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T-Type NPC Power Module

1200 V 100 A IGBT, 650 V 75 A IGBT

NXH100T120L3Q0S1NG

Description

The NXH100T120L3Q0S1NG is a power module containing a T-type Neutral Point Clamped (NPC) 3-level inverter consisting of 100 A/1200 V half-bridge IGBTs with 40 A/1200 V half-bridge diodes and 75 A/650 V NP IGBTs with 50 A/650 V NP diodes. The module also contains an on-board thermistor.

Features

- T-type NPC Module with 100 A/1200 V and 75 A/650 V IGBTs
- HB IGBT Specifications: $V_{CE(SAT)} = 1.8 \text{ V}$, $E_{SW} = 2.5 \text{ mJ}$
- NP IGBT Specifications: $V_{CE(SAT)} = 1.4 \text{ V}$, $E_{SW} = 1.25 \text{ mJ}$
- Solder Pins
- Thermistor
- These Device is Pb-Free, Halogen Free and is RoHS Compliant

Typical Applications

- Solar Inverter
- Uninterruptible Power Supplies

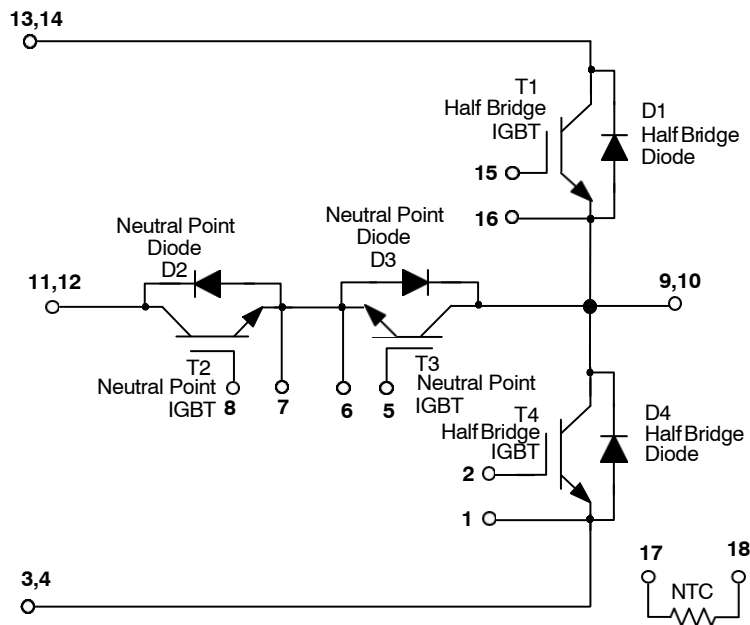
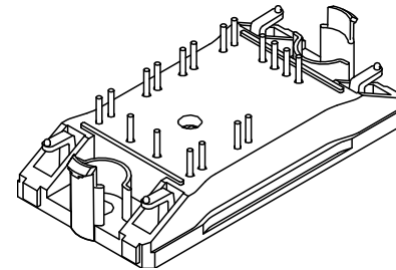


Figure 1. NXH100T120L3Q0S1NG Schematic Diagram



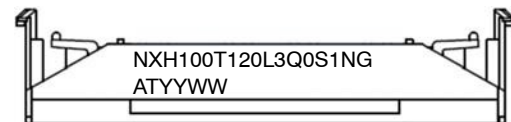
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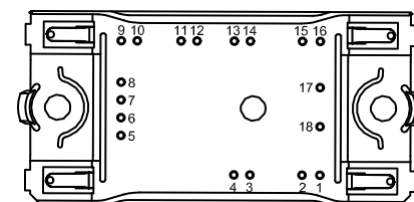
**Q0PACK
CASE 180AH**

MARKING DIAGRAM



NXH100T120L3Q0S1NG = Specific Device Code
 YYWW = Year and Work Week Code
 A = Assembly Site Code
 T = Test Site Code
 G = Pb-Free Package

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information on page 19 of this data sheet.

NXH100T120L3Q0S1NG

ABSOLUTE MAXIMUM RATINGS (Note 1) $T_j = 25^{\circ}\text{C}$ unless otherwise noted

Rating	Symbol	Value	Unit
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HALF BRIDGE IGBT

Collector-Emitter Voltage	V_{CES}	1200	V
Gate-Emitter Voltage	V_{GE}	± 20	V
Continuous Collector Current @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	I_C	100	A
Pulsed Collector Current ($T_j = 175^{\circ}\text{C}$)	I_{Cpulse}	300	A
Maximum Power Dissipation @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	P_{tot}	328	W
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^{\circ}\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	175	$^{\circ}\text{C}$

NEUTRAL POINT IGBT

Collector-Emitter Voltage	V_{CES}	650	V
Gate-Emitter Voltage	V_{GE}	± 20	V
Continuous Collector Current @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	I_C	54	A
Pulsed Collector Current ($T_j = 175^{\circ}\text{C}$)	I_{Cpulse}	162	A
Maximum Power Dissipation @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	P_{tot}	122	W
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^{\circ}\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	175	$^{\circ}\text{C}$

HALF BRIDGE DIODE

Peak Repetitive Reverse Voltage	V_{RRM}	1200	V
Continuous Forward Current @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	I_F	30	A
Repetitive Peak Forward Current ($T_j = 175^{\circ}\text{C}$, t_p limited by T_{Jmax})	I_{FRM}	90	A
Maximum Power Dissipation @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	P_{tot}	101	W
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^{\circ}\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	175	$^{\circ}\text{C}$

NEUTRAL POINT DIODE

Peak Repetitive Reverse Voltage	V_{RRM}	650	V
Continuous Forward Current @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	I_F	47	A
Repetitive Peak Forward Current ($T_j = 175^{\circ}\text{C}$, t_p limited by T_{Jmax})	I_{FRM}	141	A
Maximum Power Dissipation @ $T_h = 80^{\circ}\text{C}$ ($T_j = 175^{\circ}\text{C}$)	P_{tot}	101	W
Minimum Operating Junction Temperature	T_{JMIN}	-40	$^{\circ}\text{C}$
Maximum Operating Junction Temperature	T_{JMAX}	175	$^{\circ}\text{C}$

THERMAL PROPERTIES

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

Isolation Test Voltage, $t = 1$ sec, 60 Hz	V_{is}	3000	V_{RMS}
Creepage Distance		12.7	mm

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 RANGES

Rating	Symbol	Min	Max	Unit
Module Operating Junction Temperature	T_j	-40	$T_{jmax} - 25$	$^{\circ}\text{C}$

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.

NXH100T120L3Q0S1NG

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
HALF BRIDGE IGBT CHARACTERISTICS						
Collector–Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} = 1200 V	I _{CES}	–	–	200	μA
Collector–Emitter Saturation Voltage	V _{GE} = 15 V, I _C = 100 A, T _J = 25°C	V _{CE(sat)}	–	1.8	2.3	V
	V _{GE} = 15 V, I _C = 100 A, T _J = 175°C		–	1.9	–	V
Gate–Emitter Threshold Voltage	V _{GE} = V _{CE} , I _C = 2 mA	V _{GE(TH)}	4.6	5.3	6.5	V
Gate Leakage Current	V _{GE} = 20 V, V _{CE} = 0 V	I _{GES}	–	–	800	nA
Turn–on Delay Time	T _J = 25°C, V _{CE} = 350 V, I _C = 100 A, V _{GE} = +15/–8 V, R _G = 4.7 Ω	t _{d(on)}	–	59	–	ns
Rise Time		t _r	–	38	–	
Turn–off Delay Time		t _{d(off)}	–	229	–	
Fall Time		t _f	–	77	–	
Turn–on Switching Loss per Pulse		E _{on}	–	1.2	–	mJ
Turn–off Switching Loss per Pulse		E _{off}	–	2.5	–	
Turn–on Delay Time	T _J = 125°C, V _{CE} = 400 V, I _C = 100 A, V _{GE} = +15/–15 V, R _G = 4.7 Ω	t _{d(on)}	–	55	–	ns
Rise Time		t _r	–	38	–	
Turn–off Delay Time		t _{d(off)}	–	261	–	
Fall Time		t _f	–	151	–	
Turn–on Switching Loss per Pulse		E _{on}	–	1.8	–	mJ
Turn–off Switching Loss per Pulse		E _{off}	–	3.7	–	
Input Capacitance	V _{CE} = 20 V, V _{GE} = 0 V, f = 10 kHz	C _{ies}	–	18150	–	pF
Output Capacitance		C _{oes}	–	346	–	
Reverse Transfer Capacitance		C _{res}	–	294	–	
Total Gate Charge	V _{CE} = 600 V, I _C = 80 A, V _{GE} = 15 V	Q _g	–	817	–	nC
Thermal Resistance – chip–to–heatsink	Thermal grease, Thickness = 100 μm, λ = 2.87 W/mK	R _{thJH}	–	0.29	–	°C/W

