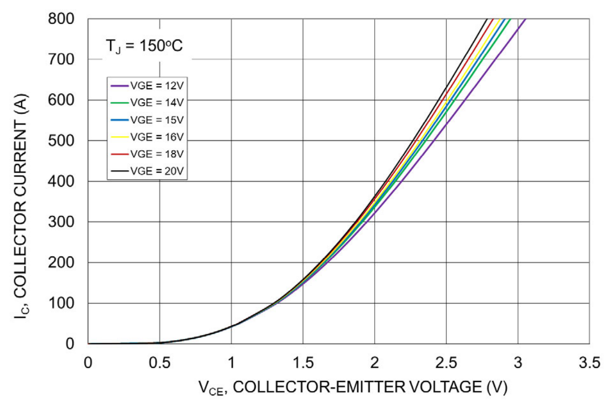



Figure 6. Typical Output Characteristics – Inner IGBT

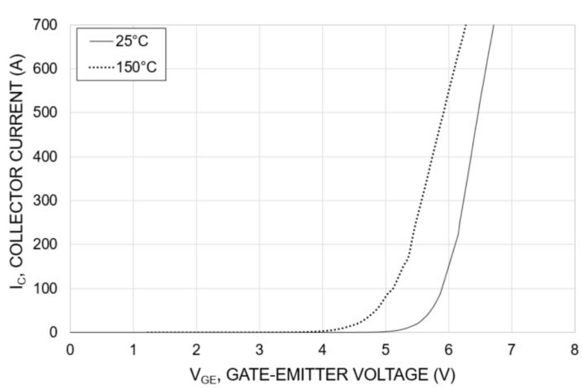



Figure 7. Transfer Characteristics – Outer IGBT

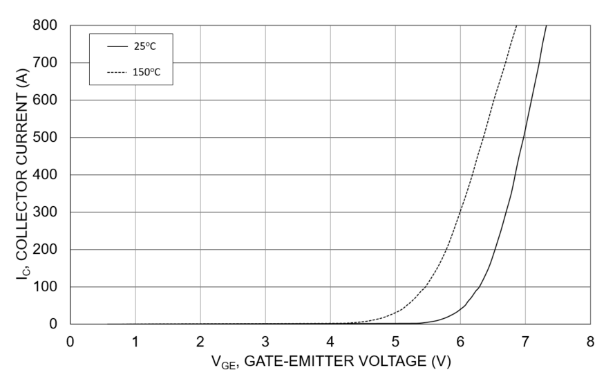



Figure 8. Transfer Characteristics – Inner IGBT

## TYPICAL CHARACTERISTICS – OUTER IGBT, INNER IGBT, IGBT INVERSE DIODE AND NEUTRAL POINT DIODE

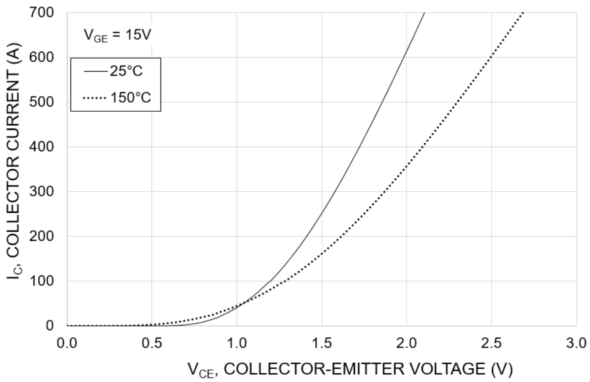



**Figure 9. Typical Saturation Voltage Characteristics − Outer IGBT**

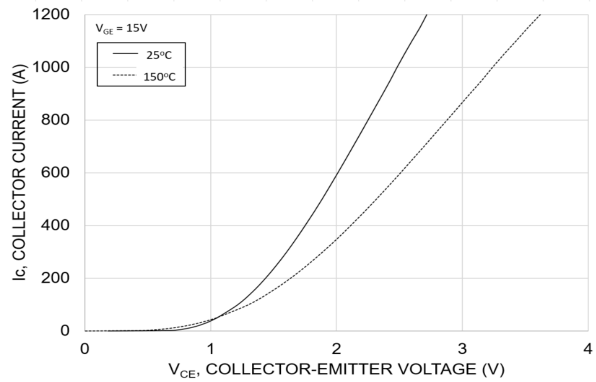



**Figure 10. Typical Saturation Voltage Characteristics − Inner IGBT**

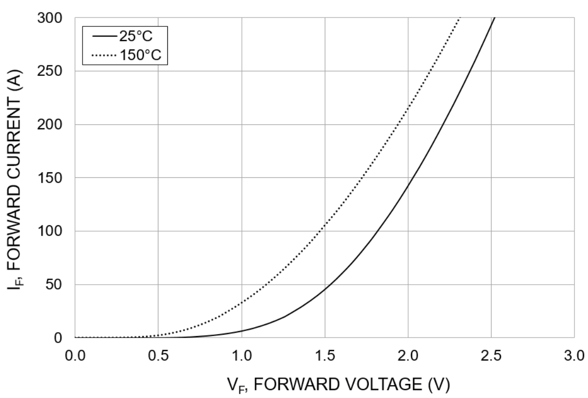



**Figure 11. Inverse Diode Forward Characteristics**

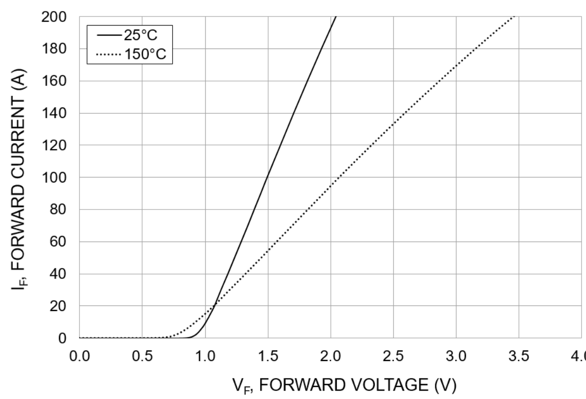



**Figure 12. Buck Diode Forward Characteristics**

## TYPICAL SWITCHING CHARACTERISTICS – OUTER IGBT

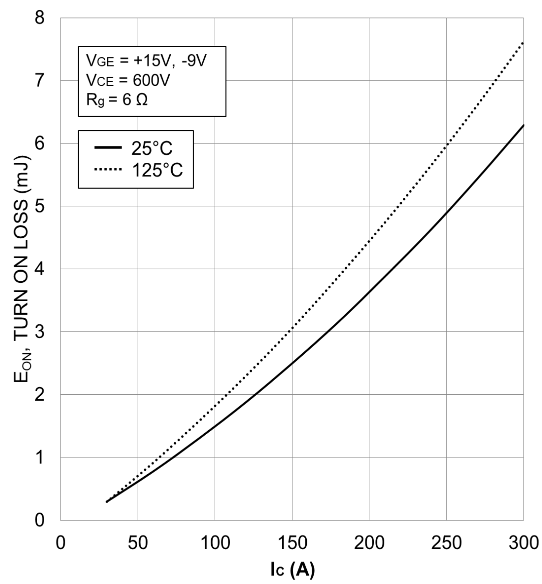



