

3-Level NPC Inverter Module

NXH600N100L4F5PG, NXH600N100L4F5SG

The NXH600N100L4F5PG / NXH600N100L4F5SG is a power module containing a I-type neutral point clamped three-level inverter. The integrated field stop trench IGBTs and FRDs provide lower conduction losses and switching losses, enabling designers to achieve high efficiency and superior reliability.

Features

- Neutral Point Clamped Three-level Inverter Module
- 1000 V Field Stop 4 IGBTs
- Low Inductive layout
- Press-fit Pins
- Thermistor
- This is a Pb-Free and Halide Free Device

Typical Applications

- Solar Inverters
- Energy Storage System
- Uninterruptable Power Supplies Systems

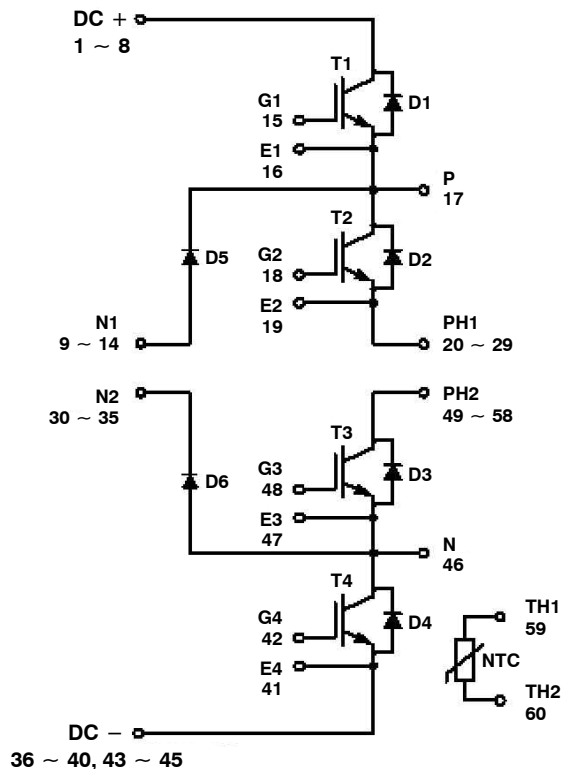
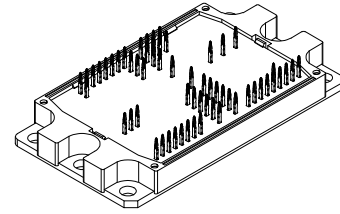
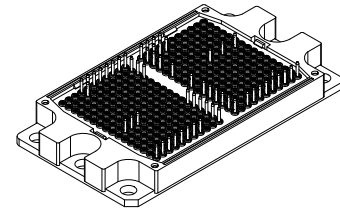


Figure 1. NXH600N100L4F5PG /
NXH600N100L4F5SG Schematic Diagram

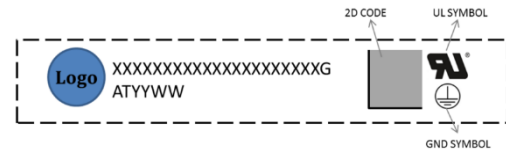


PIM52 112x62 (PRESSFIT PIN)
CASE 180HK



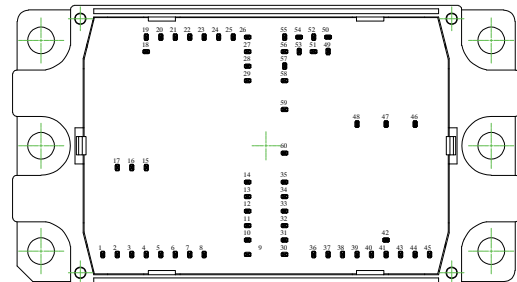
PIM60 112x62x12.3 (SOLDER PIN)
CASE 180BJ

MARKING DIAGRAM



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

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information on page 17 of this data sheet.

NXH600N100L4F5PG, NXH600N100L4F5SG

MAXIMUM RATINGS

| Parameter | Symbol | Max | Unit |
|-----------|--------|-----|------|
|-----------|--------|-----|------|

OUTER IGBT (T1,T4)

| | | | |
|--|--------------|----------------|------------------|
| Collector-Emitter Voltage | V_{CES} | 1000 | V |
| Gate-Emitter Voltage Positive Transient Gate-emitter Voltage (Tpulse = 5 μ s, D < 0.10) | V_{GE} | ± 20 30 | V |
| Continuous Collector Current @ $T_c = 80^\circ\text{C}$ ($T_J = 150^\circ\text{C}$) | I_C | 339 | A |
| Pulsed Collector Current ($T_J = 150^\circ\text{C}$) @ Tpulse = 1 ms | I_{Cpulse} | 1017 | A |
| Maximum Power Dissipation ($T_J = 150^\circ\text{C}$, Th = 80°C) | P_{tot} | 745 | W |
| Minimum Junction Temperature | T_{JMIN} | -40 | $^\circ\text{C}$ |
| Maximum Junction Temperature | T_{JMAX} | 175 | $^\circ\text{C}$ |

INNER IGBT (T2,T3)

| | | | |
|--|--------------|----------------|------------------|
| Collector-Emitter Voltage | V_{CES} | 1000 | V |
| Gate-Emitter Voltage Positive Transient Gate-emitter Voltage (Tpulse = 5 μ s, D < 0.10) | V_{GE} | ± 20 30 | V |
| Continuous Collector Current @ $T_c = 80^\circ\text{C}$ ($T_J = 150^\circ\text{C}$) | I_C | 337 | A |
| Pulsed Collector Current ($T_J = 150^\circ\text{C}$) @ Tpulse = 1 ms | I_{Cpulse} | 1011 | A |
| Maximum Power Dissipation ($T_J = 150^\circ\text{C}$, Th = 80°C) | P_{tot} | 745 | W |
| Minimum Junction Temperature | T_{JMIN} | -40 | $^\circ\text{C}$ |
| Maximum Junction Temperature | T_{JMAX} | 175 | $^\circ\text{C}$ |

NEUTRAL POINT DIODE (D5, D6)

| | | | |
|---|------------|------|----------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 1000 | V |
| Continuous Forward Current @ $T_c = 80^\circ\text{C}$ ($T_J = 150^\circ\text{C}$) | I_F | 132 | A |
| Repetitive Peak Forward Current ($T_J = 150^\circ\text{C}$) @ Tpulse = 1 ms | I_{FRM} | 396 | A |
| Maximum Power Dissipation ($T_J = 150^\circ\text{C}$, Th = 80°C) | P_{tot} | 295 | W |
| Minimum Junction Temperature | T_{JMIN} | -40 | $^\circ\text{C}$ |
| Maximum Junction Temperature | T_{JMAX} | 175 | $^\circ\text{C}$ |
| Non-Repetitive Forward Surge Current ($T_J = 150^\circ\text{C}$, Tpulse = 10 ms) | I_{FSM} | 700 | A |
| I^2t - Value ($t_p = 10$ ms, $T_{vj} = 150^\circ\text{C}$) | $I@t$ | 2450 | A^2s |

INVERSE DIODES (D1, D2, D3, D4)

| | | | |
|---|------------|------|----------------------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 1000 | V |
| Continuous Forward Current @ $T_c = 80^\circ\text{C}$ ($T_J = 150^\circ\text{C}$) | I_F | 137 | A |
| Repetitive Peak Forward Current ($T_J = 150^\circ\text{C}$) @ Tpulse = 1 ms | I_{FRM} | 411 | A |
| Maximum Power Dissipation ($T_J = 150^\circ\text{C}$, Th = 80°C) | P_{tot} | 295 | W |
| Minimum Junction Temperature | T_{JMIN} | -40 | $^\circ\text{C}$ |
| Maximum Junction Temperature | T_{JMAX} | 175 | $^\circ\text{C}$ |
| Non-Repetitive Forward Surge Current ($T_J = 150^\circ\text{C}$, Tpulse = 10 ms) | I_{FSM} | 700 | A |
| I^2t - Value ($t_p = 10$ ms, $T_{vj} = 150^\circ\text{C}$) | $I@t$ | 2450 | A^2s |

THERMAL PROPERTIES

| | | | |
|---------------------------|-----------|------------|------------------|
| Storage Temperature Range | T_{stg} | -40 to 150 | $^\circ\text{C}$ |
|---------------------------|-----------|------------|------------------|

INSULATION PROPERTIES

| | | | |
|---|----------|------|-----------|
| Isolation Test Voltage, t = 1 min, 50/60 Hz | V_{is} | 3400 | V_{RMS} |
|---|----------|------|-----------|

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MAXIMUM RATINGS (continued)

| Parameter | Symbol | Max | Unit |
|----------------------------|--------|------|------|
| 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.

RECOMMENDED OPERATING CONDITIONS

| Parameter | Symbol | Min | Max | Unit |
|---------------------------------------|--------|-----|-----|------|
| Module Operating Junction Temperature | T_J | -40 | 150 | °C |

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ °C}$ unless otherwise noted)

| Parameter | Test Condition | Symbol | Min | Typ | Max | Unit |
|---------------------------------------|---|---------------|-----|---------|-----|---------------|
| OUTER IGBT (T1, T4) | | | | | | |
| Collector-Emitter Cutoff Current | $V_{GE} = 0\text{ V}$, $V_{CE} = 1000\text{ V}$ | I_{CES} | – | – | 25 | μA |
| Collector-Emitter Saturation Voltage | $V_{GE} = 15\text{ V}$, $I_C = 600\text{ A}$, $T_J = 25\text{ °C}$ | $V_{CE(sat)}$ | – | 1.71 | 2.3 | V |
| | $V_{GE} = 15\text{ V}$, $I_C = 600\text{ A}$, $T_J = 150\text{ °C}$ | | – | 1.95 | – | |
| Gate-Emitter Threshold Voltage | $V_{GE} = V_{CE}$, $I_C = 600\text{ mA}$ | $V_{GE(TH)}$ | 3.9 | 4.67 | 5.8 | V |
| Gate Leakage Current | $V_{GE} = 20\text{ V}$, $V_{CE} = 0\text{ V}$ | I_{GES} | – | – | 1.0 | μA |
| Internal Gate Resistor | | R_G | – | 1.0 | – | Ω |
| Turn-on Delay Time | $T_J = 25\text{ °C}$ $V_{CE} = 600\text{ V}$, $I_C = 200\text{ A}$ $V_{GE} = -9\text{ V to } +15\text{ V}$, $R_G(\text{on}) = 7\text{ }\Omega$, $R_G(\text{off}) = 23\text{ }\Omega$ | $t_{d(on)}$ | – | 231.41 | – | ns |
| Rise Time | | t_r | – | 54.04 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 1361.48 | – | |
| Fall Time | | t_f | – | 42.32 | – | |
| Turn-on Switching Loss per Pulse | | E_{on} | – | 6.62 | – | mJ |
| Turn off Switching Loss per Pulse | | E_{off} | – | 12.16 | – | |
| Turn-on Delay Time | $T_J = 125\text{ °C}$ $V_{CE} = 600\text{ V}$, $I_C = 200\text{ A}$ $V_{GE} = -9\text{ V to } +15\text{ V}$, $R_G(\text{on}) = 7\text{ }\Omega$, $R_G(\text{off}) = 23\text{ }\Omega$ | $t_{d(on)}$ | – | 211.22 | – | ns |
| Rise Time | | t_r | – | 61.09 | – | |
| Turn-off Delay Time | | $t_{d(off)}$ | – | 1517.69 | – | |
| Fall Time | | t_f | – | 49.22 | – | |
| Turn-on Switching Loss per Pulse | | E_{on} | – | 10.4 | – | mJ |
| Turn off Switching Loss per Pulse | | E_{off} | – | 13.98 | – | |
| Input Capacitance | $V_{CE} = 20\text{ V}$, $V_{GE} = 0\text{ V}$, $f = 10\text{ kHz}$ | C_{ies} | – | 38976.2 | – | pF |
| Output Capacitance | | C_{oes} | – | 1447.5 | – | |
| Reverse Transfer Capacitance | | C_{res} | – | 224.2 | – | |
| Total Gate Charge | $V_{CE} = 600\text{ V}$, $I_C = 40\text{ A}$, $V_{GE} = \pm 15\text{ V}$ | Q_g | – | 2100 | – | nC |
| Thermal Resistance – Chip-to-heatsink | Thermal grease, Thickness = 2 Mil $\pm 2\%$, $\lambda = 2.87\text{ W/mK}$ | R_{thJH} | – | 0.158 | – | °C/W |
| Thermal Resistance – Chip-to-case | | R_{thJC} | – | 0.094 | – | °C/W |