NEUTRAL POINT DIODE CHARACTERISTICS

Diode Forward Voltage	I _F = 50 A, T _J = 25°C	V _F	–	2.2	2.8	V
	I _F = 50 A, T _J = 175°C		–	1.7	–	
Reverse Recovery Time	T _J = 25°C, V _{CE} = 350 V, I _C = 100 A, V _{GE} = +15/–15 V, R _G = 4.7 Ω	t _{rr}	–	34	–	ns
Reverse Recovery Charge		Q _{rr}	–	688	–	μC
Peak Reverse Recovery Current		I _{RRM}	–	35	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	1764	–	A/μs
Reverse Recovery Energy		E _{rr}	–	143	–	μJ
Reverse Recovery Time	T _J = 125°C, V _{CE} = 400 V, I _C = 100 A, V _{GE} = +15/–15 V, R _G = 4.7 Ω	t _{rr}	–	100	–	ns
Reverse Recovery Charge		Q _{rr}	–	2740	–	nC
Peak Reverse Recovery Current		I _{RRM}	–	67	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	872	–	A/μs
Reverse Recovery Energy		E _{rr}	–	645	–	μJ
Thermal Resistance – chip–to–heatsink	Thermal grease, Thickness = 100 μm, λ = 2.87 W/mK	R _{thJH}	–	0.94	–	°C/W

NEUTRAL POINT IGBT CHARACTERISTICS

Collector–Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} = 650 V	I _{CES}	–	–	200	μA
Collector–Emitter Saturation Voltage	V _{GE} = 15 V, I _C = 75 A, T _J = 25°C	V _{CE(sat)}	–	1.39	2.2	V
	V _{GE} = 15 V, I _C = 75 A, T _J = 175°C		–	1.58	–	
Gate–Emitter Threshold Voltage	V _{GE} = V _{CE} , I _C = 250 μA	V _{GE(TH)}	3.5	4.0	4.7	V
Gate Leakage Current	V _{GE} = 20 V, V _{CE} = 0 V	I _{GES}	–	–	300	nA

NXH100T120L3Q0S1NG

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
NEUTRAL POINT IGBT CHARACTERISTICS						
Turn-on Delay Time	T _J = 25°C V _{CE} = 350 V, I _C = 100 A, V _{GE} = ±15 V, R _G = 10 Ω	t _{d(on)}	–	68	–	ns
Rise Time		t _r	–	44	–	
Turn-off Delay Time		t _{d(off)}	–	108	–	
Fall Time		t _f	–	21	–	
Turn-on Switching Loss per Pulse		E _{on}	–	0.95	–	mJ
Turn-off Switching Loss per Pulse		E _{off}	–	1.25	–	
Turn-on Delay Time	T _J = 125°C V _{CE} = 350 V, I _C = 100 A, V _{GE} = ±15 V, R _G = 10 Ω	t _{d(on)}	–	73	–	ns
Rise Time		t _r	–	49	–	
Turn-off Delay Time		t _{d(off)}	–	114	–	
Fall Time		t _f	–	29	–	
Turn-on Switching Loss per Pulse		E _{on}	–	1.95	–	mJ
Turn-off Switching Loss per Pulse		E _{off}	–	2.22	–	
Input Capacitance	V _{CE} = 25 V, V _{GE} = 0 V, f = 10 kHz	C _{ies}	–	4877	–	pF
Output Capacitance		C _{oes}	–	77	–	
Reverse Transfer Capacitance		C _{res}	–	21	–	
Total Gate Charge	V _{CE} = 480 V, I _C = 50 A, V _{GE} = 15 V	Q _g	–	550	–	nC
Thermal Resistance – chip-to-heatsink	Thermal grease, Thickness < 100 μm, λ = 2.87 W/mK	R _{thJH}	–	0.78	–	°C/W

HALF BRIDGE DIODE CHARACTERISTICS

Diode Forward Voltage	I _F = 30 A, T _J = 25°C	V _F	–	2.4	3.2	V
	I _F = 30 A, T _J = 175°C		–	1.8	–	
Reverse Recovery Time	T _J = 25°C V _{CE} = 350 V, I _C = 100 A, V _{GE} = ±15 V, R _G = 10 Ω	t _{rr}	–	53	–	ns
Reverse Recovery Charge		Q _{rr}	–	1862	–	nC
Peak Reverse Recovery Current		I _{RRM}	–	63	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	2259	–	A/μs
Reverse Recovery Energy		E _{rr}	–	371	–	μJ
Reverse Recovery Time	T _J = 125°C V _{CE} = 350 V, I _C = 100 A, V _{GE} = ±15 V, R _G = 10 Ω	t _{rr}	–	308	–	ns
Reverse Recovery Charge		Q _{rr}	–	7290	–	nC
Peak Reverse Recovery Current		I _{RRM}	–	95	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	238	–	A/μs
Reverse Recovery Energy		E _{rr}	–	2025	–	μJ
Thermal Resistance – chip-to-heatsink	Thermal grease, Thickness < 100 μm, λ = 2.87 W/mK	R _{thJH}	–	1.2	–	°C/W

THERMISTOR CHARACTERISTICS

Nominal Resistance		R ₂₅	–	22	–	kΩ
Nominal Resistance	T = 100°C	R ₁₀₀	–	1486	–	Ω
Deviation of R25		R/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.