Figure 13. Typical Turn On Loss vs. $I_C$

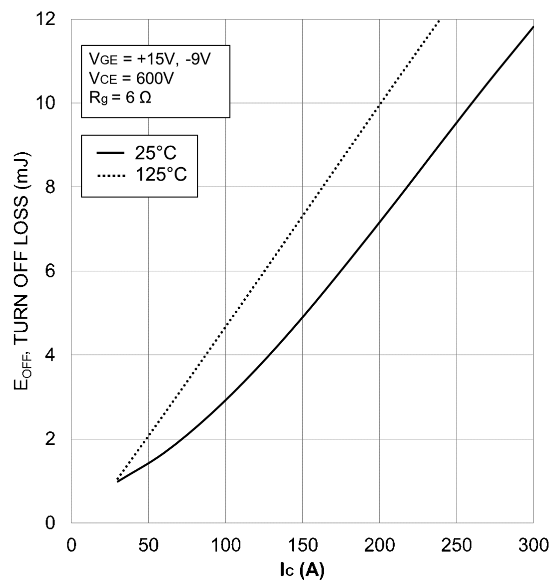



Figure 14. Typical Turn Off Loss vs. $I_C$

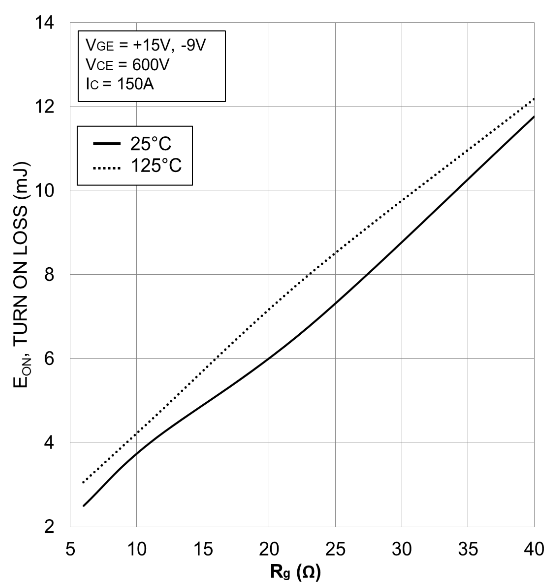



Figure 15. Typical Turn On Loss vs. $R_G$

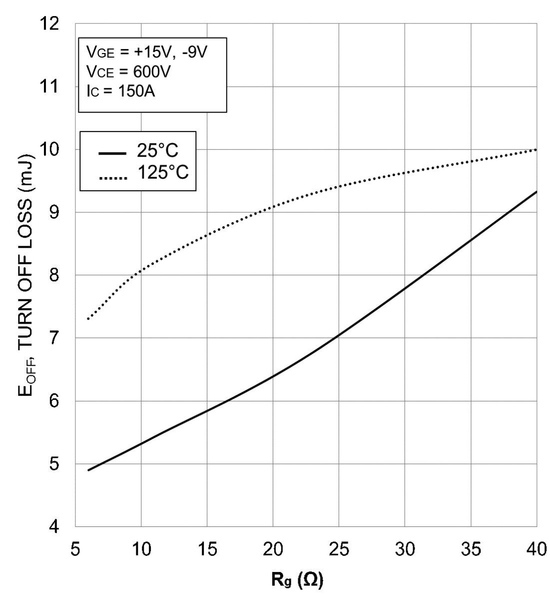



Figure 16. Typical Turn Off Loss vs. $R_G$

## TYPICAL SWITCHING CHARACTERISTICS – OUTER IGBT (CONTINUED)

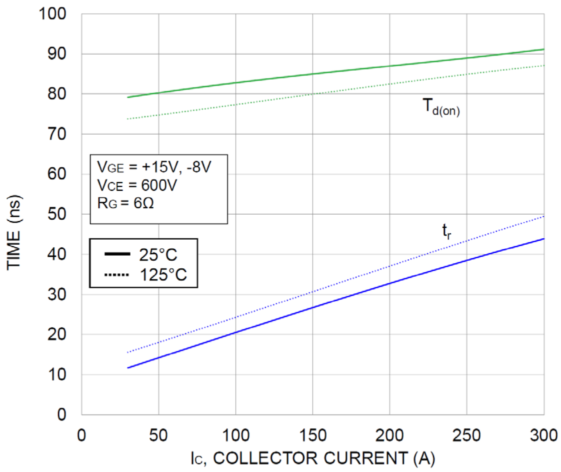



**Figure 17. Typical Turn On Switching Time vs. $I_C$**

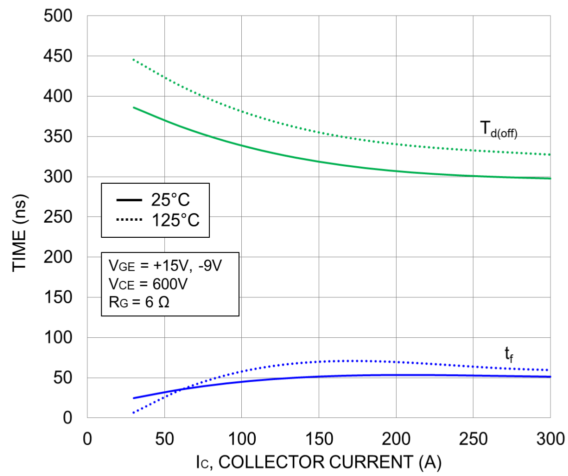



**Figure 18. Typical Turn Off Switching Time vs. $I_C$**

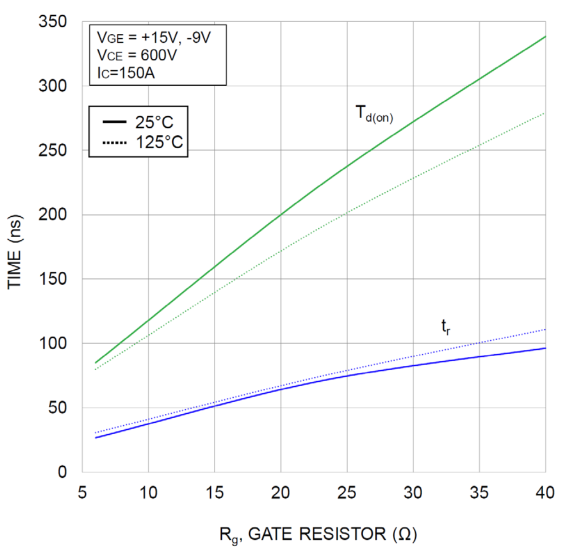



**Figure 19. Typical Turn On Switching Time vs. $R_G$**

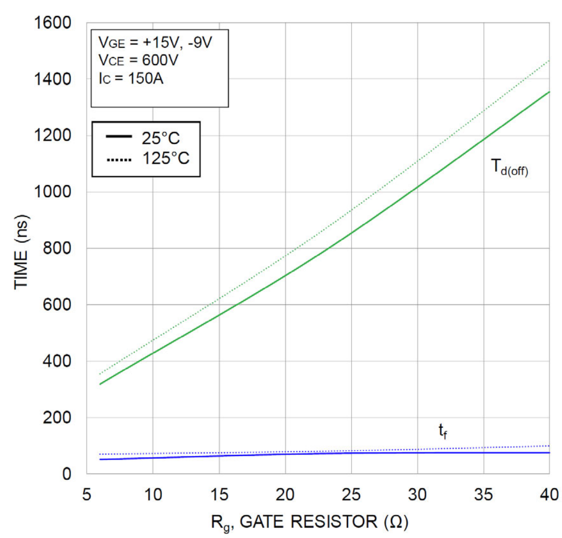



**Figure 20. Typical Turn Off Switching Time vs. $R_G$**

## TYPICAL SWITCHING CHARACTERISTICS – INNER IGBT

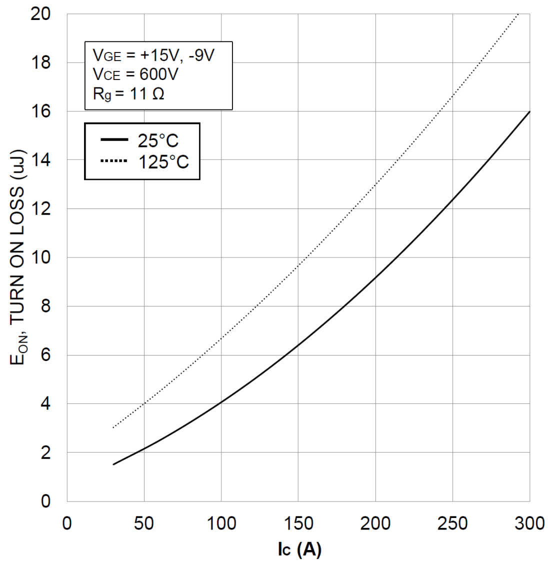