NEUTRAL POINT DIODE (D5, D6)

| | | | | | | |
|-----------------------|--|-------|---|------|-----|---|
| Diode Forward Voltage | $I_F = 300\text{ A}$, $T_J = 25\text{ °C}$ | V_F | – | 2.5 | 3.2 | V |
| | $I_F = 300\text{ A}$, $T_J = 150\text{ °C}$ | | – | 2.25 | – | |

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted) (continued)

| Parameter | Test Condition | Symbol | Min | Typ | Max | Unit |
|---------------------------------------|---|-------------------|-----|--------|-----|------|
| NEUTRAL POINT DIODE (D5, D6) | | | | | | |
| Reverse Recovery Time | T _J = 25 °C V _{CE} = 600 V, I _C = 200 A V _{GE} = -9 V to +15 V, R _G = 7 Ω | t _{rr} | – | 46.43 | – | ns |
| Reverse Recovery Charge | | Q _{rr} | – | 2.786 | – | μC |
| Peak Reverse Recovery Current | | I _{RRM} | – | 102.29 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 2.95 | – | A/μs |
| Reverse Recovery Energy | | E _{rr} | – | 881.2 | – | μJ |
| Reverse Recovery Time | T _J = 125 °C V _{CE} = 600 V, I _C = 200 A V _{GE} = -9 V to +15 V, R _G = 7 Ω | t _{rr} | – | 133.01 | – | ns |
| Reverse Recovery Charge | | Q _{rr} | – | 9.767 | – | μC |
| Peak Reverse Recovery Current | | I _{RRM} | – | 167.7 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 2.73 | – | A/μs |
| Reverse Recovery Energy | | E _{rr} | – | 3534.9 | – | μJ |
| Thermal Resistance – Chip-to-heatsink | Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK | R _{thJH} | – | 0.324 | – | °C/W |
| Thermal Resistance – Chip-to-case | | R _{thJC} | – | 0.237 | – | °C/W |

INNER IGBT (T2,T3)

| | | | | | | |
|---------------------------------------|--|----------------------|-----|---------|------|------|
| Collector-Emitter Cutoff Current | V _{GE} = 0 V, V _{CE} = 1000 V | I _{CES} | – | – | 25 | μA |
| Collector-Emitter Saturation Voltage | V _{GE} = 15 V, I _C = 600 A, T _J = 25 °C | V _{CE(sat)} | – | 1.71 | 2.30 | V |
| | V _{GE} = 15 V, I _C = 600 A, T _J = 150 °C | | – | 1.96 | – | |
| Gate-Emitter Threshold Voltage | V _{GE} = V _{CE} , I _C = 600 mA | V _{GE(TH)} | 3.9 | 4.67 | 5.8 | V |
| Gate Leakage Current | V _{GE} = 20 V, V _{CE} = 0 V | I _{GES} | – | – | 1.0 | μA |
| Internal Gate Resistor | | R _G | – | 1.0 | – | Ω |
| Turn-on Delay Time | T _J = 25 °C V _{CE} = 600 V, I _C = 200 A V _{GE} = -9 V to +15 V, R _G (on) = 15 Ω, R _G (off) = 21 Ω | t _{d(on)} | – | 417.57 | – | ns |
| Rise Time | | t _r | – | 76.61 | – | |
| Turn-off Delay Time | | t _{d(off)} | – | 1309.89 | – | |
| Fall Time | | t _f | – | 86.98 | – | |
| Turn-on Switching Loss per Pulse | | E _{on} | – | 10.42 | – | mJ |
| Turn off Switching Loss per Pulse | | E _{off} | – | 15.08 | – | |
| Turn-on Delay Time | T _J = 125 °C V _{CE} = 600 V, I _C = 200 A V _{GE} = -9 V to +15 V, R _G (on) = 15Ω, R _G (off) = 21 Ω | t _{d(on)} | – | 382.03 | – | ns |
| Rise Time | | t _r | – | 93.33 | – | |
| Turn-off Delay Time | | t _{d(off)} | – | 1420.5 | – | |
| Fall Time | | t _f | – | 90.31 | – | |
| Turn-on Switching Loss per Pulse | | E _{on} | – | 14.47 | – | mJ |
| Turn off Switching Loss per Pulse | | E _{off} | – | 19.12 | – | |
| Input Capacitance | V _{CE} = 20 V, V _{GE} = 0 V, f = 10 kHz | C _{ies} | – | 38097.0 | – | pF |
| Output Capacitance | | C _{oes} | – | 1441.8 | – | |
| Reverse Transfer Capacitance | | C _{res} | – | 228.0 | – | |
| Total Gate Charge | V _{CE} = 600 V, I _C = 40 A, V _{GE} = ±15 V | Q _g | – | 2060 | – | nC |
| Thermal Resistance – Chip-to-heatsink | Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK | R _{thJH} | – | 0.158 | – | °C/W |
| Thermal Resistance – Chip-to-case | | R _{thJC} | – | 0.094 | – | °C/W |

INVERSE DIODES (D1, D2, D3, D4)

| | | | | | | |
|-----------------------|---|----------------|---|------|-----|---|
| Diode Forward Voltage | I _F = 300 A, T _J = 25 °C | V _F | – | 2.58 | 3.2 | V |
| | I _F = 300 A, T _J = 150 °C | | – | 2.35 | – | |

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted) (continued)

| Parameter | Test Condition | Symbol | Min | Typ | Max | Unit |
|--|--|-------------------|-----|--------|-----|------|
| INVERSE DIODES (D1, D2, D3, D4) | | | | | | |
| Reverse Recovery Time | V _{CE} = 600 V, I _C = 200 A V _{GE} = -9 V to +15 V, R _G = 10 Ω | t _{rr} | – | 94.95 | – | ns |
| Reverse Recovery Charge | | Q _{rr} | – | 4.557 | – | μC |
| Peak Reverse Recovery Current | | I _{RRM} | – | 94.48 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 2.524 | – | A/μs |
| Reverse Recovery Energy | | E _{rr} | – | 1642 | – | μJ |
| Reverse Recovery Time | T _J = 125 °C V _{CE} = 600 V, I _C = 200 A V _{GE} = -9 V to +15 V, R _G = 10 Ω | t _{rr} | – | 172.16 | – | ns |
| Reverse Recovery Charge | | Q _{rr} | – | 12.574 | – | μC |
| Peak Reverse Recovery Current | | I _{RRM} | – | 146.25 | – | A |
| Peak Rate of Fall of Recovery Current | | di/dt | – | 2.169 | – | A/μs |
| Reverse Recovery Energy | | E _{rr} | – | 5550 | – | μJ |
| Thermal Resistance – Chip-to-heatsink | Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK | R _{thJH} | – | 0.324 | – | °C/W |
| Thermal Resistance – Chip-to-case | | R _{thJC} | – | 0.237 | – | °C/W |

THERMISTOR CHARACTERISTICS

| | | | | | | |
|----------------------------|-------------------------|------------------|----|-------|---|------|
| Nominal Resistance | T = 25 °C | R ₂₅ | – | 5 | – | kΩ |
| Nominal Resistance | T = 100 °C | R ₁₀₀ | – | 492.2 | – | Ω |
| Deviation of R25 | | ΔR/R | –1 | – | 1 | % |
| Power Dissipation | | P _D | – | 5 | – | mW |
| Power Dissipation Constant | | | – | 1.3 | – | mW/K |
| B-value | B(25/85), tolerance ±1% | | – | 3430 | – | 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.

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TYPICAL CHARACTERISTICS – IGBT T1/T4 AND D5/D6 DIODE

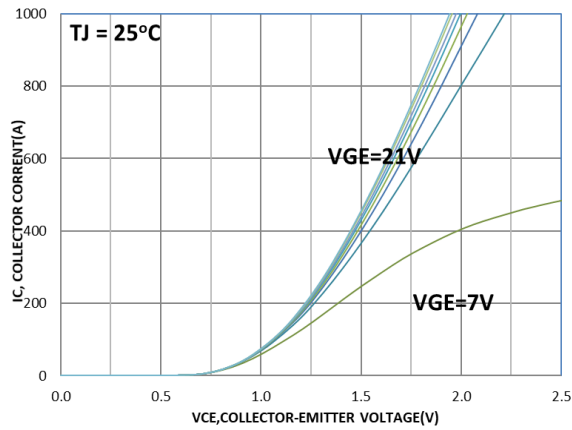


Figure 2. Typical Output Characteristics

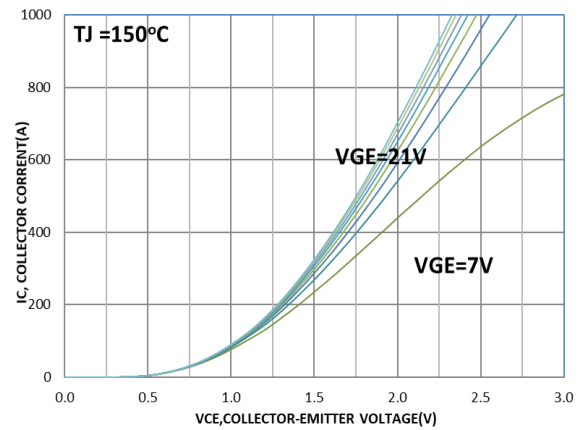


Figure 3. Typical Output Characteristics

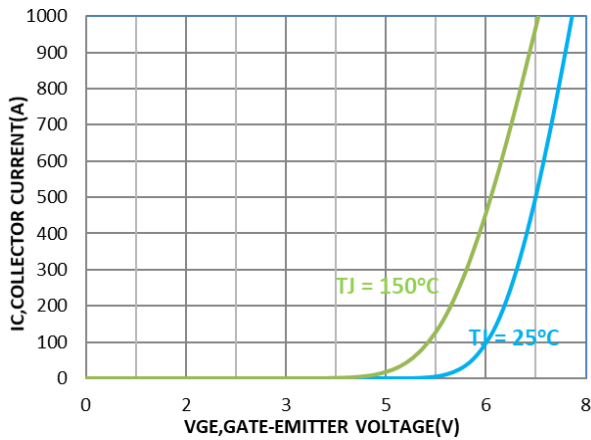


Figure 4. Transfer Characteristics

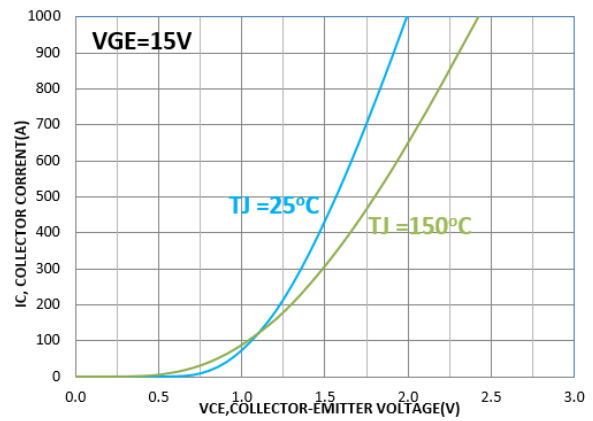


Figure 5. Saturation Voltage Characteristic

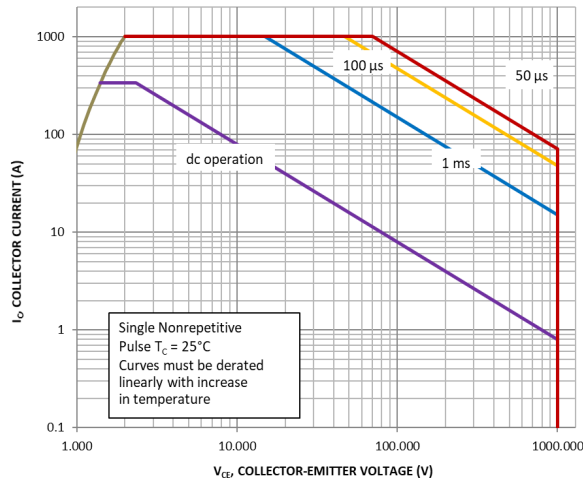


Figure 6. FBSOA

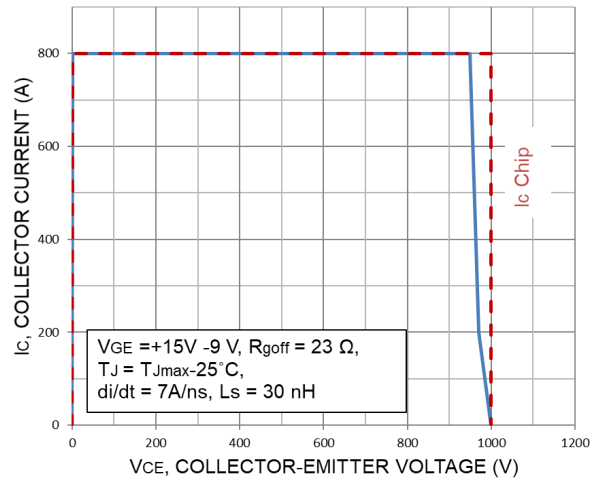


Figure 7. RBSOA

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TYPICAL CHARACTERISTICS – IGBT T1/T4 AND D5/D6 DIODE (continued)