NXH100T120L3Q0S1NG

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT AND DIODE

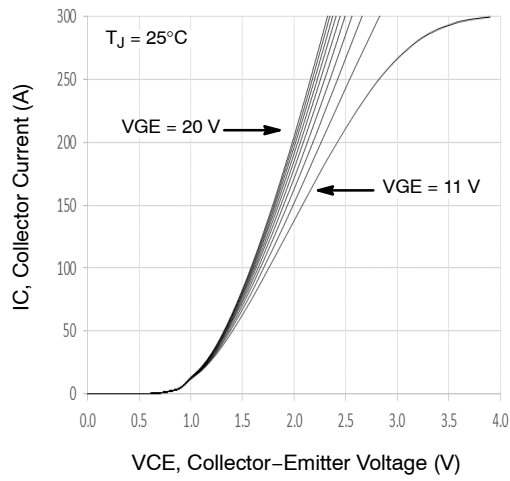


Figure 2. Typical Output Characteristics

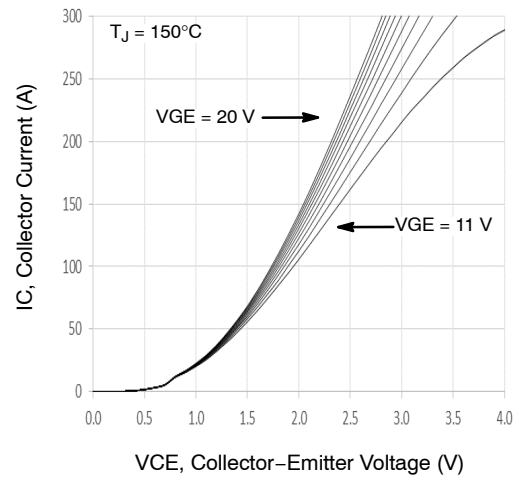


Figure 3. Typical Output Characteristics

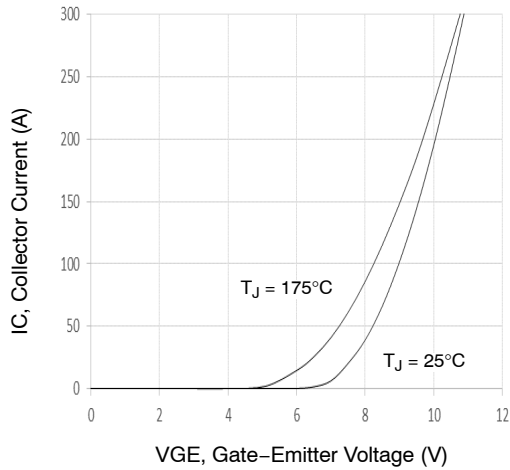


Figure 4. Typical Transfer Characteristics

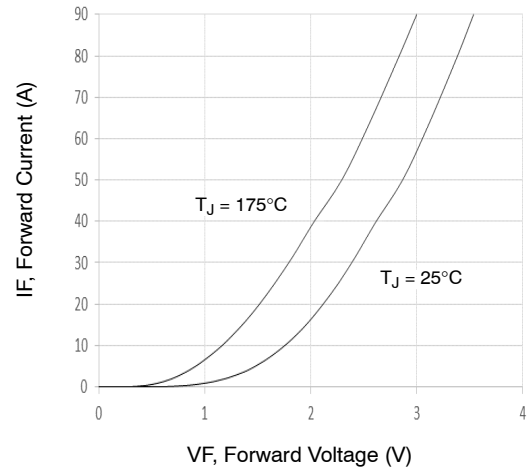


Figure 5. Typical Diode Forward Characteristics

NXH100T120L3Q0S1NG

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT AND DIODE (continued)

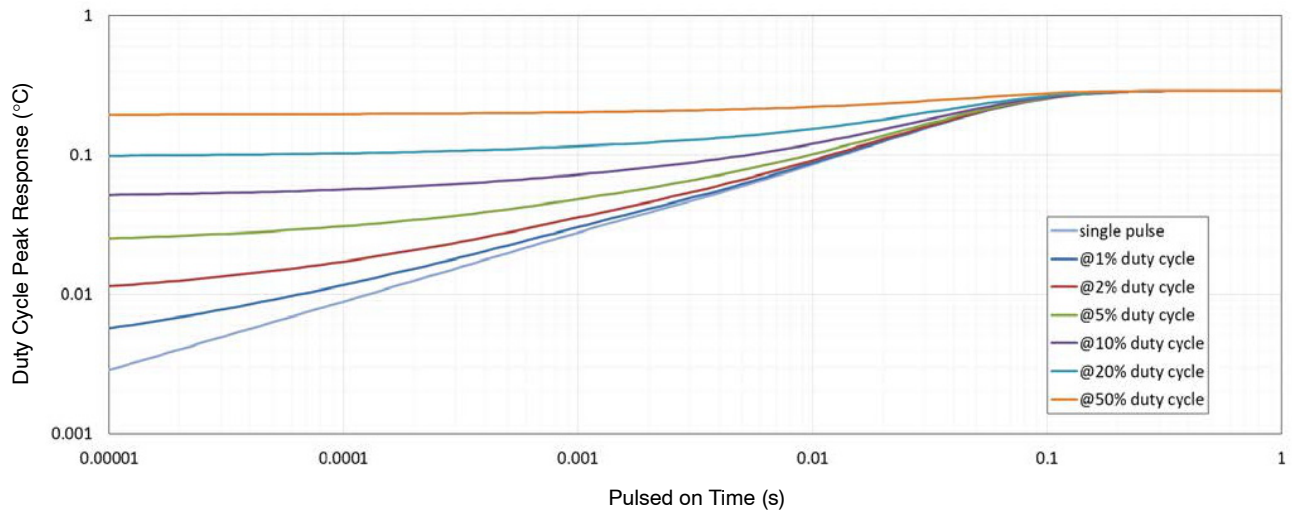


Figure 6. Transient Thermal Impedance (Half Bridge IGBT)

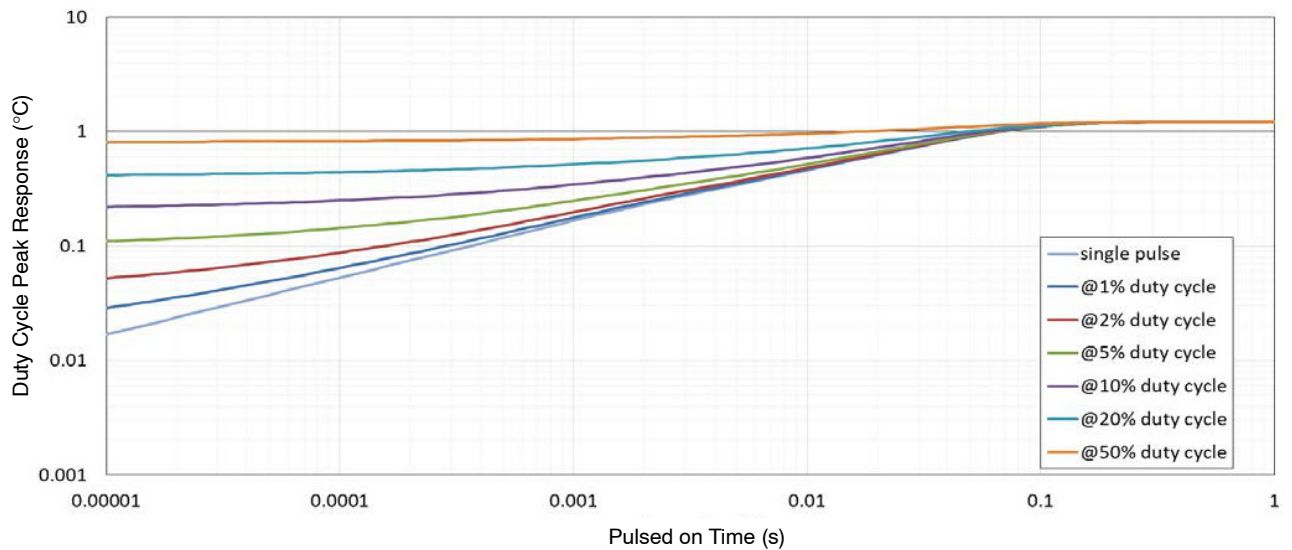


Figure 7. Transient Thermal Impedance (Half Bridge Diode)

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT AND DIODE (continued)