Figure 21. Typical Turn On Loss vs. $I_C$

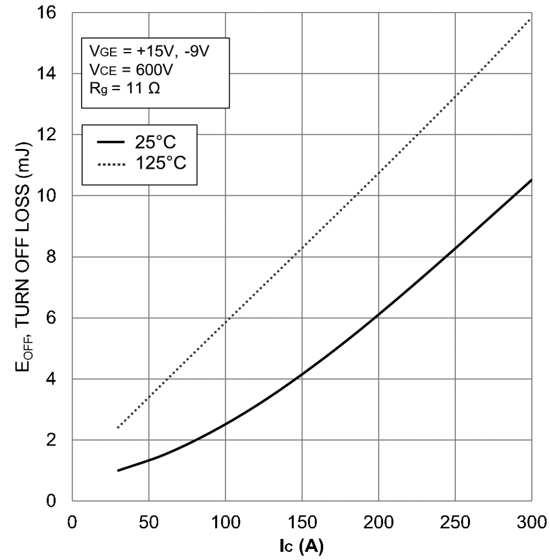



Figure 22. Typical Turn Off Loss vs. $I_C$

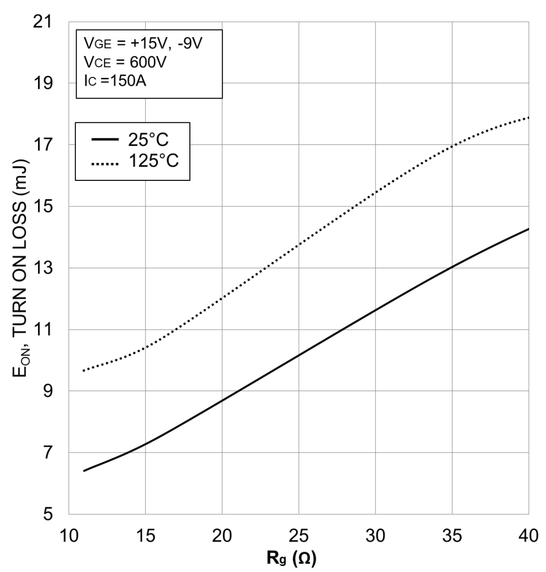



Figure 23. Typical Turn On Loss vs. $R_G$

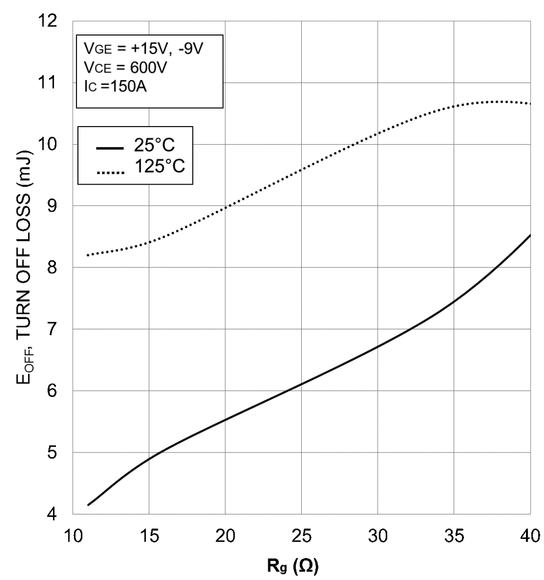



Figure 24. Typical Turn Off Loss vs. $R_G$

## TYPICAL SWITCHING CHARACTERISTICS – INNER IGBT (CONTINUED)

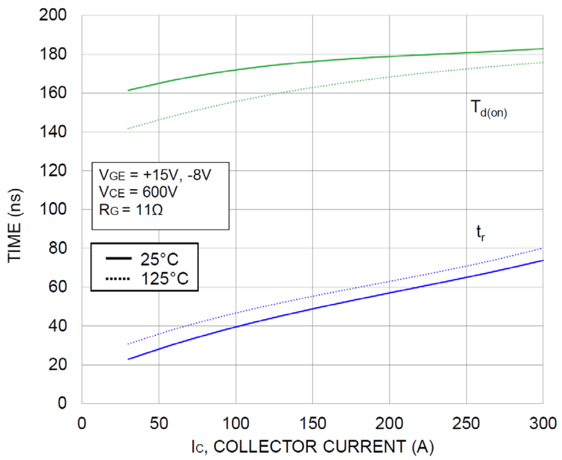



**Figure 25. Typical Turn On Switching Time vs. $I_C$**

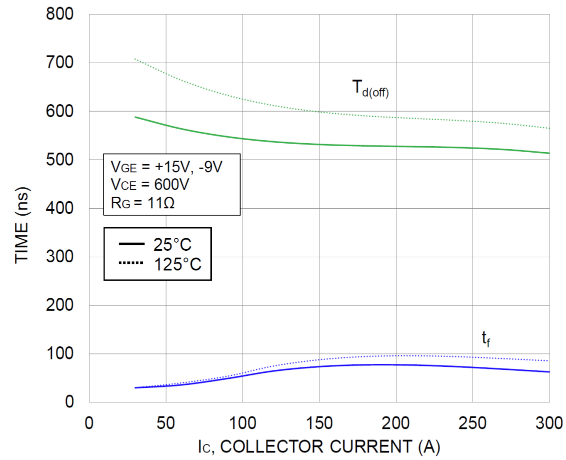



**Figure 26. Typical Turn Off Switching Time vs. $I_C$**

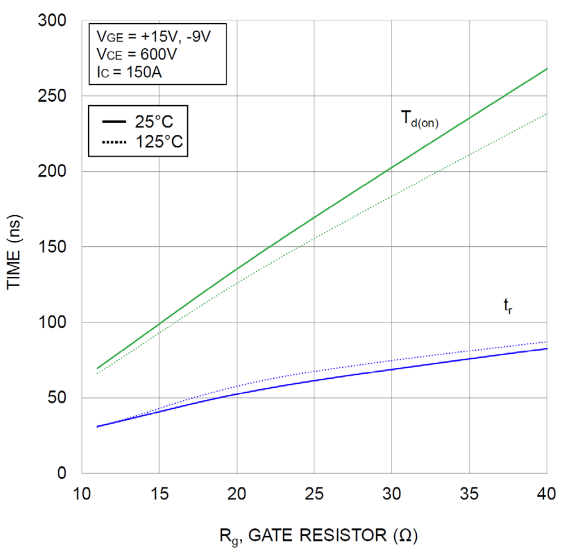



**Figure 27. Typical Turn On Switching Time vs. $R_G$**

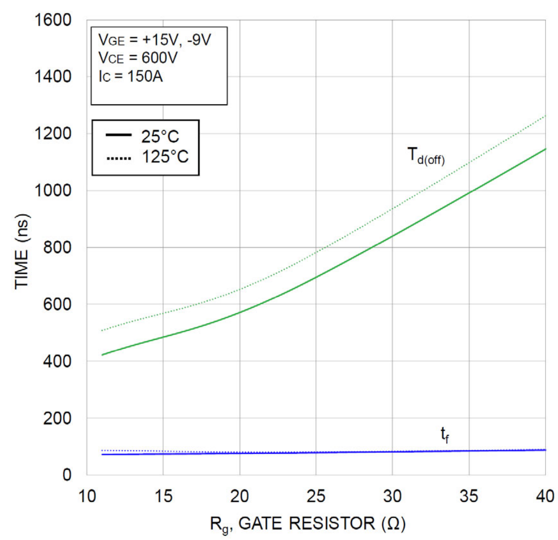



**Figure 28. Typical Turn Off Switching Time vs. $R_G$**

## TYPICAL SWITCHING CHARACTERISTICS – INVERSE DIODE

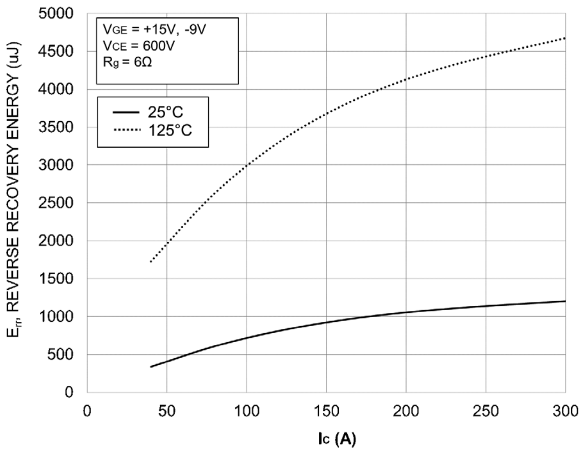