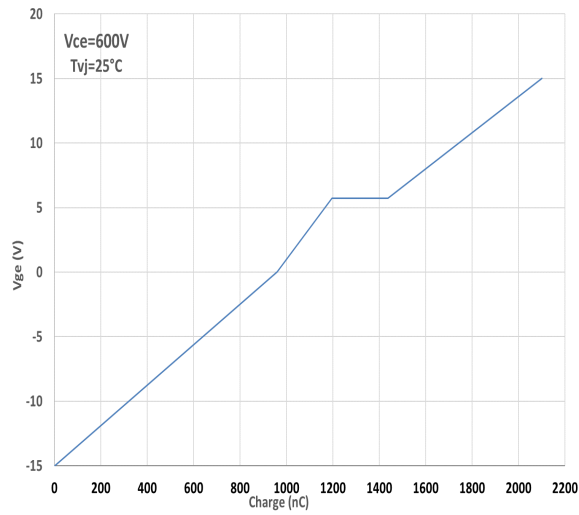


Figure 8. Gate Voltage vs. Gate Charge

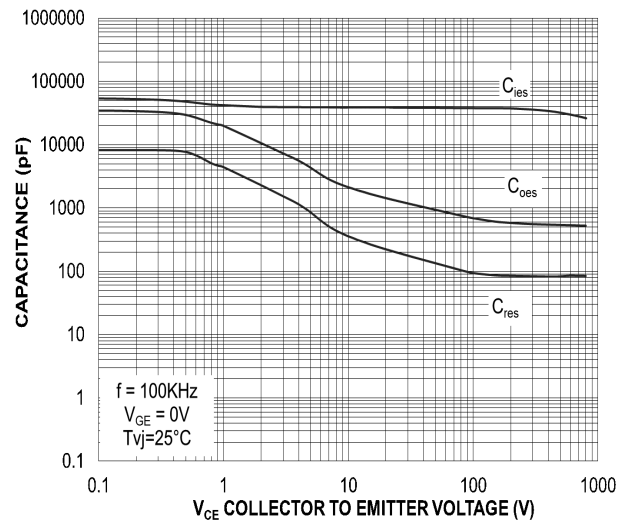


Figure 9. Capacitance

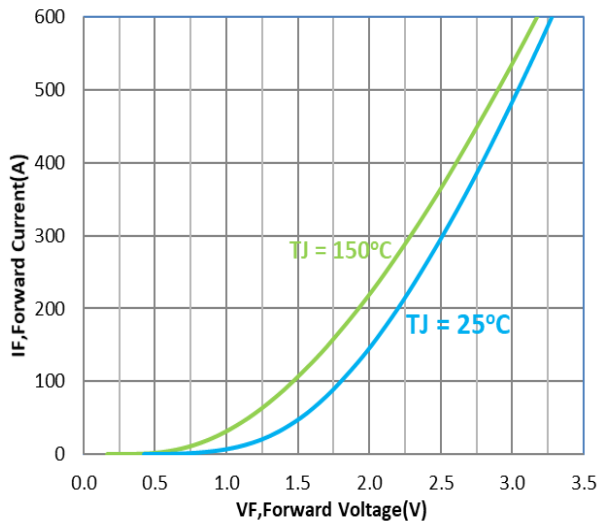


Figure 10. Diode Forward Characteristics

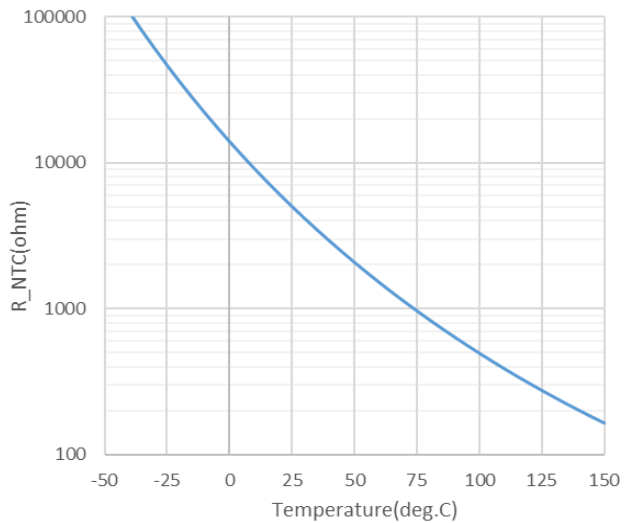


Figure 11. Temperature vs. NTC Value

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TYPICAL CHARACTERISTICS – IGBT T2/T3 AND D3/D4, D1/D2 DIODE

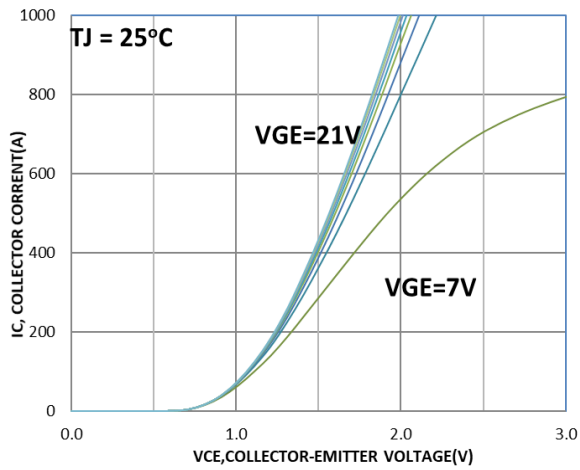


Figure 12. Typical Output Characteristics

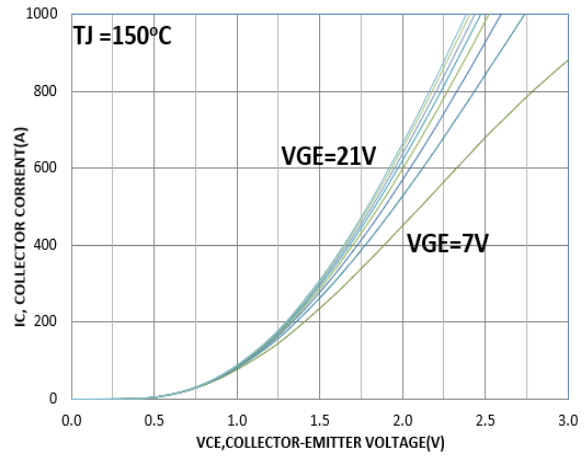


Figure 13. Typical Output Characteristics

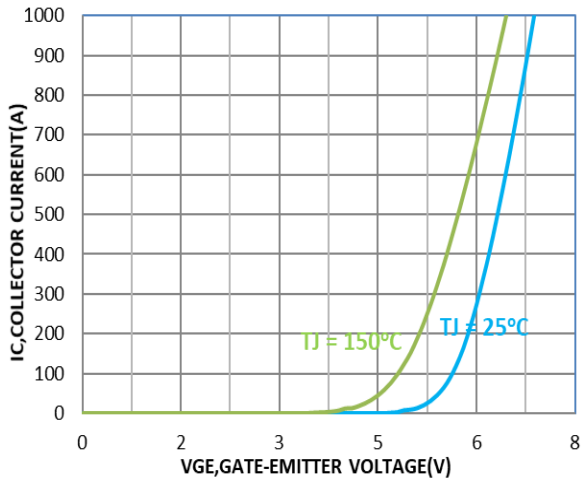


Figure 14. Transfer Characteristics

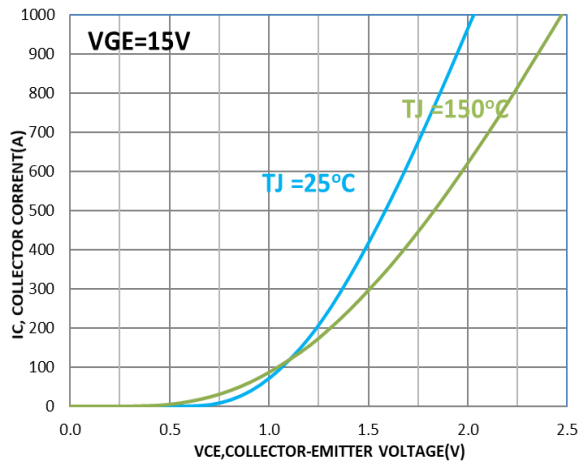


Figure 15. Saturation Voltage Characteristic

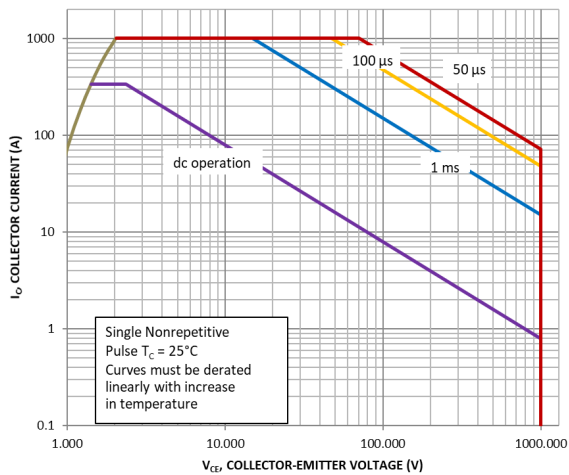


Figure 16. FBSOA

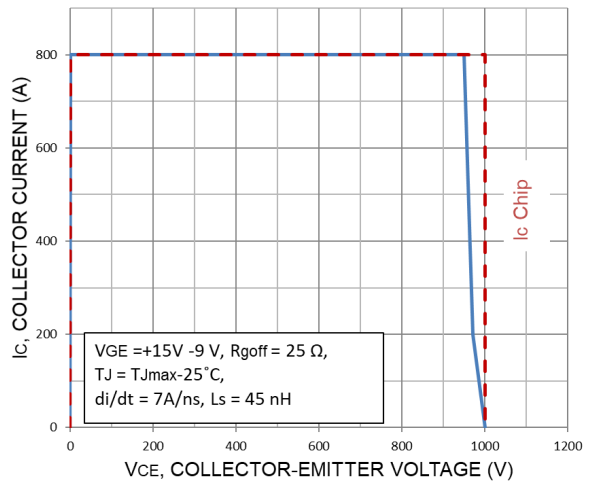


Figure 17. RBSOA

NXH600N100L4F5PG, NXH600N100L4F5SG

TYPICAL CHARACTERISTICS – IGBT T2/T3 AND D3/D4, D1/D2 DIODE (continued)