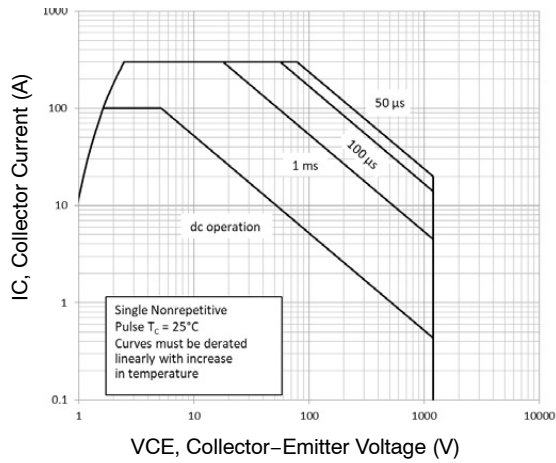


Figure 8. FBSOA

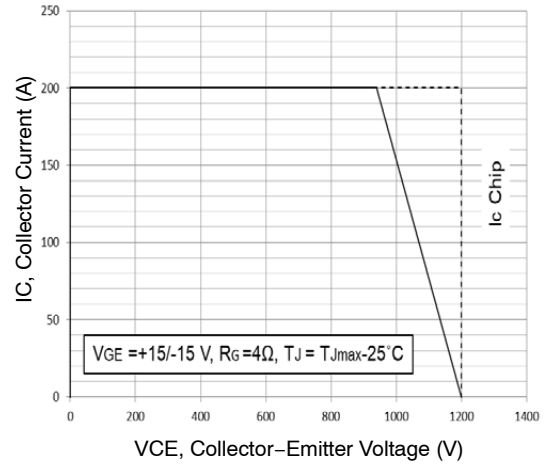


Figure 9. RBSOA

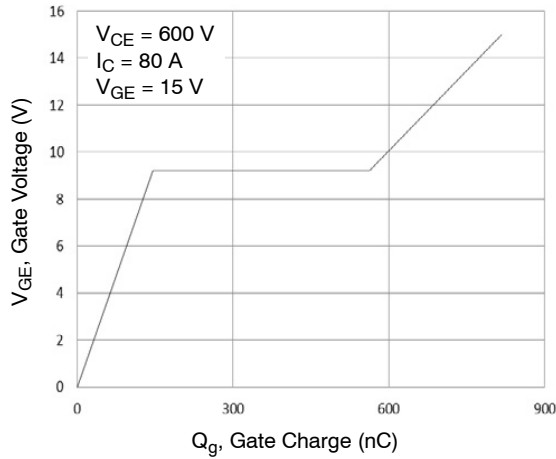


Figure 10. Gate Voltage vs. Gate Charge

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT AND DIODE

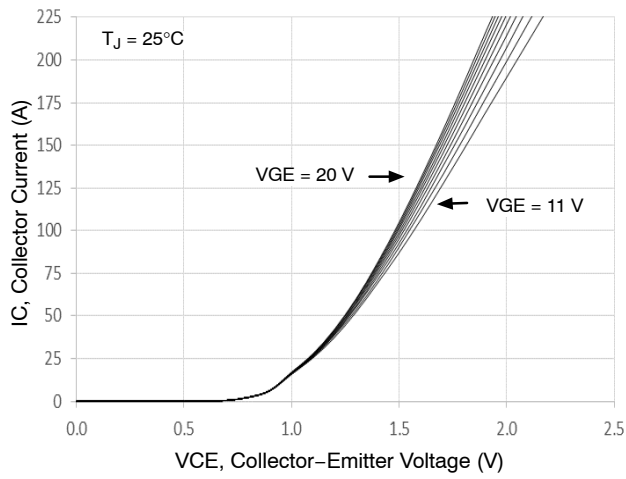


Figure 11. Typical Output Characteristics

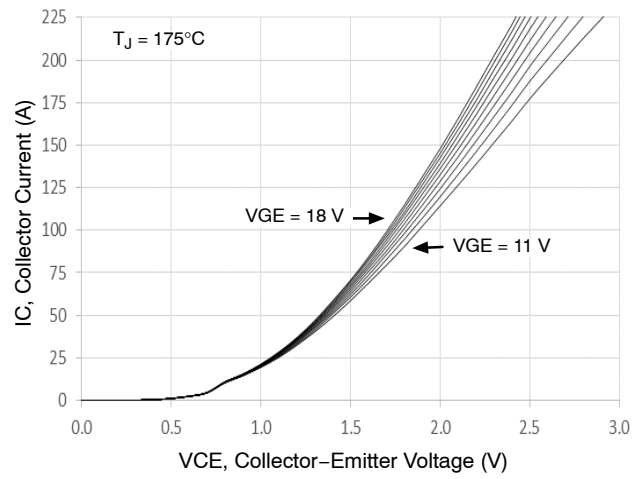


Figure 12. Typical Output Characteristics

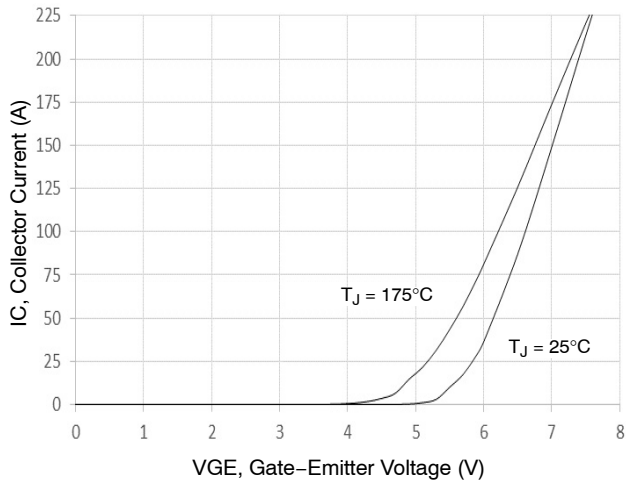


Figure 13. Typical Transfer Characteristics

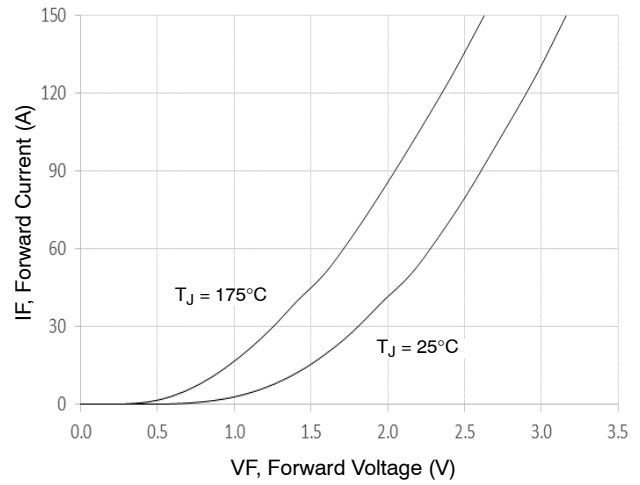


Figure 14. Typical Diode Forward Characteristics

NXH100T120L3Q0S1NG

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT AND DIODE (continued)

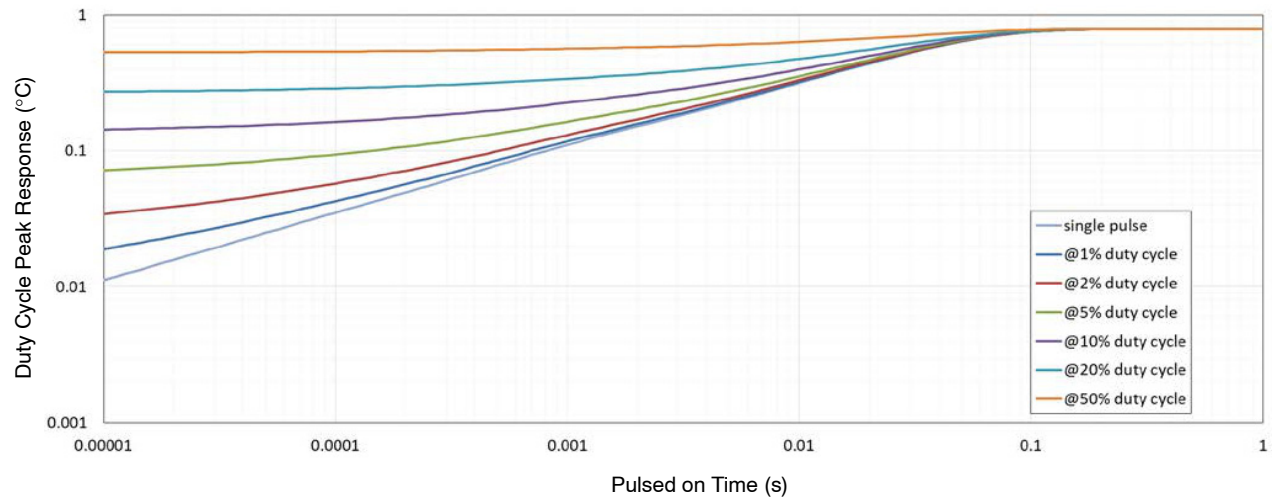


Figure 15. Transient Thermal Impedance (Neutral Point IGBT)