**Figure 29. Typical Reverse Recovery Energy Loss vs. $I_C$**

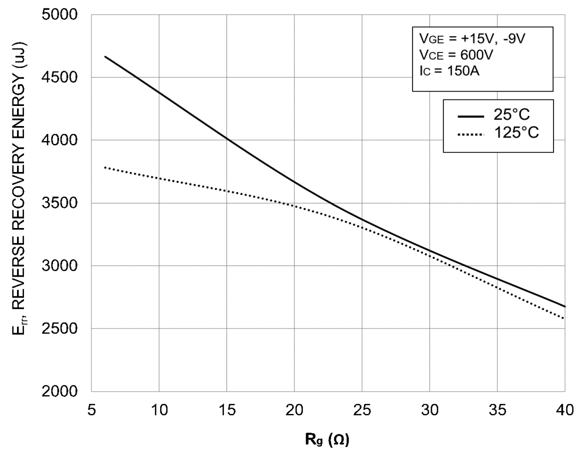



**Figure 30. Typical Reverse Recovery Energy Loss vs. $R_G$**

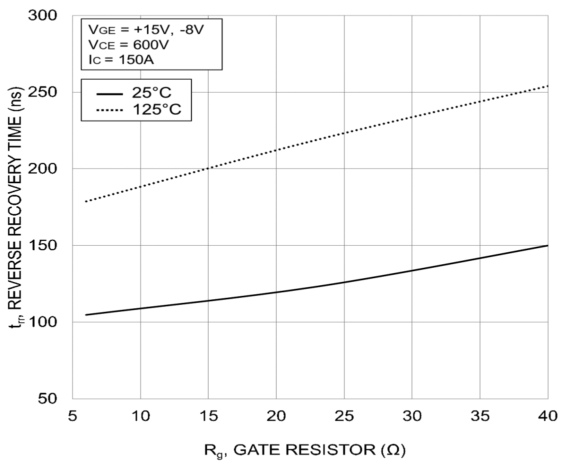



**Figure 31. Typical Reverse Recovery Time vs. $R_G$**

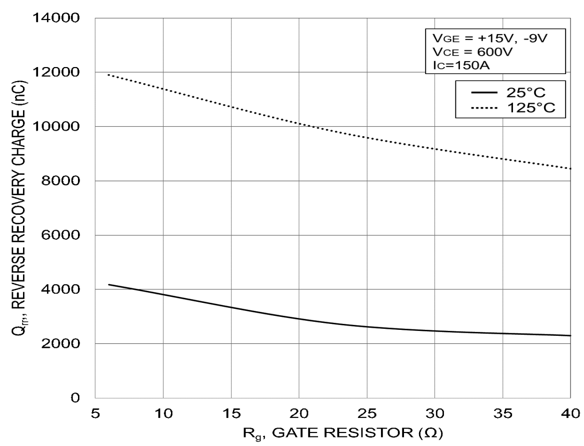



**Figure 32. Typical Reverse Recovery Charge vs. $R_G$**

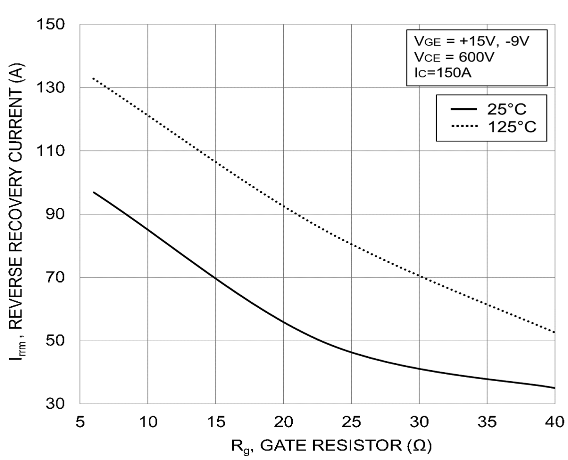



**Figure 33. Typical Reverse Recovery Peak Current vs. $R_G$**

## TYPICAL SWITCHING CHARACTERISTICS – NEUTRAL POINT DIODE

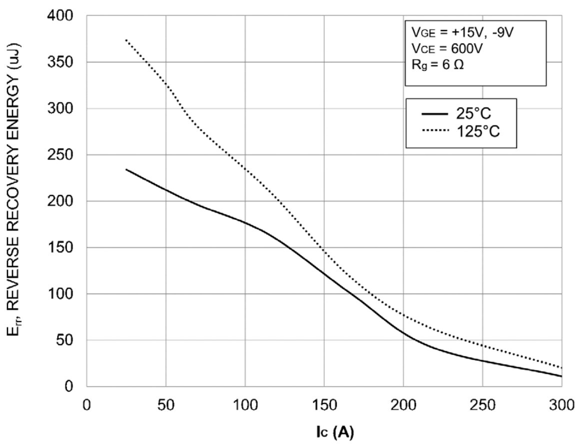



**Figure 34. Typical Reverse Recovery Energy Loss vs. $I_C$**

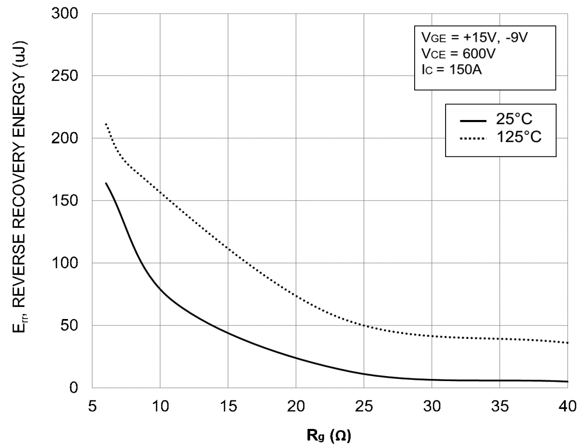



**Figure 35. Typical Reverse Recovery Energy Loss vs. $R_G$**

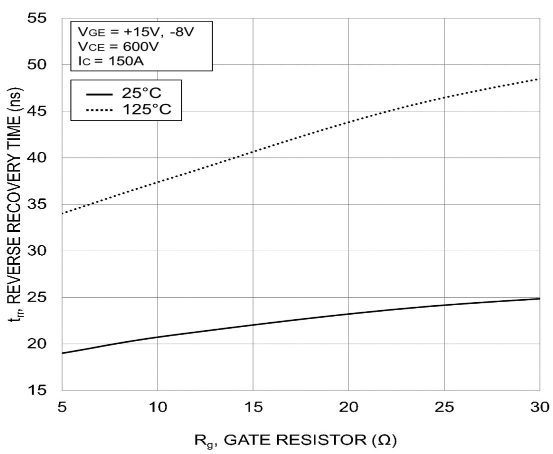