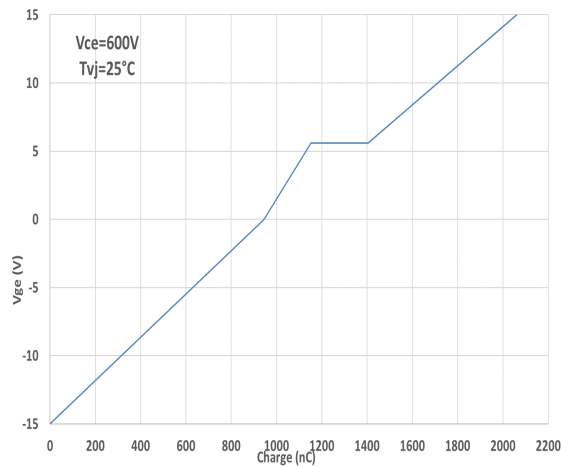


Figure 18. Gate Voltage vs. Gate Charge

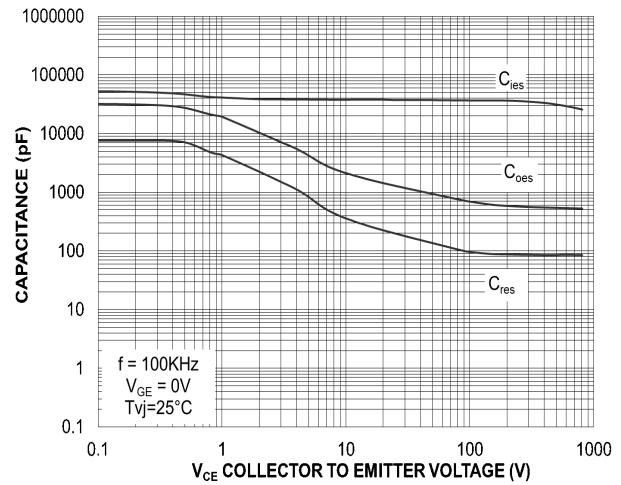


Figure 19. Capacitance

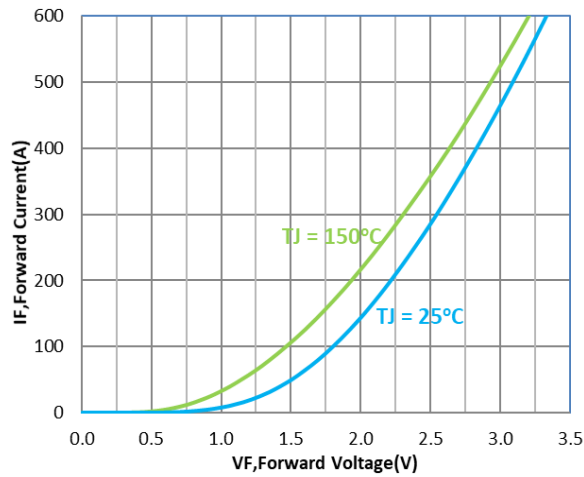


Figure 20. Diode Forward Characteristics

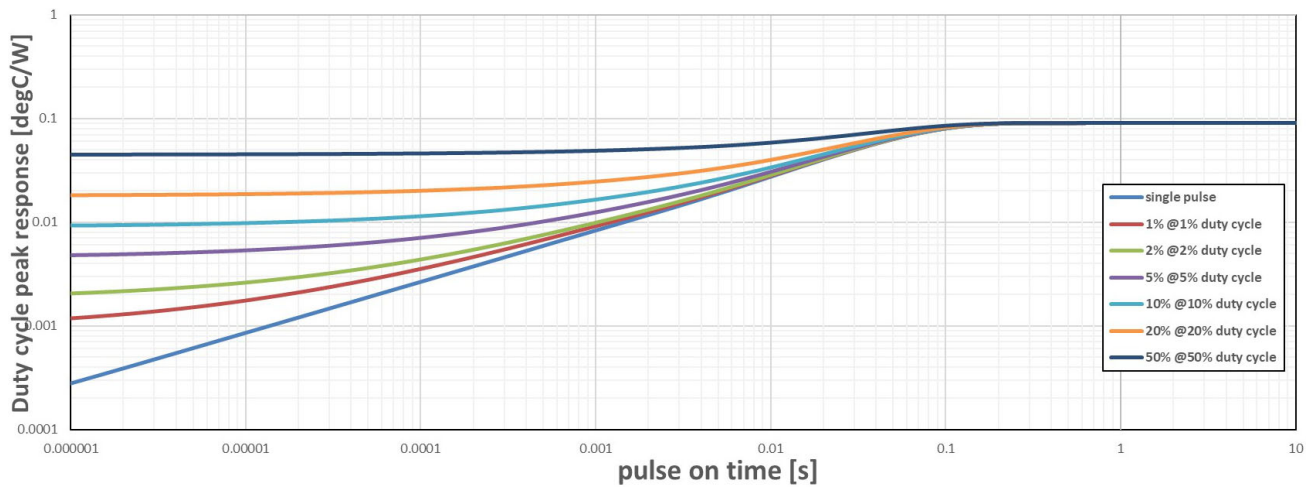


Figure 21. Transient Thermal Impedance (IGBT R_{thjc})

NXH600N100L4F5PG, NXH600N100L4F5SG

TYPICAL CHARACTERISTICS – IGBT T2/T3 AND D3/D4, D1/D2 DIODE (continued)

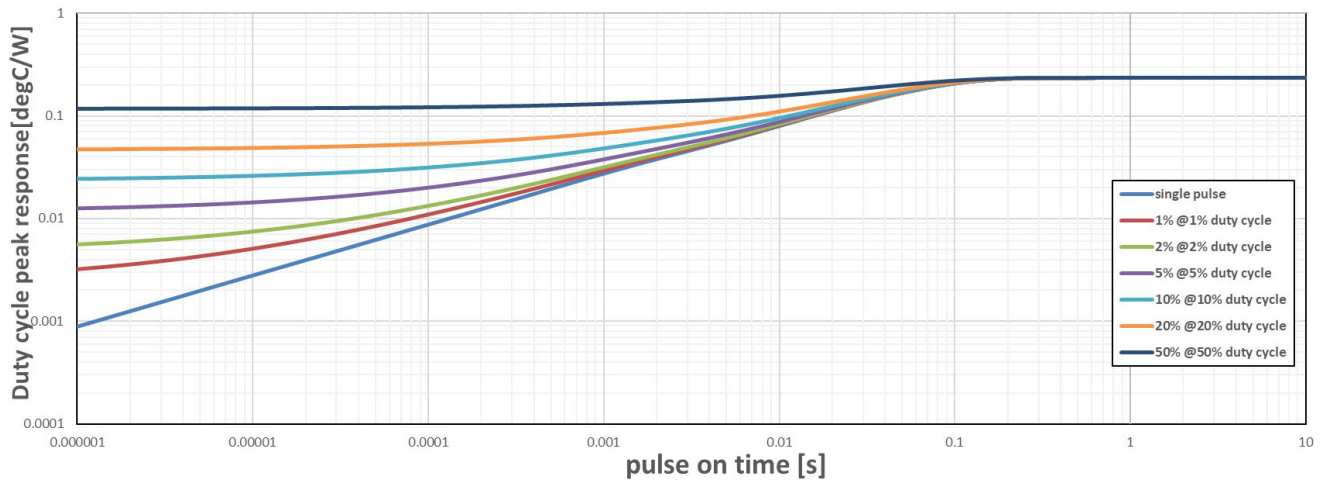


Figure 22. Transient Thermal Impedance (DIODE R_{thjc})

NXH600N100L4F5PG, NXH600N100L4F5SG

TYPICAL CHARACTERISTICS – T1 || D5 OR T4 || D6

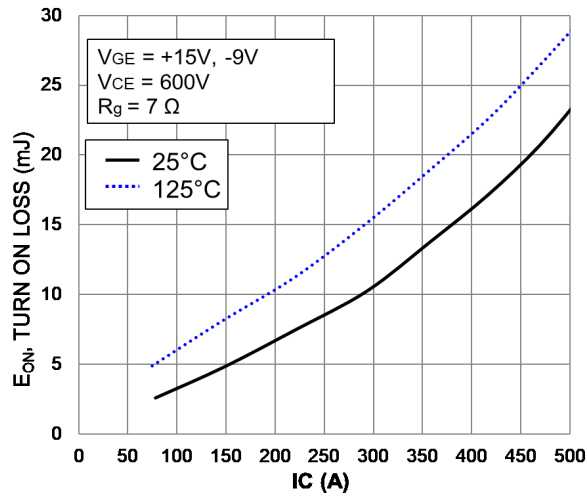


Figure 23. Typical Turn On Loss vs. I_C

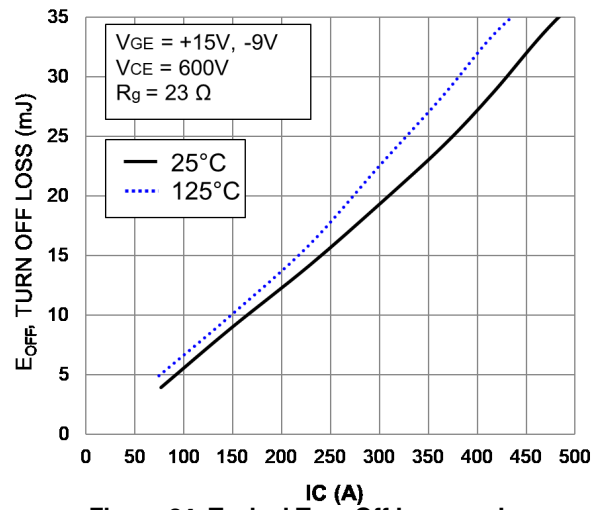


Figure 24. Typical Turn Off Loss vs. I_C

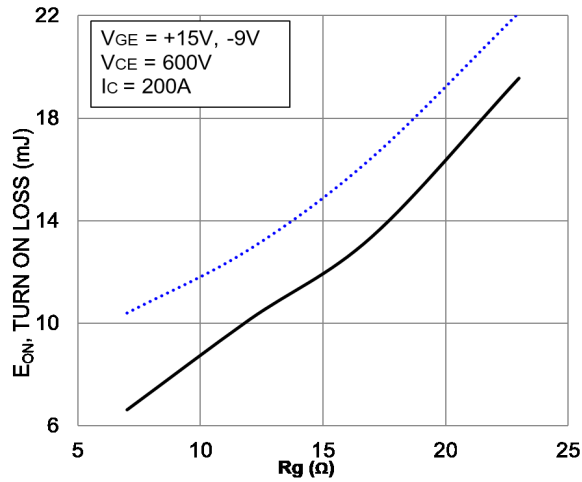


Figure 25. Typical Turn On Loss vs. R_g

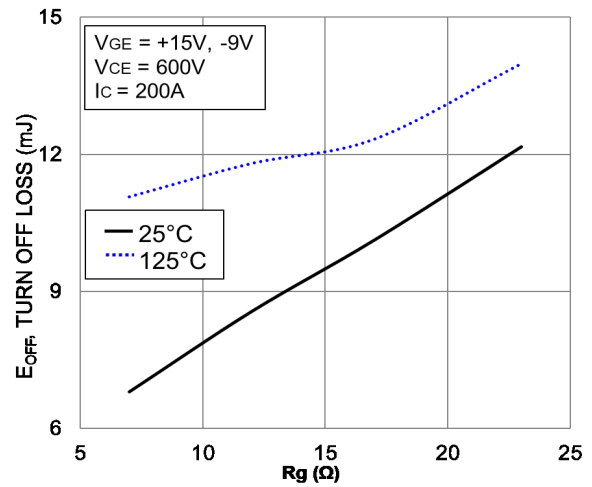


Figure 26. Typical Turn Off Loss vs. R_g

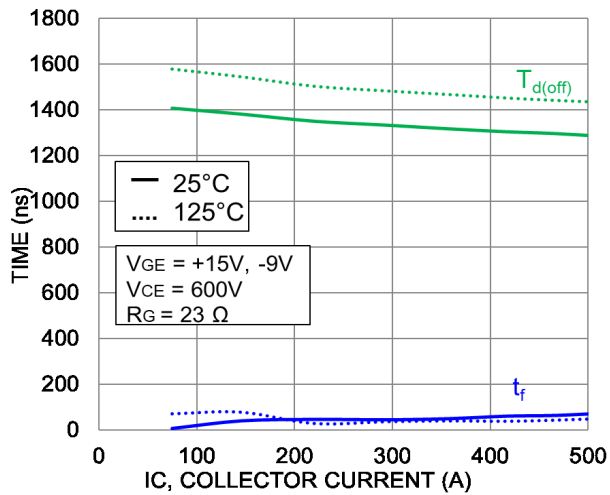


Figure 27. Typical Turn-Off Switching Time vs. I_C

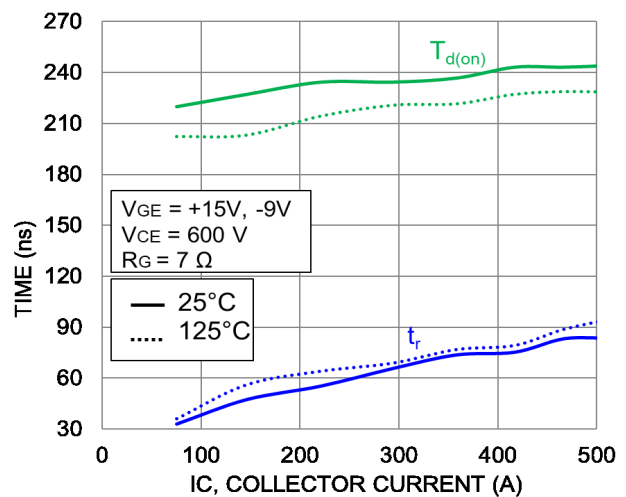


Figure 28. Typical Turn-On Switching Time vs. I_C

TYPICAL CHARACTERISTICS – T1 || D5 OR T4 || D6 (continued)