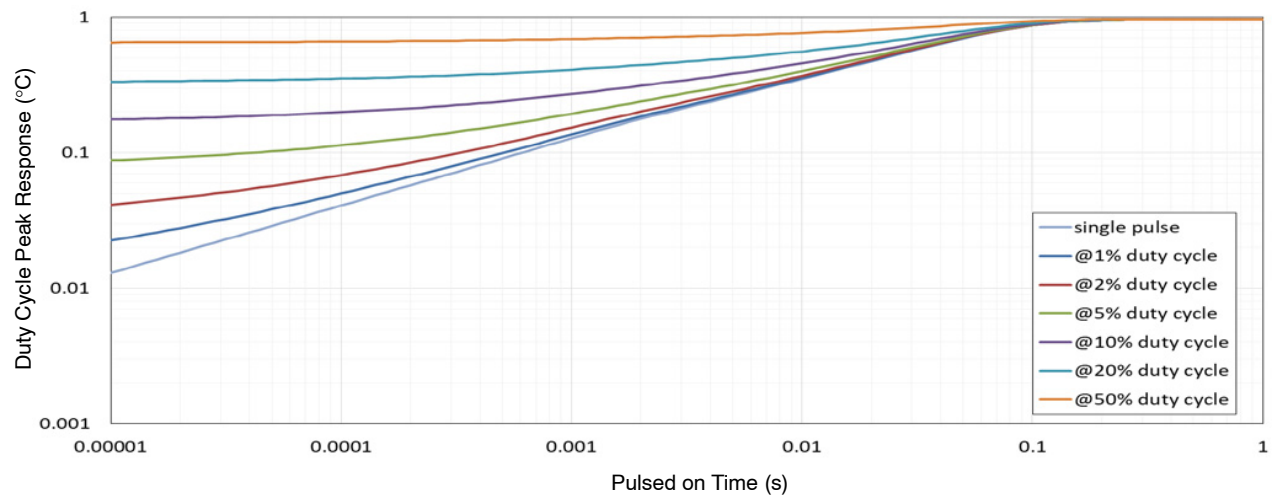


Figure 16. Transient Thermal Impedance (Neutral Point Diode)

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT AND DIODE (continued)

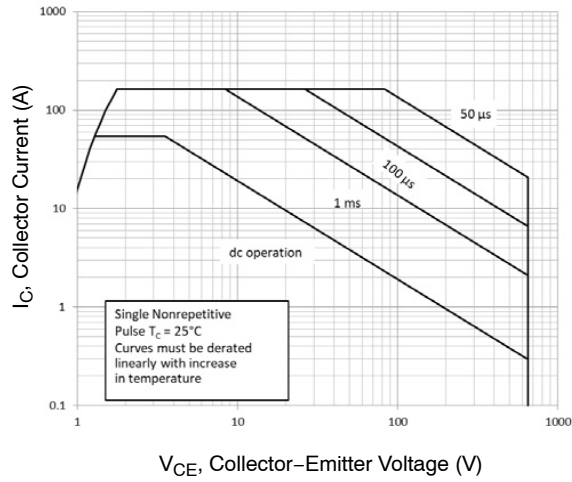


Figure 17. FBSOA

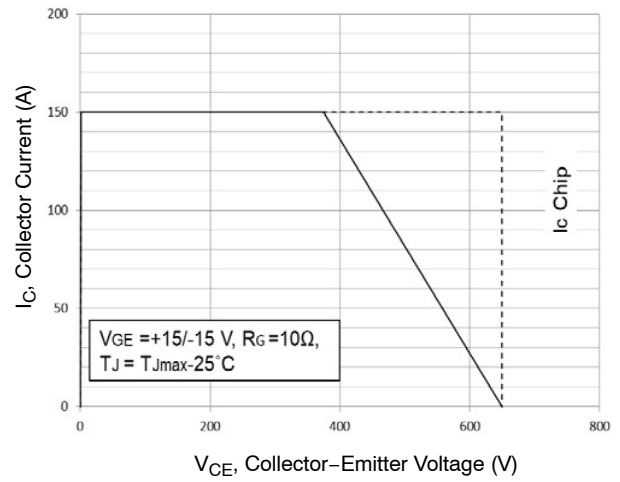


Figure 18. RBSOA

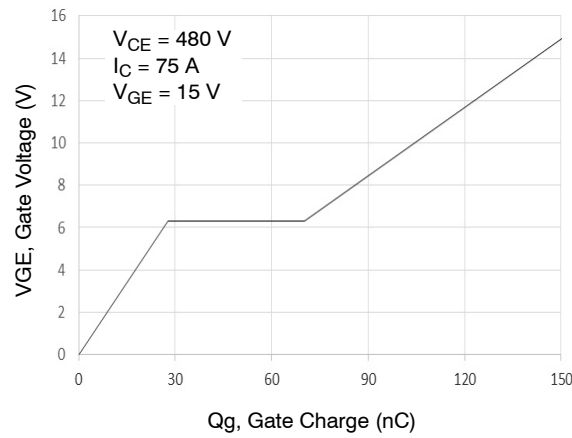


Figure 19. Gate Voltage vs. Gate Charge

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT COMUTATES NEUTRAL POINT DIODE