**Figure 36. Typical Reverse Recovery Time vs. $R_G$**

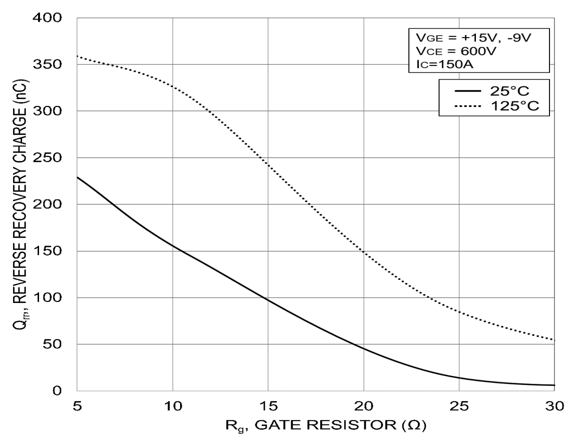



**Figure 37. Typical Reverse Recovery Charge vs. $R_G$**

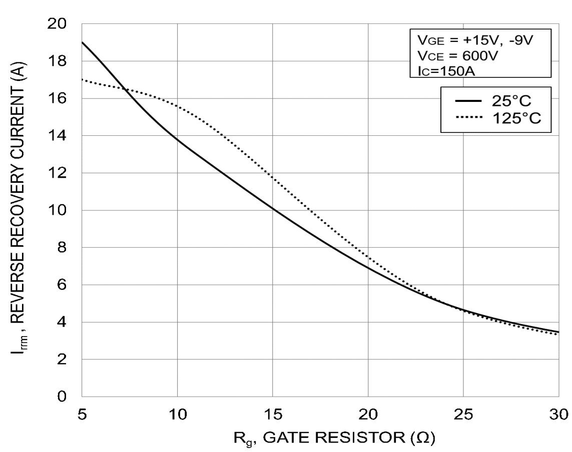



**Figure 38. Typical Reverse Recovery Peak Current vs. $R_G$**

## TRANSIENT THERMAL IMPEDANCE

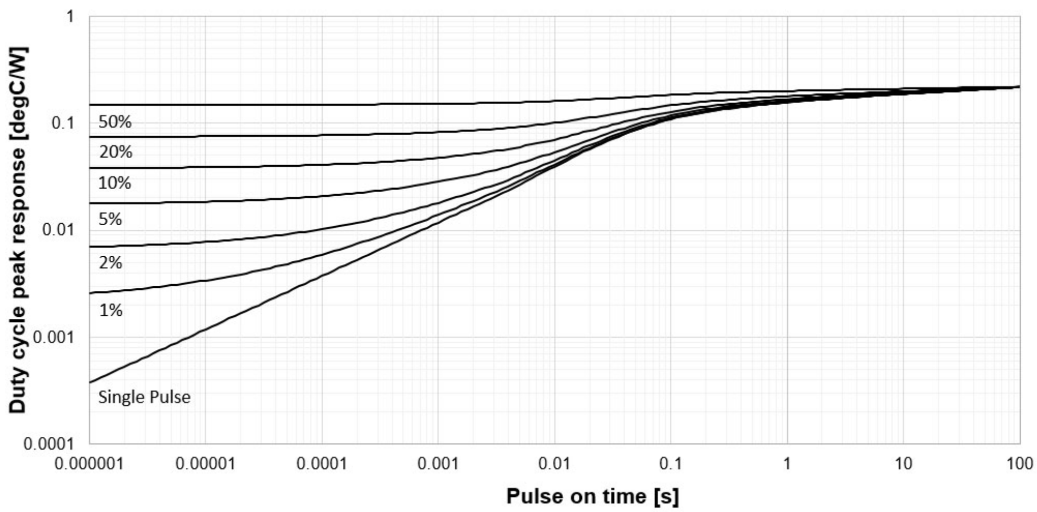



**Figure 39. Transient Thermal Impedance – Outer IGBT**

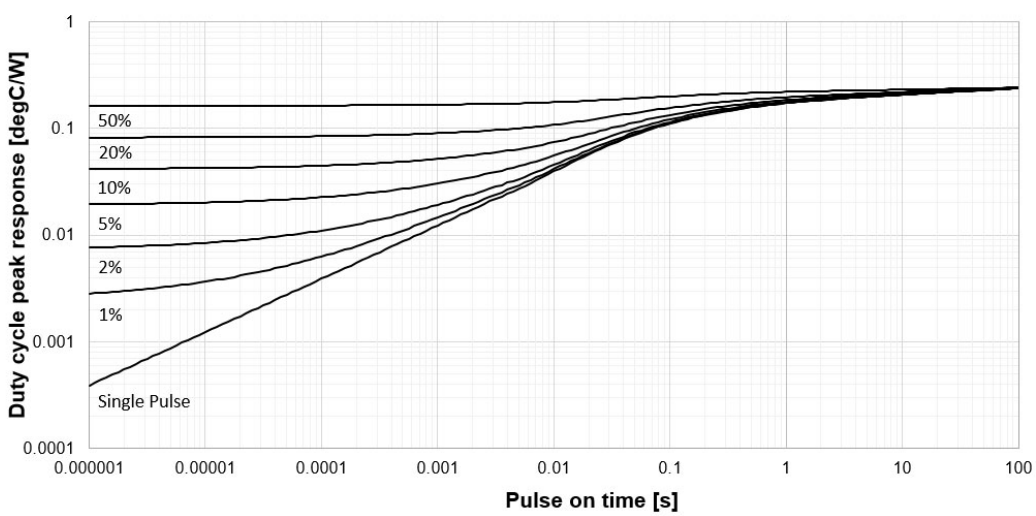



**Figure 40. Transient Thermal Impedance – Inner IGBT**

## TRANSIENT THERMAL IMPEDANCE (CONTINUED)

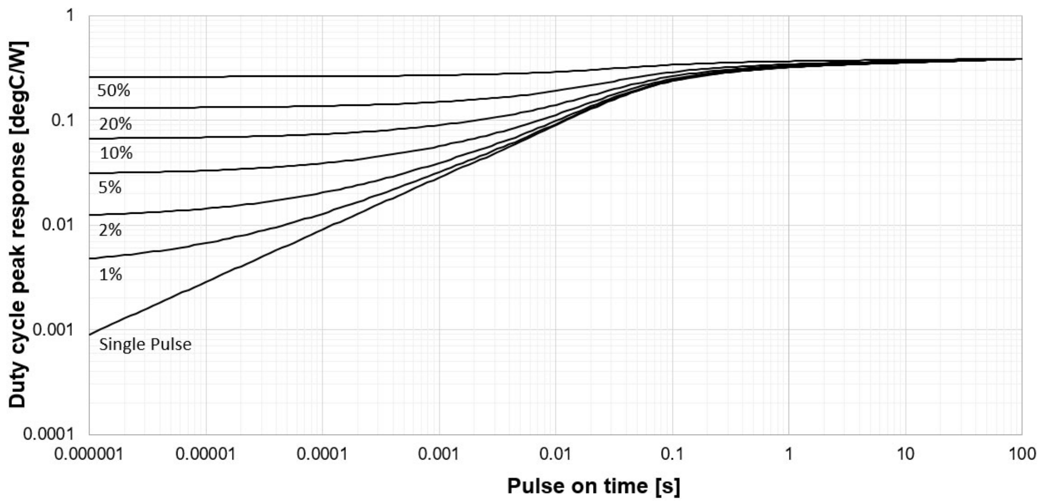



**Figure 41. Transient Thermal Impedance – Inverse Diode**

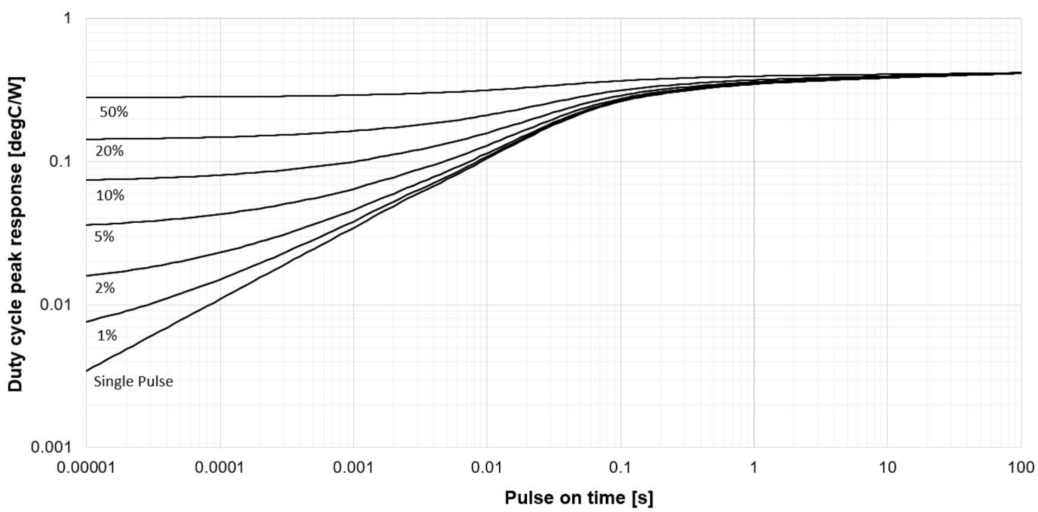



**Figure 42. Transient Thermal Impedance – Neutral Point Diode**

## SAFE OPERATING AREA

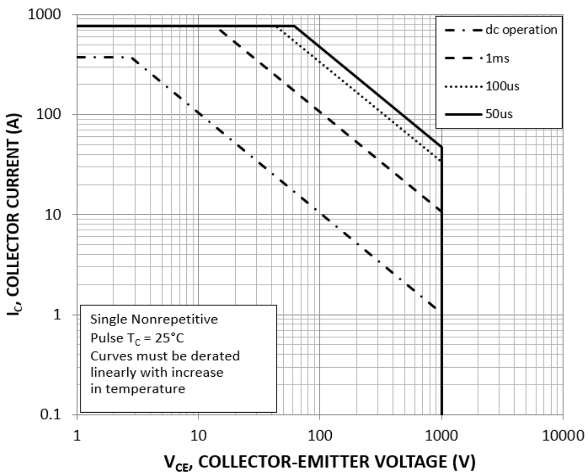



Figure 43. FBSOA – Outer IGBT

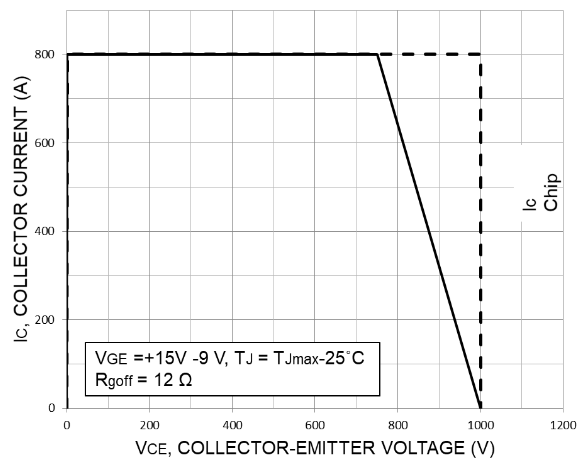