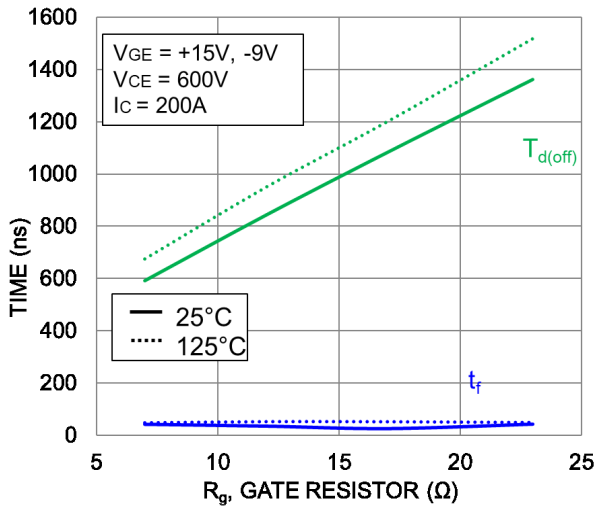


Figure 29. Typical Turn-Off Switching Time vs. R_g

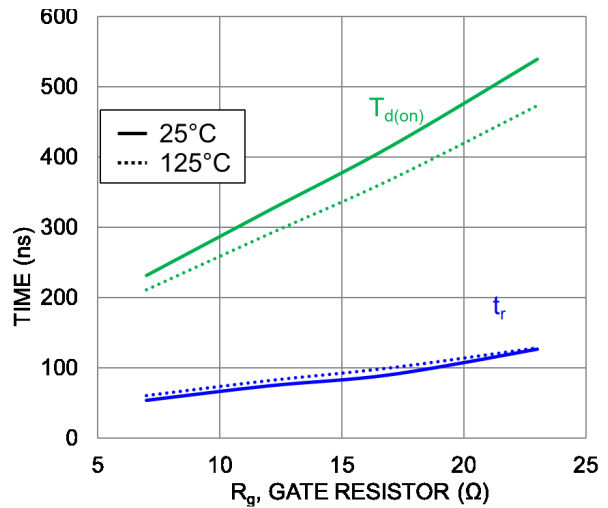


Figure 30. Typical Turn-On Switching Time vs. R_g

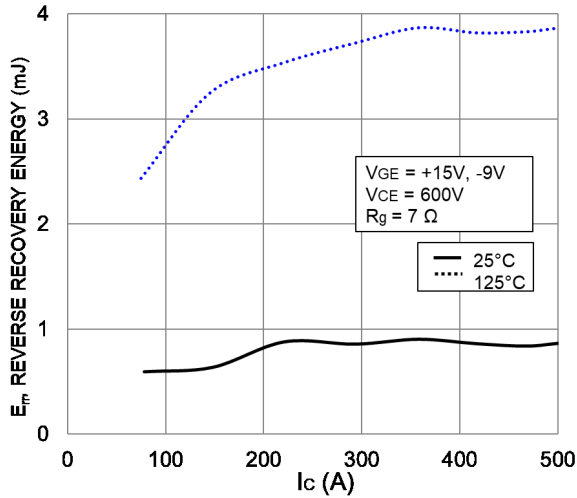


Figure 31. Typical Reverse Recovery Energy Loss vs. I_C

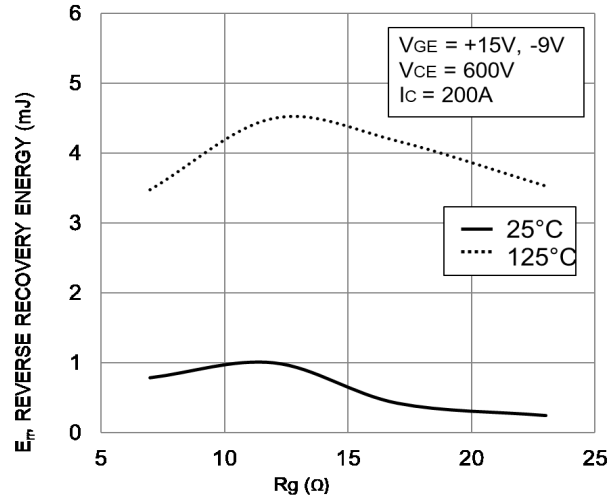


Figure 32. Typical Reverse Recovery Energy Loss vs. R_g

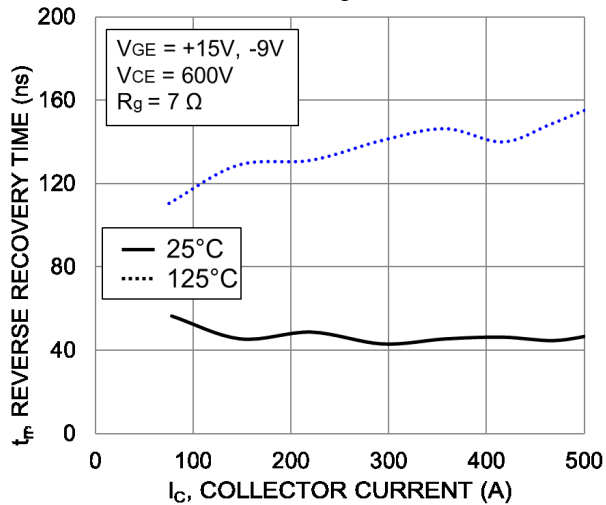


Figure 33. Typical Reverse Recovery Time vs. I_C

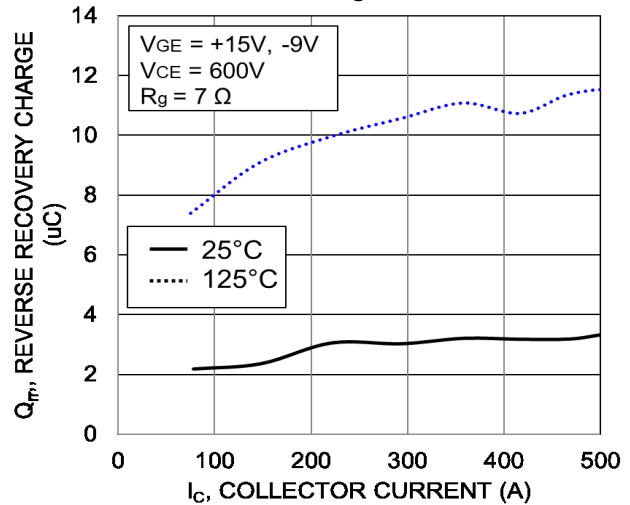


Figure 34. Typical Reverse Recovery Charge vs. I_C

TYPICAL CHARACTERISTICS – T1 || D5 OR T4 || D6 (continued)