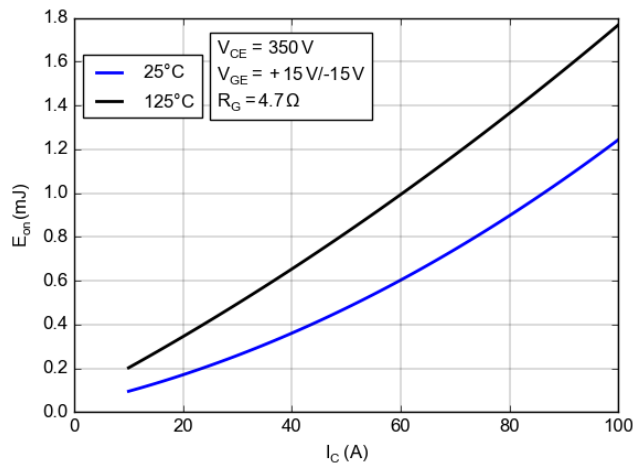


Figure 20. Typical Turn On Loss vs. I_C

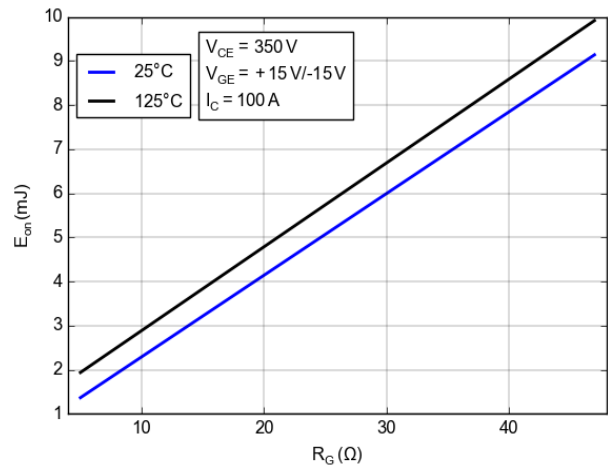


Figure 21. Typical Turn On Loss vs. R_G

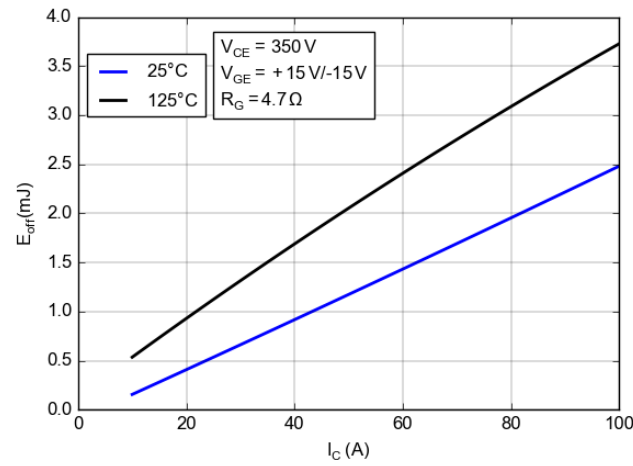


Figure 22. Typical Turn Off Loss vs. I_C

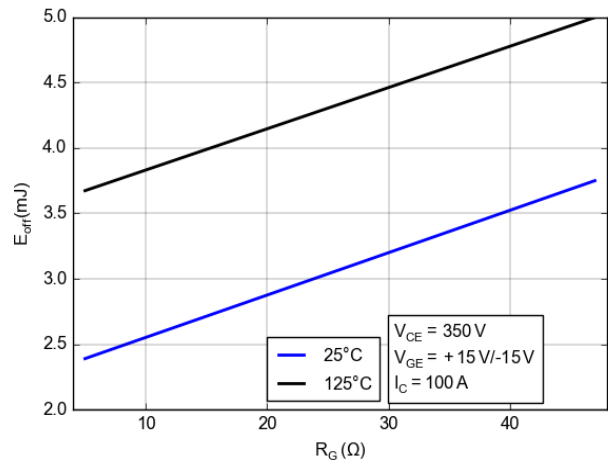


Figure 23. Typical Turn Off Loss vs. R_G

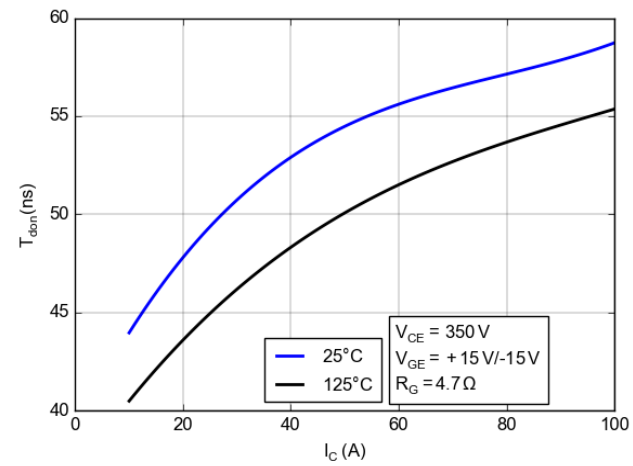


Figure 24. Typical Switching Times T_{don} vs. I_C

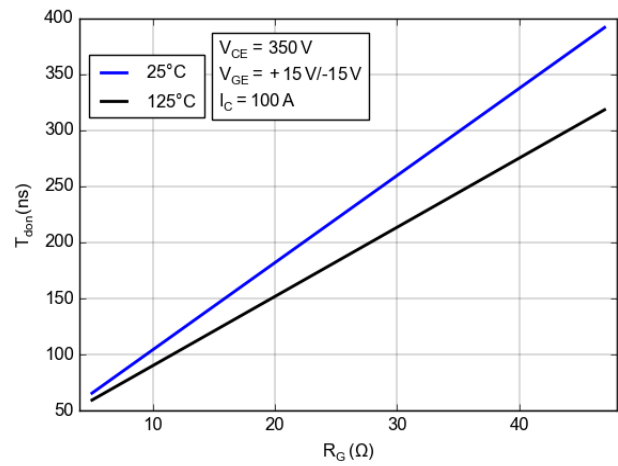


Figure 25. Typical Switching Times T_{don} vs. R_G

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT COMUTATES NEUTRAL POINT DIODE (continued)