Figure 44. RBSOA – Outer IGBT

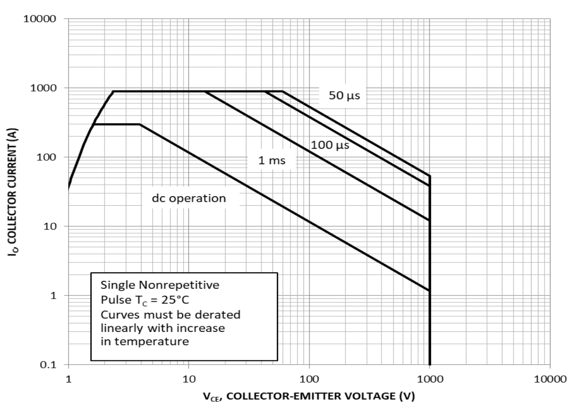



Figure 45. FBSOA – Inner IGBT

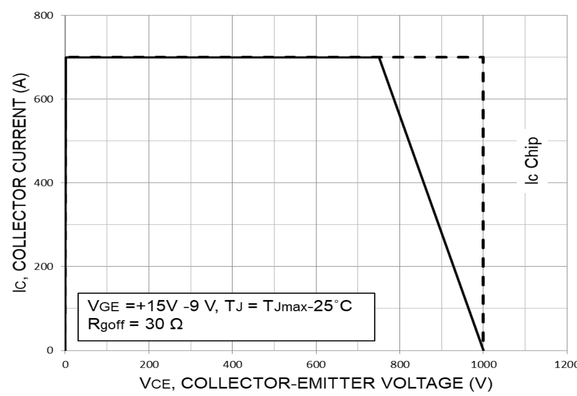



Figure 46. RBSOA – Inner IGBT

## GATE CHARGE AND CAPACITANCE

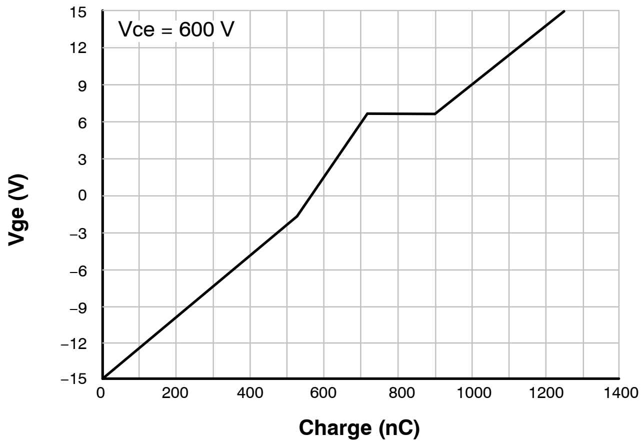



Figure 47. Gate Voltage vs. Gate Charge – Outer IGBT

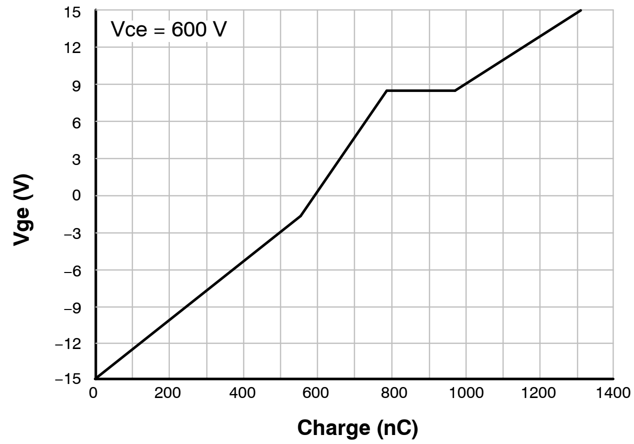



Figure 48. Gate Voltage vs. Gate Charge – Inner IGBT

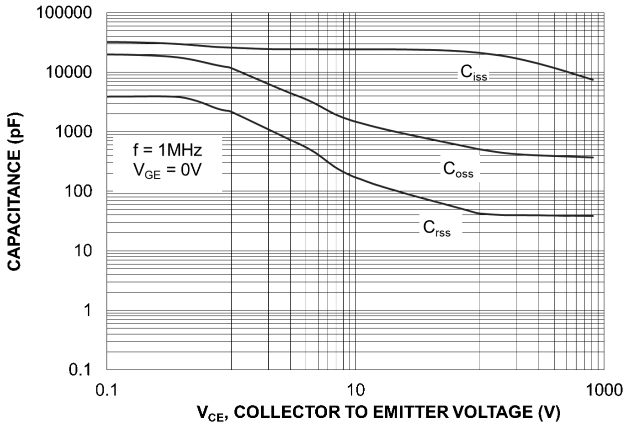



Figure 49. Capacitance Charge – Outer IGBT

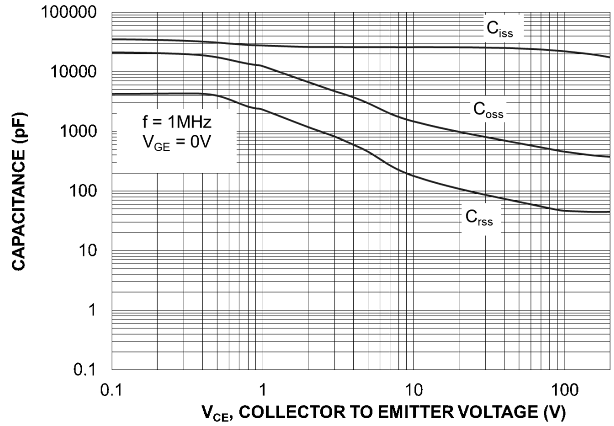



Figure 50. Capacitance Charge – Inner IGBT

## TYPICAL CHARCTERISTICS – THERMISTOR

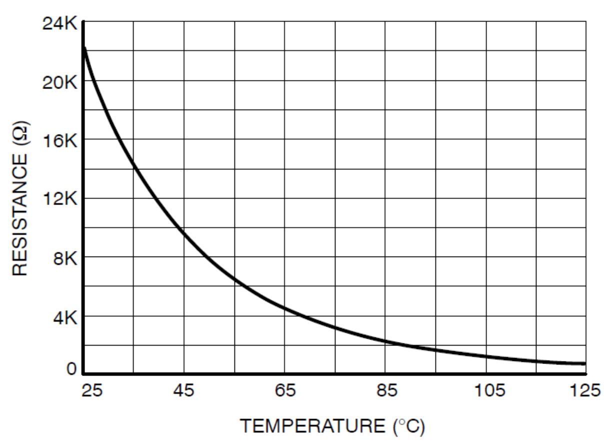
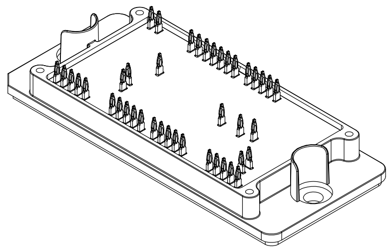
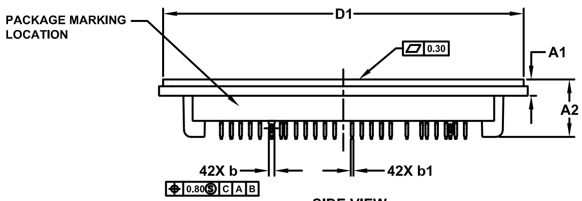



Figure 51. Thermistor Characteristics

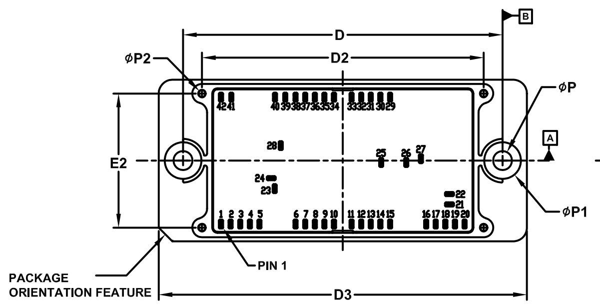
**PIM42, 93x47 (PRESSFIT)**
CASE 180BH