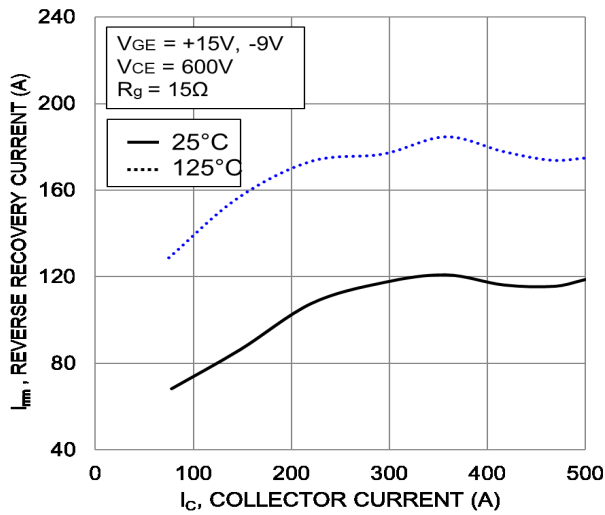


Figure 35. Typical Reverse Recovery Current vs. I_C

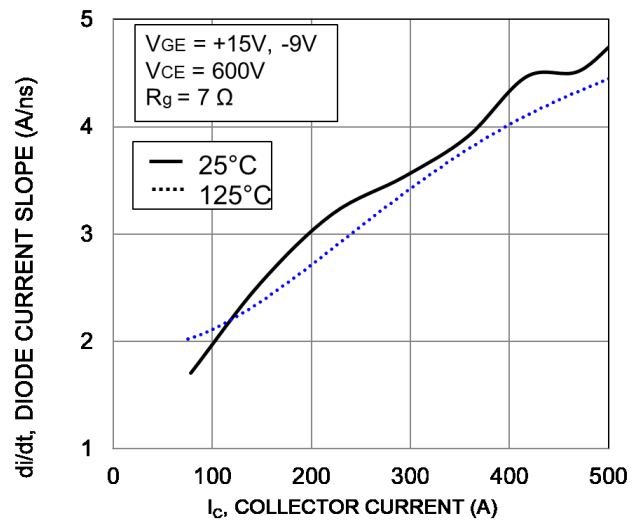


Figure 36. Typical di/dt vs. I_C

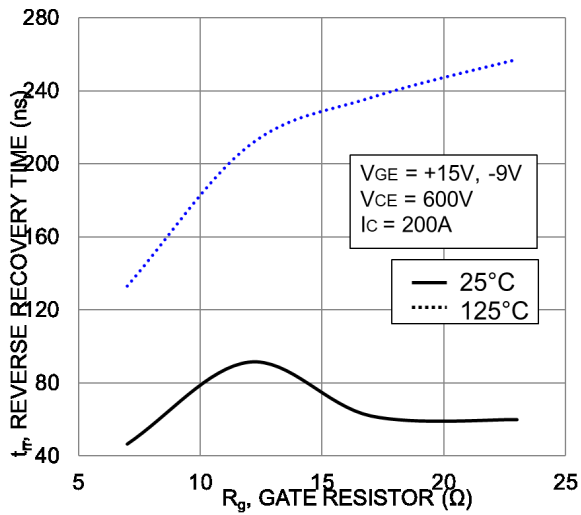


Figure 37. Typical Reverse Recovery Time vs. R_g

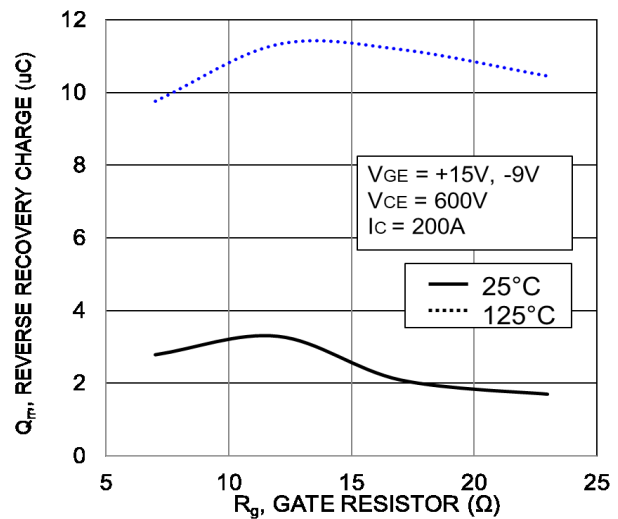


Figure 38. Typical Reverse Recovery Charge vs. R_g

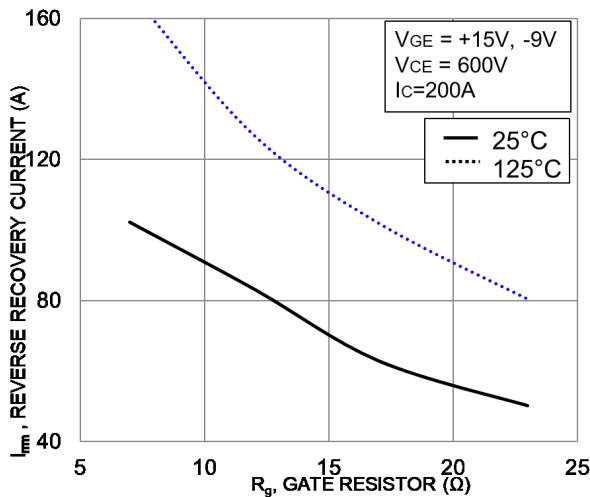


Figure 39. Typical Reverse Recovery Peak Current vs. R_g

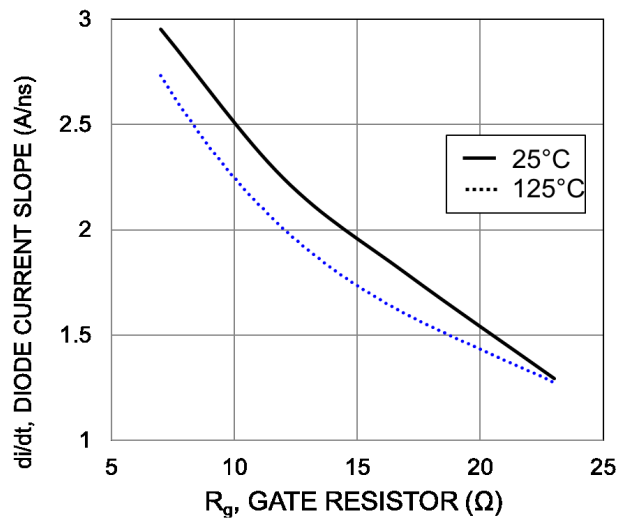


Figure 40. Typical di/dt vs. R_g

NXH600N100L4F5PG, NXH600N100L4F5SG

TYPICAL CHARACTERISTICS – T2||D3 + D4 OR T3||D1 +D2

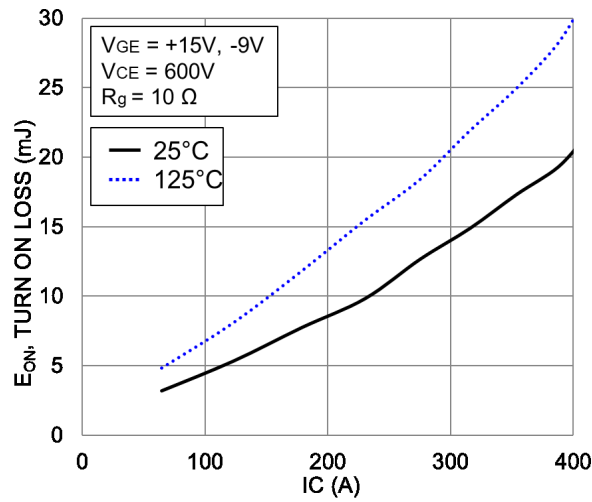


Figure 41. Typical Turn On Loss vs. I_C

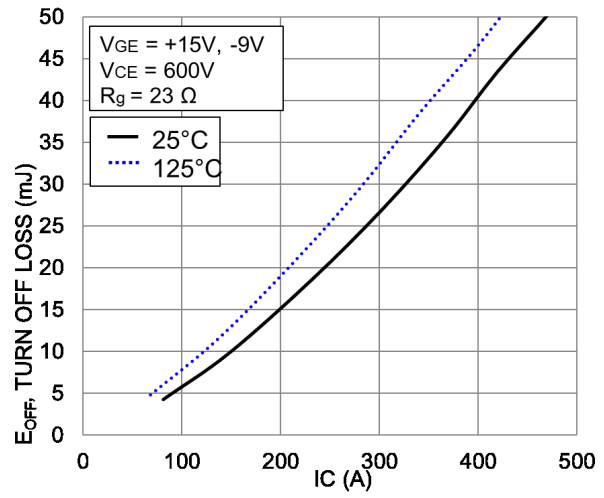


Figure 42. Typical Turn Off Loss vs. I_C

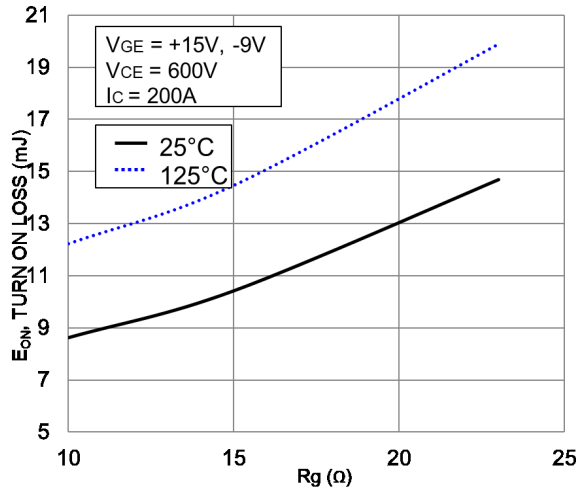


Figure 43. Typical Turn On Loss vs. R_g

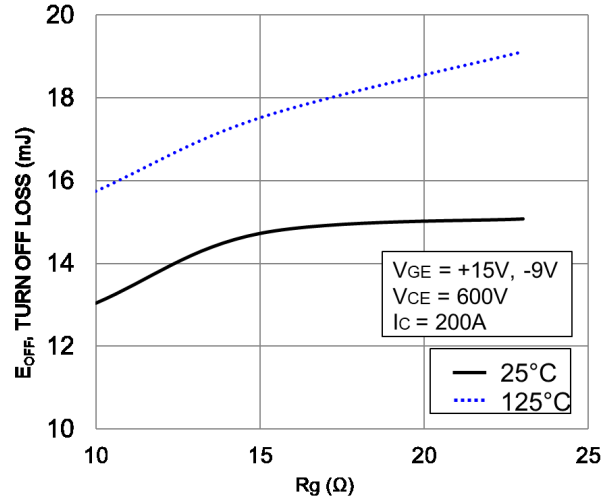


Figure 44. Typical Turn Off Loss vs. R_g

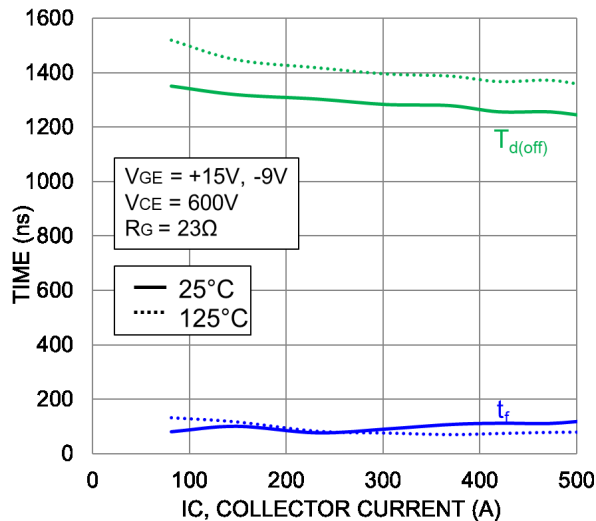


Figure 45. Typical Turn-Off Switching Time vs. I_C

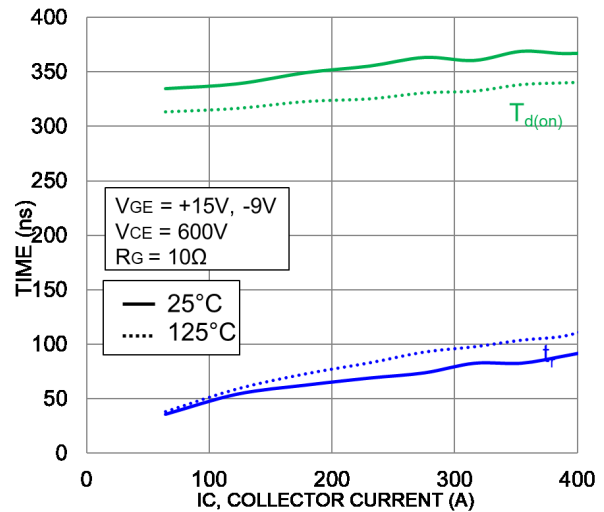


Figure 46. Typical Turn-On Switching Time vs. I_C

TYPICAL CHARACTERISTICS – T2 || D3 + D4 OR T3 || D1 + D2 (continued)