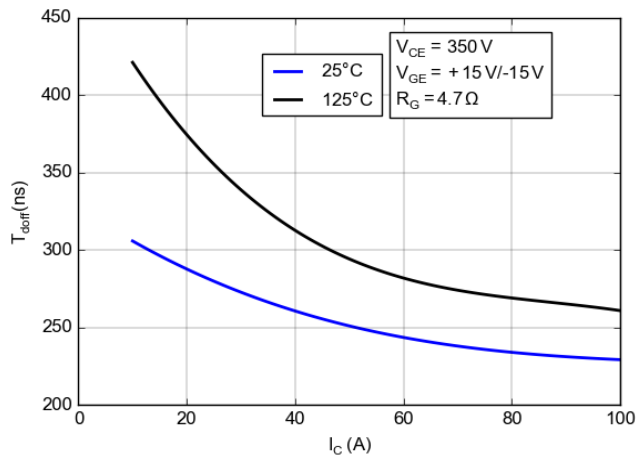


Figure 26. Typical Switching Times Tdoff vs. I_C

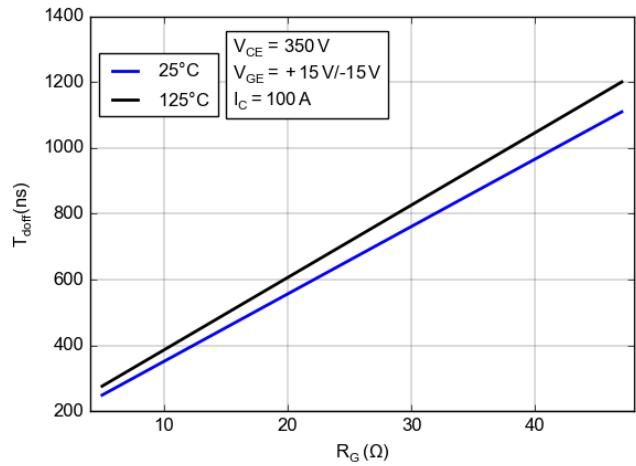


Figure 27. Typical Switching Times Tdoff vs. R_G

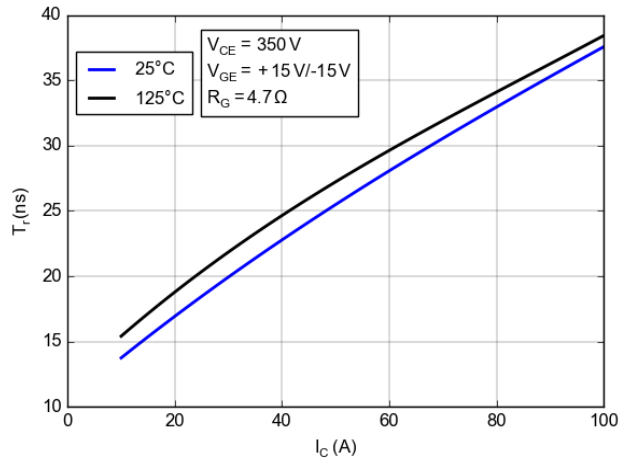


Figure 28. Typical Switching Times Tron vs. I_C

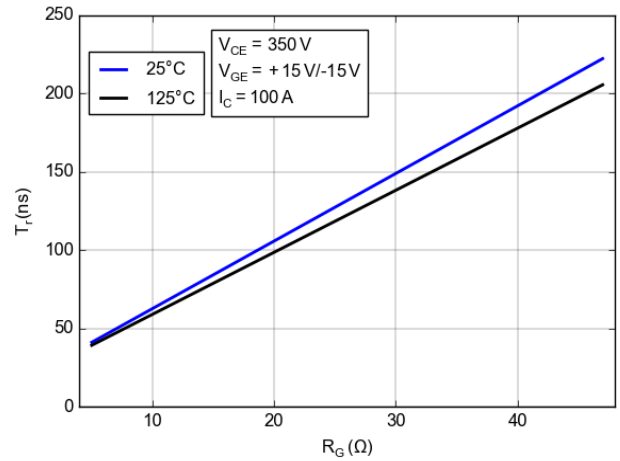


Figure 29. Typical Switching Times Tron vs. R_G

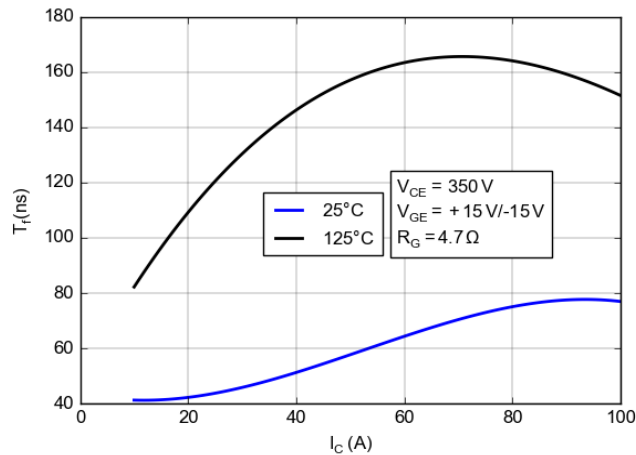


Figure 30. Typical Switching Times Tf vs. I_C

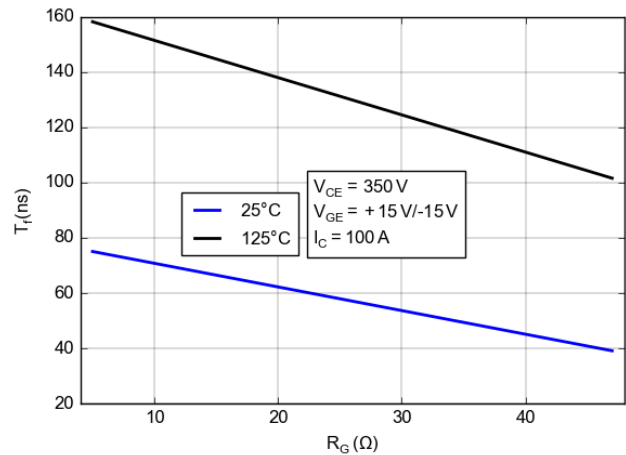


Figure 31. Typical Switching Times Tf vs. R_G

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT COMUTATES NEUTRAL POINT DIODE (continued)

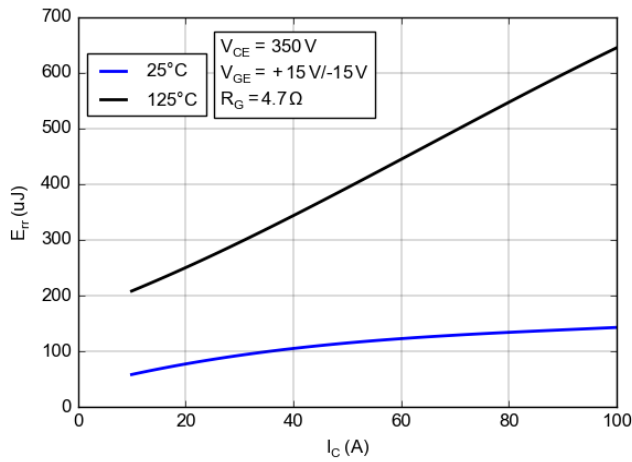


Figure 32. Typical Reverse Recovery Energy vs. I_C

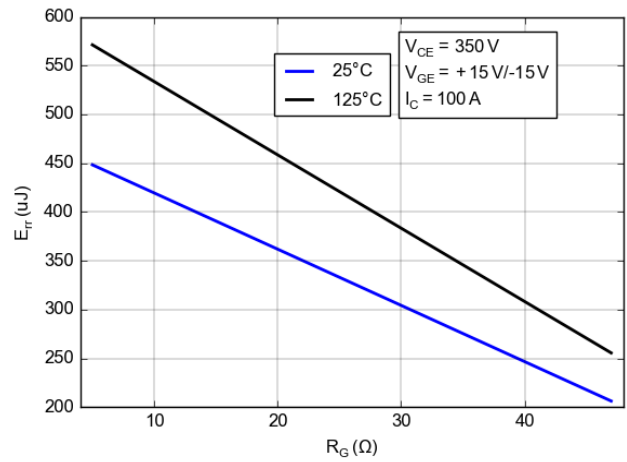


Figure 33. Typical Reverse Recovery Energy vs. R_G

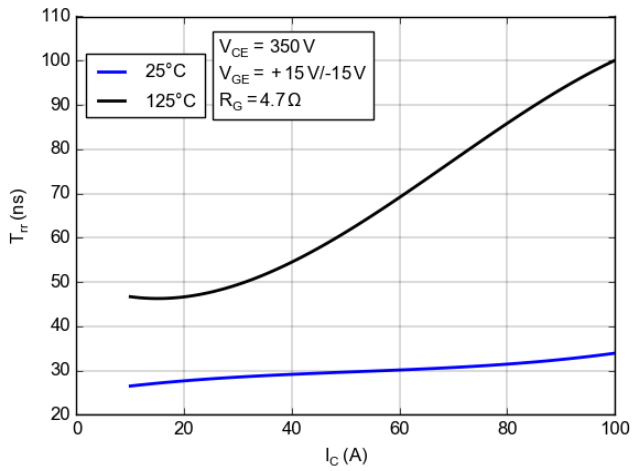


Figure 34. Typical Reverse Recovery Time vs. I_C

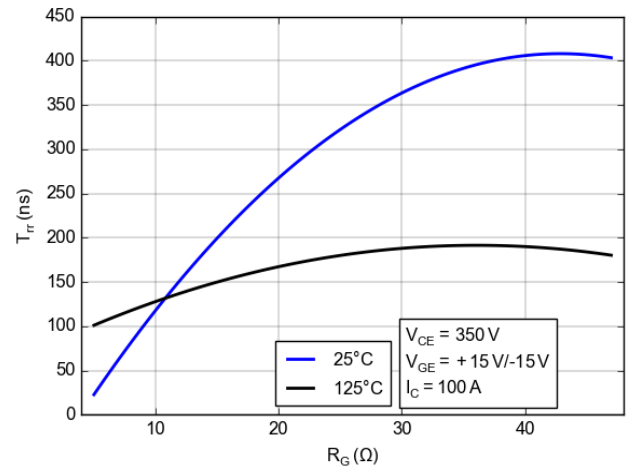


Figure 35. Typical Reverse Recovery Time vs. R_G

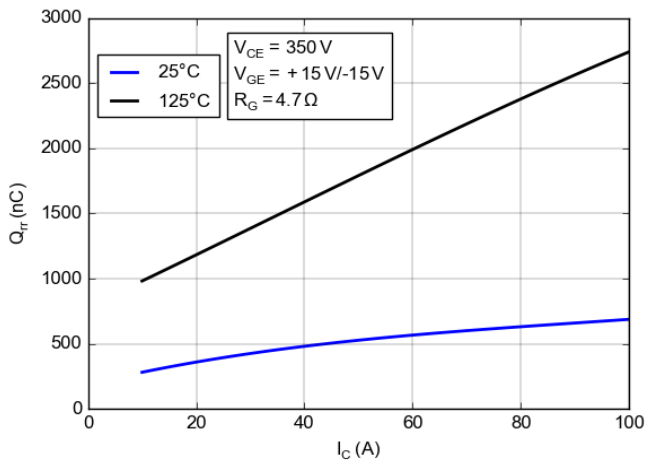


Figure 36. Typical Reverse Recovery Charge vs. I_C

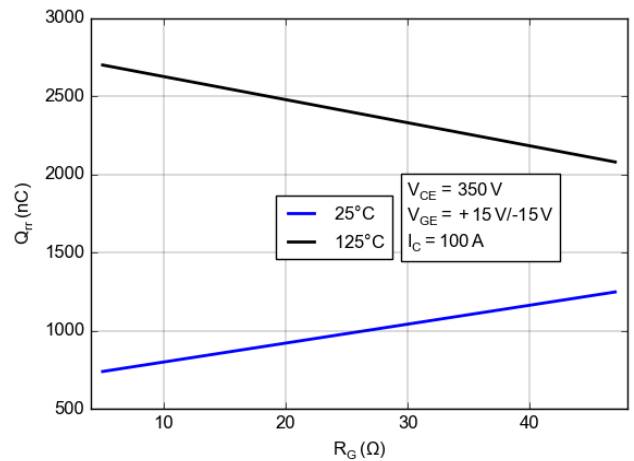


Figure 37. Typical Reverse Recovery Charge vs. R_G

TYPICAL CHARACTERISTICS – HALF BRIDGE IGBT COMUTATES NEUTRAL POINT DIODE (continued)