ISSUE O

DATE 06 AUG 2019

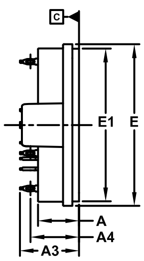





SIDE VIEW




TOP VIEW




END VIEW

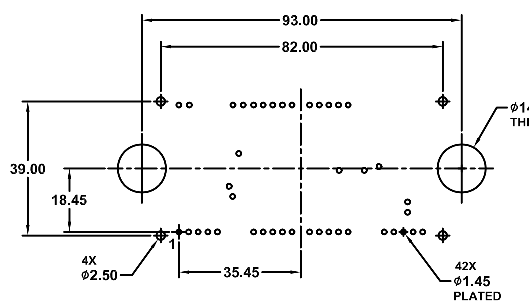
NOTES:

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 A4.
4. POSITION OF THE CENTER OF THE TERMINALS IS DETERMINED FROM DATUM B THE CENTER OF DIMENSION D, X DIRECTION, AND FROM DATUM A, Y DIRECTION. POSITIONAL TOLERANCE, AS NOTED IN DRAWING, APPLIES TO EACH TERMINAL IN BOTH DIRECTIONS.
5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES.

| DIM | MILLIMETERS MIN. | NOM. | MAX. |
|---|---|---|---|
| A | 11.70 | 12.00 | 12.30 |
| A1 | 4.40 | 4.70 | 5.00 |
| A2 | 16.40 | 16.70 | 17.00 |
| A3 | 16.90 | 17.30 | 17.70 |
| A4 | 13.97 | 14.18 | 14.39 |
| 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 | 39.10 |
| P | 5.40 | 5.50 | 5.60 |
| P1 | 10.60 | 10.70 | 10.80 |
| P2 | 1.80 | 2.00 | 2.20 |