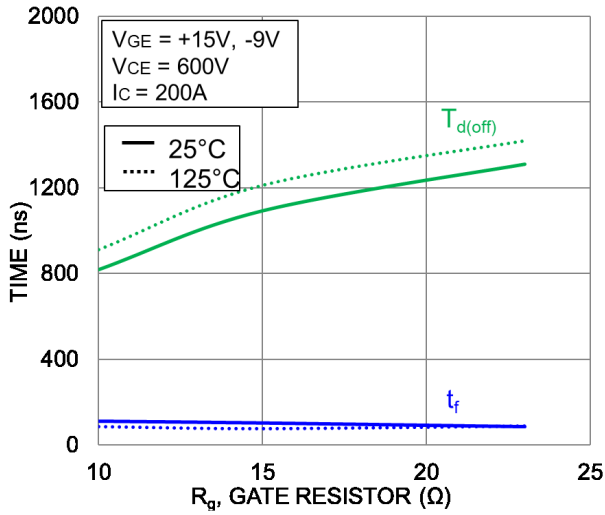


Figure 47. Typical Turn-Off Switching Time vs. Rg

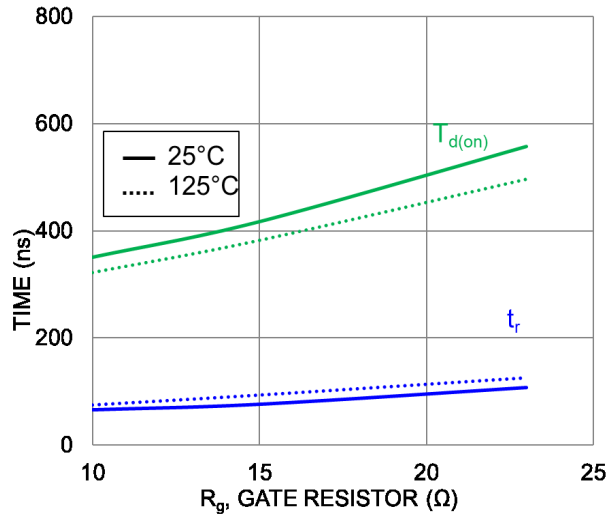


Figure 48. Typical Turn-On Switching Time vs. Rg

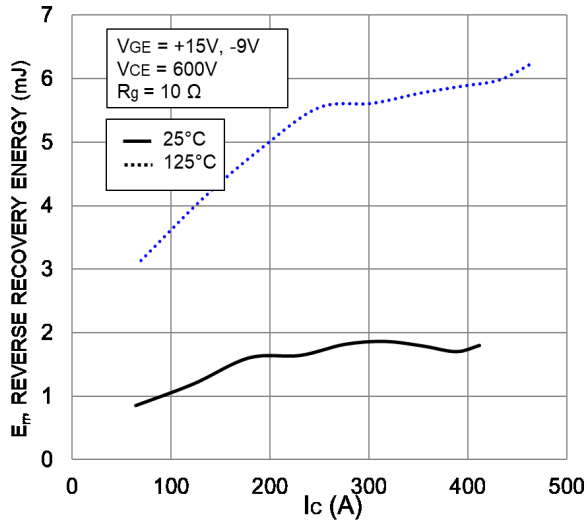


Figure 49. Typical Reverse Recovery Energy Loss vs. IC

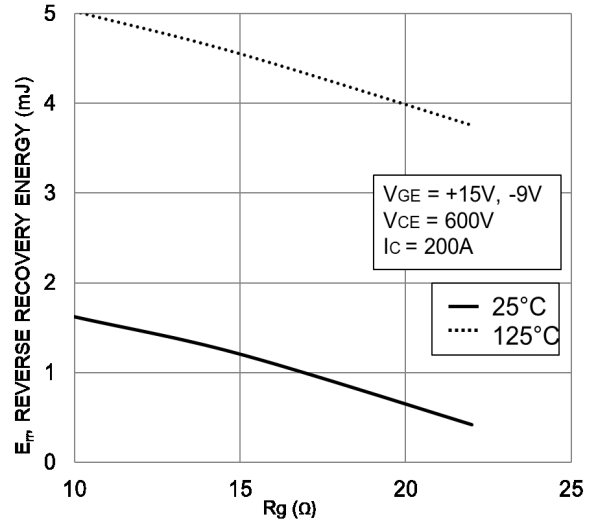


Figure 50. Typical Reverse Recovery Energy Loss vs. Rg

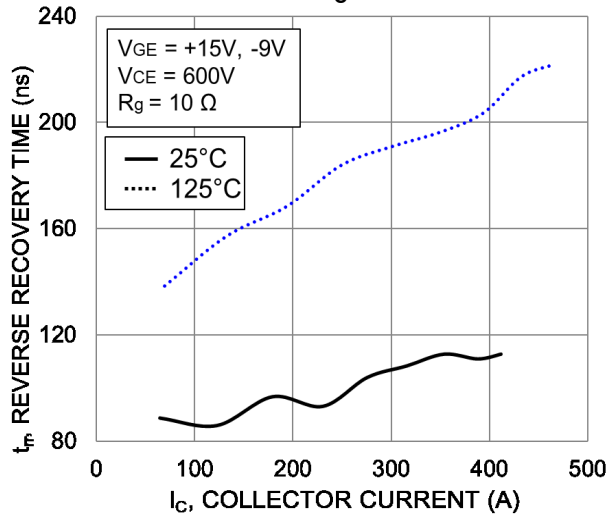


Figure 51. Typical Reverse Recovery Time vs. IC

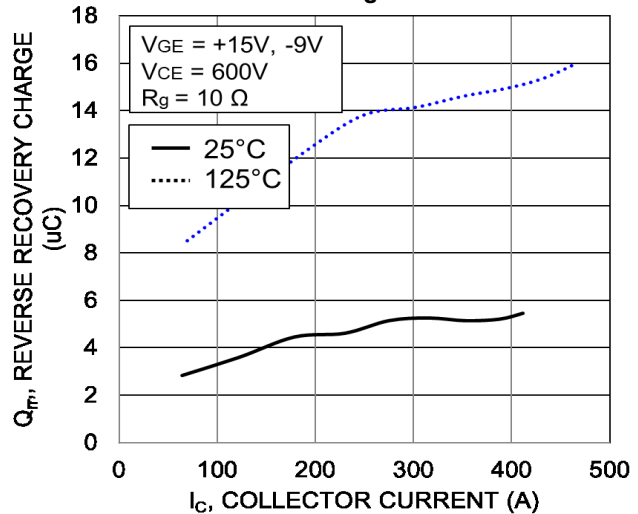


Figure 52. Typical Reverse Recovery Charge vs. IC

TYPICAL CHARACTERISTICS – T2 || D3 + D4 OR T3 || D1 + D2 (continued)

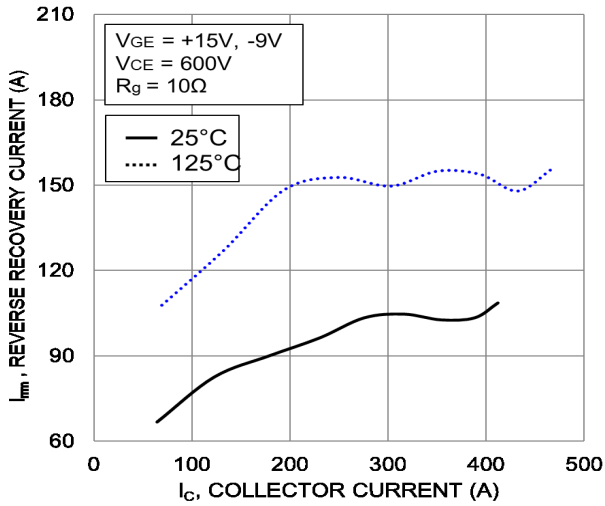


Figure 53. Typical Reverse Recovery Current vs. I_c

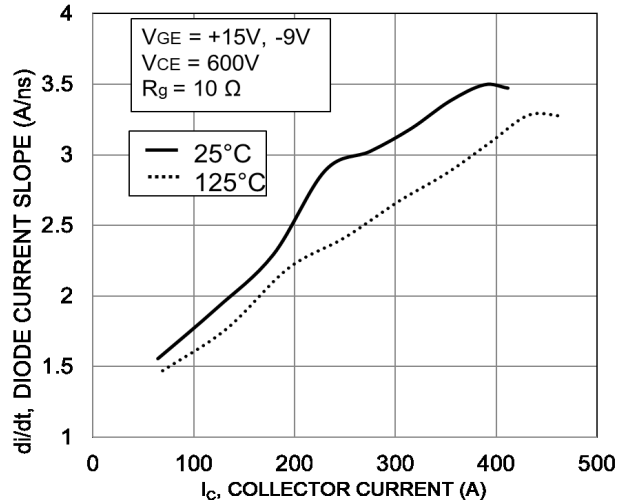


Figure 54. Typical di/dt vs. I_c

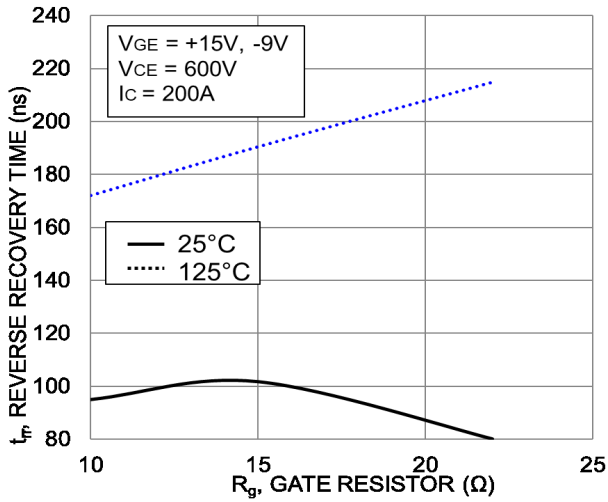


Figure 55. Typical Reverse Recovery Time vs. R_g

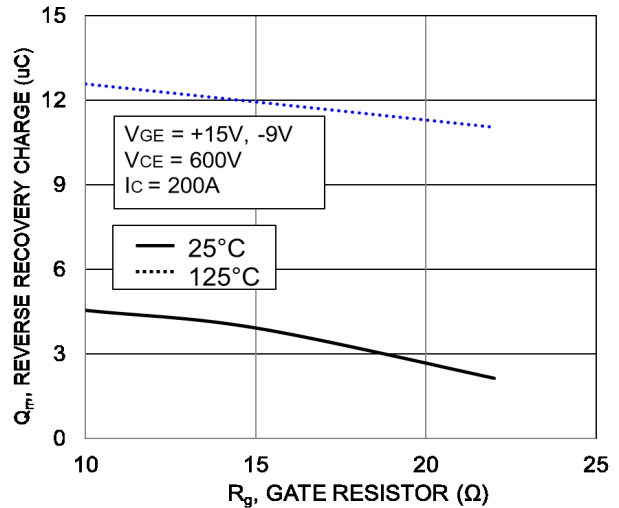


Figure 56. Typical Reverse Recovery Charge vs. R_g

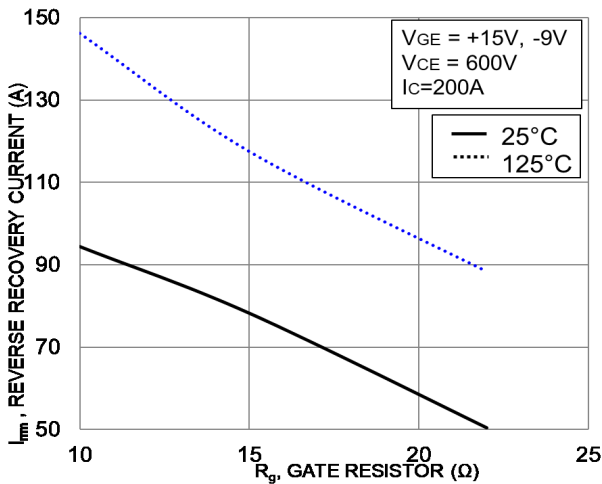


Figure 57. Typical Reverse Recovery Peak Current vs. R_g

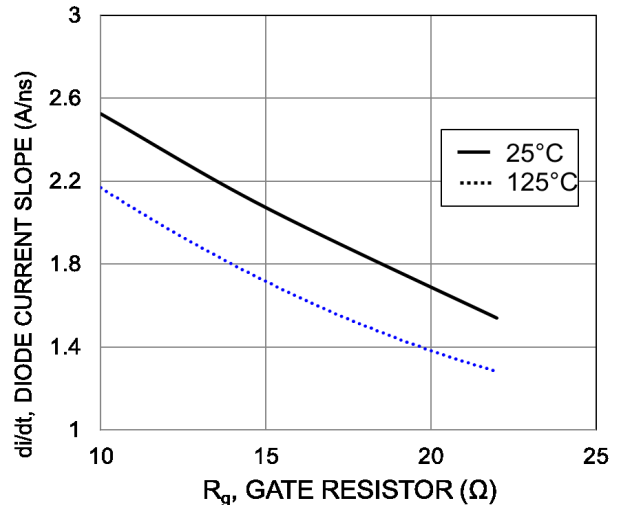


Figure 58. Typical di/dt vs. R_g

NXH600N100L4F5PG, NXH600N100L4F5SG

ORDERING INFORMATION

| Device | Marking | Package | Shipping |
|------------------|------------------|---|------------------------|
| NXH600N100L4F5PG | NXH600N100L4F5PG | F5 – PIM52 112x62 (PRESSFIT PIN) (Pb-Free and Halide-Free, Press Fit Pins) | 8 Units / Blister Tray |
| NXH600N100L4F5SG | NXH600N100L4F5SG | F5 – PIM60 112x62x12.3 (SOLDER PIN) (Pb-Free and Halide-Free, Solder Pins) | 8 Units / Blister Tray |

NXH600N100L4F5PG, NXH600N100L4F5SG

REVISION HISTORY

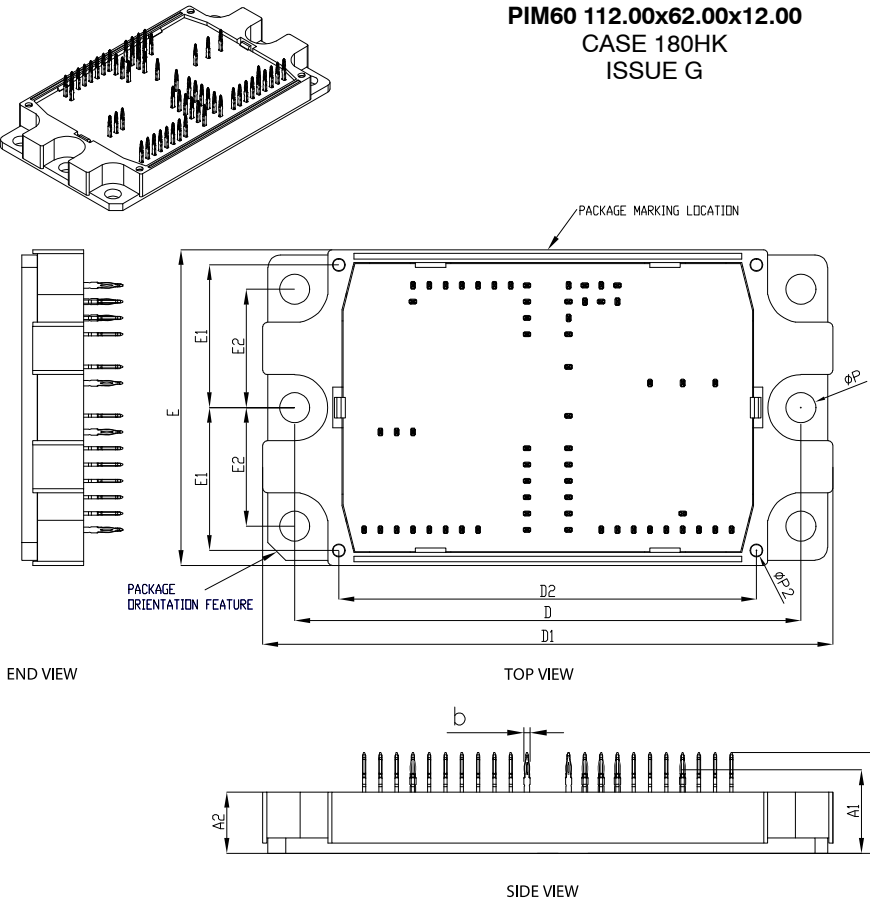
| Revision | Description of Changes | Date |
|----------|--|------------|
| 3 | Change F5BP_NXH600N100L4F5PG cover to sealed cover design. | 06/26/2025 |