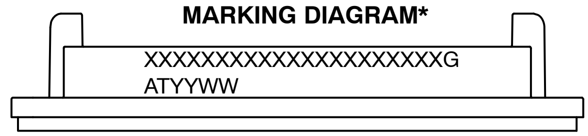
NOTE 4

| PIN | PIN POSITION X | Y | PIN | PIN POSITION X | Y |
|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 22 | 66.50 | 8.70 |
| 2 | 2.80 | 0.00 | 23 | 15.60 | 10.30 |
| 3 | 5.60 | 0.00 | 24 | 14.60 | 13.30 |
| 4 | 8.40 | 0.00 | 25 | 46.60 | 17.90 |
| 5 | 11.20 | 0.00 | 26 | 53.90 | 17.90 |
| 6 | 21.70 | 0.00 | 27 | 58.20 | 19.00 |
| 7 | 24.50 | 0.00 | 28 | 17.40 | 22.80 |
| 8 | 27.30 | 0.00 | 29 | 49.20 | 36.90 |
| 9 | 30.10 | 0.00 | 30 | 46.40 | 36.90 |
| 10 | 32.90 | 0.00 | 31 | 43.60 | 36.90 |
| 11 | 38.00 | 0.00 | 32 | 40.80 | 36.90 |
| 12 | 40.80 | 0.00 | 33 | 38.00 | 36.90 |
| 13 | 43.60 | 0.00 | 34 | 32.90 | 36.90 |
| 14 | 46.40 | 0.00 | 35 | 30.10 | 36.90 |
| 15 | 49.20 | 0.00 | 36 | 27.30 | 36.90 |
| 16 | 59.70 | 0.00 | 37 | 24.50 | 36.90 |
| 17 | 62.50 | 0.00 | 38 | 21.70 | 36.90 |
| 18 | 65.30 | 0.00 | 39 | 18.70 | 36.90 |
| 19 | 68.10 | 0.00 | 40 | 15.70 | 36.90 |
| 20 | 70.90 | 0.00 | 41 | 3.00 | 36.90 |
| 21 | 66.50 | 5.70 | 42 | 0.00 | 36.90 |




RECOMMENDED MOUNTING PATTERN

**GENERIC MARKING DIAGRAM***




XXXXX = Specific Device Code
G = Pb−Free Package
AT = Assembly & Test Site Code
YYWW= Year and Work Week Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present. Some products may not follow the Generic Marking.

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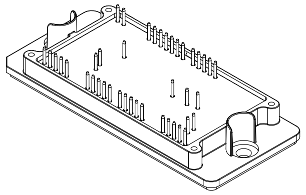
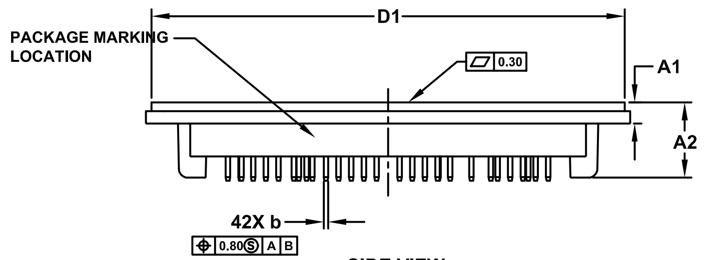
| DESCRIPTION: | PIM42 93X47 (PRESS FIT) | PAGE 1 OF 1 |

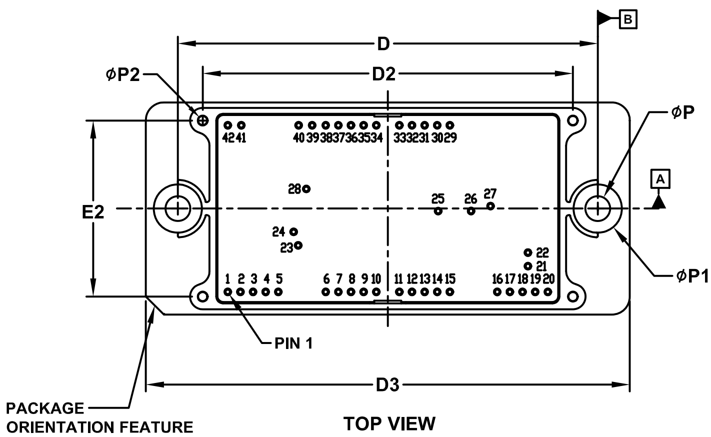


**PIM42, 93x47 (SOLDER PIN)**
CASE 180BS
ISSUE O

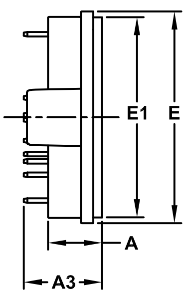
DATE 03 DEC 2019




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 A4.
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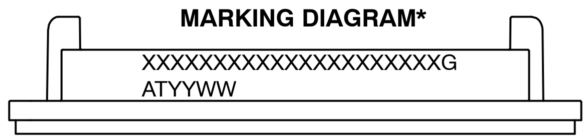
| | MILLIMETERS | | |
|---|---|---|---|
| DIM | MIN. | NOM. | MAX. |
| A | 11.70 | 12.00 | 12.30 |
| A1 | 4.40 | 4.70 | 5.00 |
| A2 | 16.40 | 16.70 | 17.00 |
| A3 | 16.80 | 17.20 | 17.60 |
| b | 0.95 | 1.00 | 1.05 |
| D | 92.90 | 93.00 | 93.10 |
| D1 | 104.45 | 104.75 | 105.05 |
| D2 | 81.80 | 82.00 | 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 | 39.10 |
| P | 5.40 | 5.50 | 5.60 |
| P1 | 10.60 | 10.70 | 10.80 |
| P2 | 1.80 | 2.00 | 2.20 |

NOTE 4

| | PIN POSITION | | | PIN POSITION | |
|---|---|---|---|---|---|
| PIN | X | Y | PIN | X | Y |
| 1 | 0.00 | 0.00 | 22 | 66.50 | 8.70 |
| 2 | 2.80 | 0.00 | 23 | 15.60 | 10.30 |
| 3 | 5.60 | 0.00 | 24 | 14.60 | 13.30 |
| 4 | 8.40 | 0.00 | 25 | 46.60 | 17.90 |
| 5 | 11.20 | 0.00 | 26 | 53.90 | 17.90 |
| 6 | 21.70 | 0.00 | 27 | 58.20 | 19.00 |
| 7 | 24.50 | 0.00 | 28 | 17.40 | 22.80 |
| 8 | 27.30 | 0.00 | 29 | 49.20 | 36.90 |
| 9 | 30.10 | 0.00 | 30 | 46.40 | 36.90 |
| 10 | 32.90 | 0.00 | 31 | 43.60 | 36.90 |
| 11 | 38.00 | 0.00 | 32 | 40.80 | 36.90 |
| 12 | 40.80 | 0.00 | 33 | 38.00 | 36.90 |
| 13 | 43.60 | 0.00 | 34 | 32.90 | 36.90 |
| 14 | 46.40 | 0.00 | 35 | 30.10 | 36.90 |
| 15 | 49.20 | 0.00 | 36 | 27.30 | 36.90 |
| 16 | 59.70 | 0.00 | 37 | 24.50 | 36.90 |
| 17 | 62.50 | 0.00 | 38 | 21.70 | 36.90 |
| 18 | 65.30 | 0.00 | 39 | 18.70 | 36.90 |
| 19 | 68.10 | 0.00 | 40 | 15.70 | 36.90 |
| 20 | 70.90 | 0.00 | 41 | 3.00 | 36.90 |
| 21 | 66.50 | 5.70 | 42 | 0.00 | 36.90 |

**GENERIC MARKING DIAGRAM***




XXXXX = Specific Device Code
G = Pb−Free Package
AT = Assembly & Test Site Code
YYWW= Year and Work Week Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present. Some products may not follow the Generic Marking.

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|---|---|---|
| DESCRIPTION: | PIM42 93X47 (SOLDER PIN) | PAGE 1 OF 1 |

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Phone: 011 421 33 790 2910

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Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative

◊