NXH600N100L4F5PG, NXH600N100L4F5SG

PACKAGE DIMENSIONS

PIM60 112.00x62.00x12.00
CASE 180HK
ISSUE G

DATE 15 MAR 2024



- NOTES:
1. CONTROLLING DIMENSION : MILLIMETERS
 2. PIN POSITION TOLERANCE IS $\pm 0.4\text{mm}$
 3. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES
 4. PRESS FIT PIN

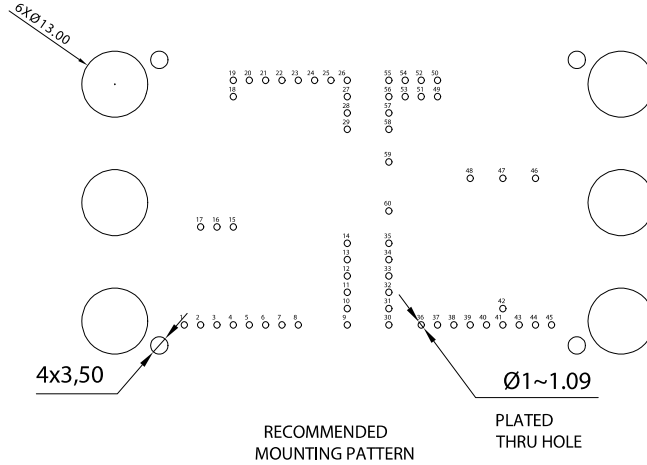
| DIM | MILLIMETERS | | |
|-----|-------------|-------|--------|
| | MIN. | NOM. | MAX. |
| A | 19.3 | 19.7 | 20.1 |
| A1 | 16.35 | 16.55 | 16.75 |
| A2 | 11.7 | 12.0 | 12.3 |
| b | 1.15 | 1.2 | 1.25 |
| D | 99.3 | 99.4 | 99.5 |
| D1 | 111.6 | 112.0 | 112.40 |
| D2 | 81.8 | 82.0 | 82.2 |
| E | 61.60 | 62.00 | 62.40 |
| E1 | 27.65 | 28.05 | 28.45 |
| E2 | 23.15 | 23.25 | 23.35 |
| P | 5.9 | 6.0 | 6.1 |
| P2 | 2.20 | 2.30 | 2.40 |

NXH600N100L4F5PG, NXH600N100L4F5SG

PACKAGE DIMENSIONS

PIM60 112.00x62.00x12.00
CASE 180HK
ISSUE G

DATE 15 MAR 2024

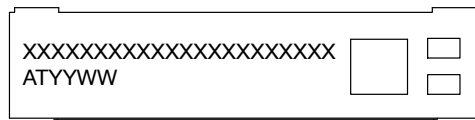


* For additional Information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

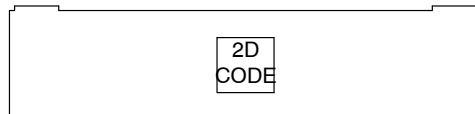
NOTE 2

| PIN | PIN POSITION | | PIN | PIN POSITION | |
|-----|--------------|-------|-----|--------------|-------|
| | X | Y | | X | Y |
| 1 | 0.00 | 0.00 | 31 | 40.16 | 3.20 |
| 2 | 3.20 | 0.00 | 32 | 40.16 | 6.40 |
| 3 | 6.40 | 0.00 | 33 | 40.16 | 9.60 |
| 4 | 9.60 | 0.00 | 34 | 40.16 | 12.80 |
| 5 | 12.80 | 0.00 | 35 | 40.16 | 16.00 |
| 6 | 16.00 | 0.00 | 36 | 46.56 | 0.00 |
| 7 | 19.20 | 0.00 | 37 | 49.76 | 0.00 |
| 8 | 22.40 | 0.00 | 38 | 52.96 | 0.00 |
| 9 | 32.00 | 0.00 | 39 | 56.16 | 0.00 |
| 10 | 32.00 | 3.20 | 40 | 59.36 | 0.00 |
| 11 | 32.00 | 6.40 | 41 | 62.56 | 0.00 |
| 12 | 32.00 | 9.60 | 42 | 62.56 | 3.20 |
| 13 | 32.00 | 12.80 | 43 | 65.76 | 0.00 |
| 14 | 32.00 | 16.00 | 44 | 68.96 | 0.00 |
| 15 | 9.60 | 19.20 | 45 | 72.16 | 0.00 |
| 16 | 6.40 | 19.20 | 46 | 68.96 | 28.80 |
| 17 | 3.20 | 19.20 | 47 | 62.56 | 28.80 |
| 18 | 9.60 | 44.80 | 48 | 56.16 | 28.80 |
| 19 | 9.60 | 48.00 | 49 | 49.76 | 44.80 |
| 20 | 12.80 | 48.00 | 50 | 49.76 | 48.00 |
| 21 | 16.00 | 48.00 | 51 | 46.56 | 44.80 |
| 22 | 19.20 | 48.00 | 52 | 46.56 | 48.00 |
| 23 | 22.40 | 48.00 | 53 | 43.36 | 44.80 |
| 24 | 25.60 | 48.00 | 54 | 43.36 | 48.00 |
| 25 | 28.80 | 48.00 | 55 | 40.16 | 48.00 |
| 26 | 32.00 | 48.00 | 56 | 40.16 | 44.80 |
| 27 | 32.00 | 44.80 | 57 | 40.16 | 41.60 |
| 28 | 32.00 | 41.60 | 58 | 40.16 | 38.40 |
| 29 | 32.00 | 38.40 | 59 | 40.16 | 32.00 |
| 30 | 40.16 | 0.00 | 60 | 40.16 | 22.40 |

GENERIC MARKING DIAGRAM*



FRONTSIDE MARKING



BACKSIDE MARKING

XXXXX = Specific Device Code
AT = Assembly & Test Site Code
YYWW = Year and Work Week Code

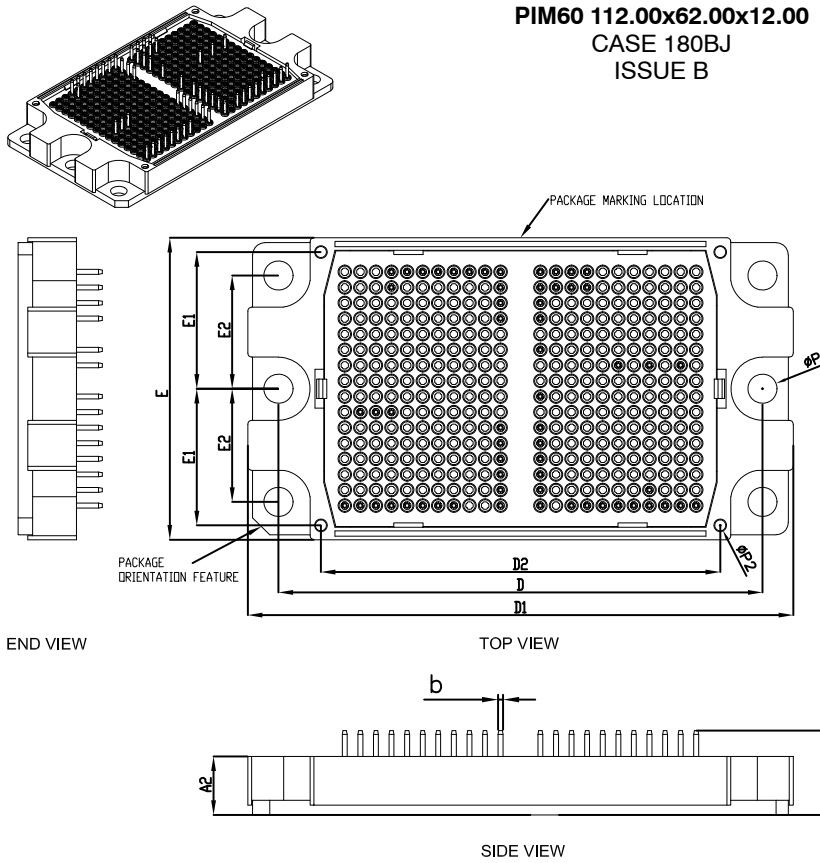
*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

NXH600N100L4F5PG, NXH600N100L4F5SG

PACKAGE DIMENSIONS

PIM60 112.00x62.00x12.00
CASE 180BJ
ISSUE B

DATE 11 DEC 2023

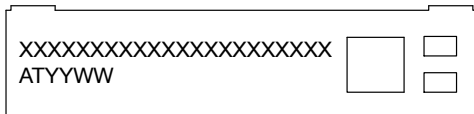


NOTES:

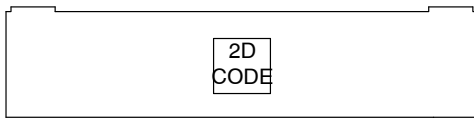
1. CONTROLLING DIMENSION : MILLIMETERS
2. PIN POSITION TOLERANCE IS $\pm 0.4\text{mm}$
3. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES
4. SOLDER PIN

| DIM | MILLIMETERS | | |
|-----|-------------|-------|--------|
| | MIN. | NOM. | MAX. |
| A | 16.9 | 17.3 | 17.7 |
| A2 | 11.7 | 12.0 | 12.3 |
| b | 0.95 | 1.0 | 1.05 |
| D | 99.3 | 99.4 | 99.5 |
| D1 | 111.6 | 112.0 | 112.40 |
| D2 | 81.8 | 82.0 | 82.2 |
| E | 61.60 | 62.00 | 62.40 |
| E1 | 27.65 | 28.05 | 28.45 |
| E2 | 23.15 | 23.25 | 23.35 |
| P | 5.9 | 6.0 | 6.1 |
| P2 | 2.20 | 2.30 | 2.40 |

GENERIC MARKING DIAGRAM*



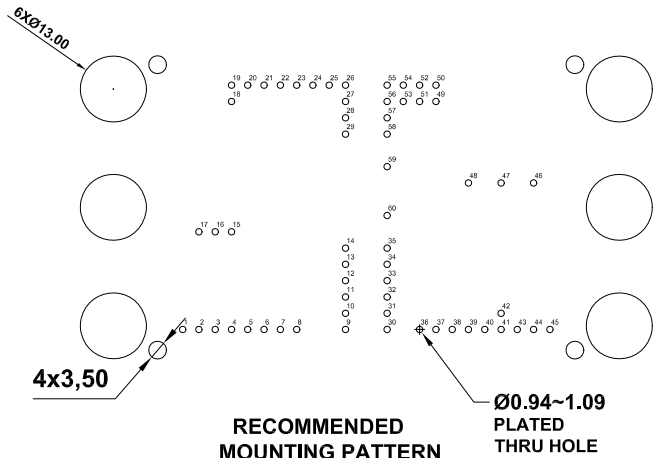
FRONTSIDE MARKING



BACKSIDE MARKING

XXXXX = Specific Device Code
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.



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.

NXH600N100L4F5PG, NXH600N100L4F5SG

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