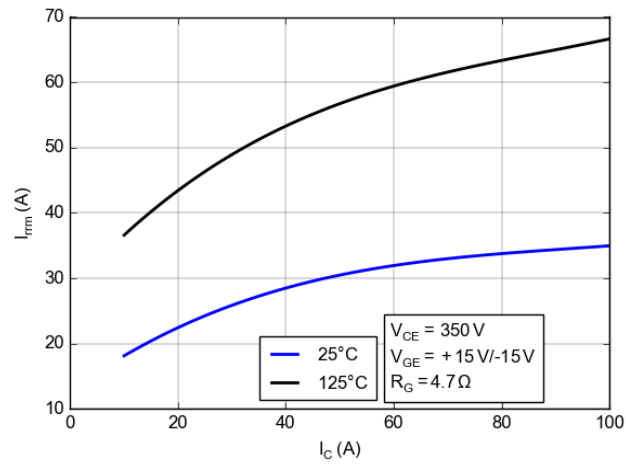


Figure 38. Typical Reverse Recovery Current vs. I_C

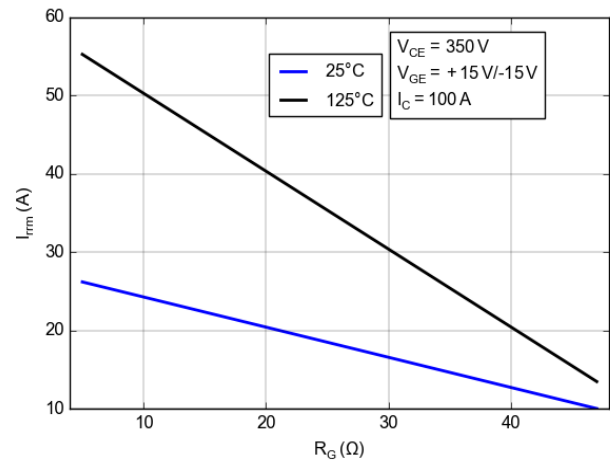


Figure 39. Typical Reverse Recovery Current vs. R_G

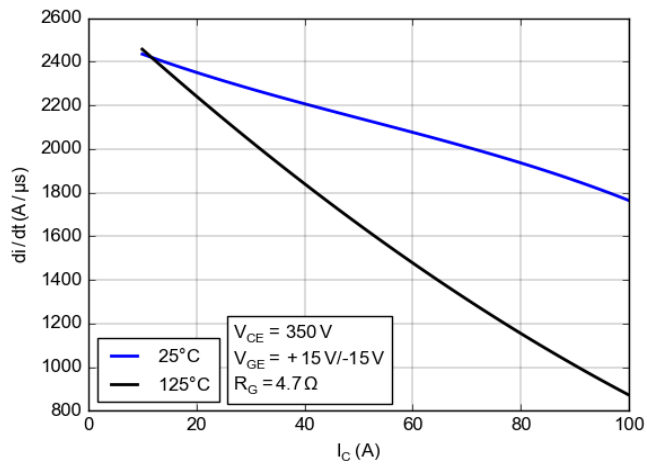


Figure 40. Typical di/dt vs. I_C

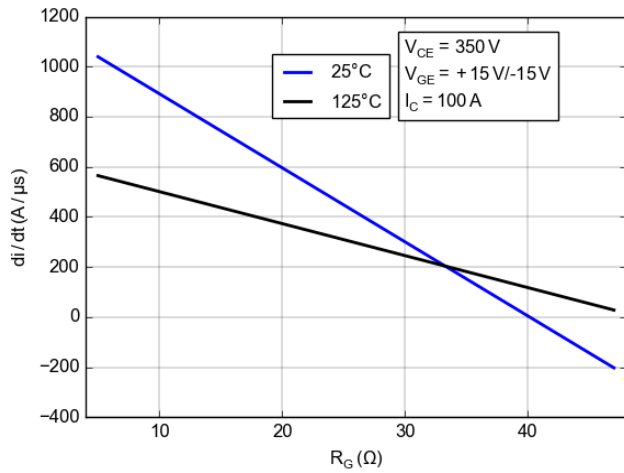


Figure 41. Typical di/dt vs. R_G

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT COMUTATES HALF BRIDGE DIODE

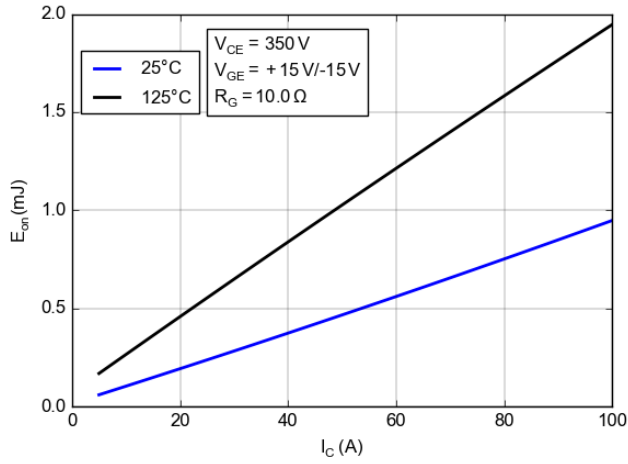


Figure 42. Typical Turn On Loss vs. I_C

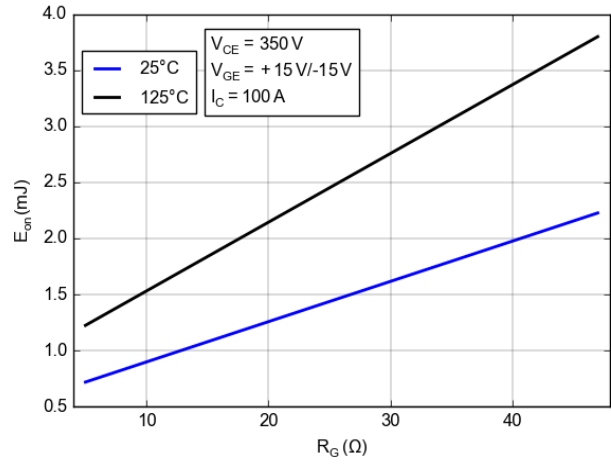


Figure 43. Typical Turn On Loss vs. R_G

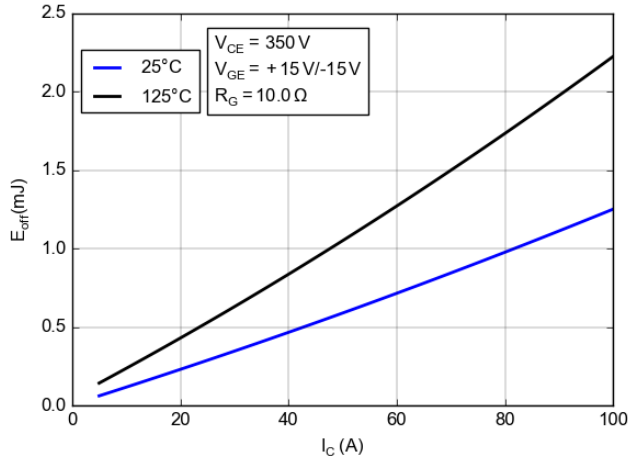


Figure 44. Typical Turn Off Loss vs. I_C

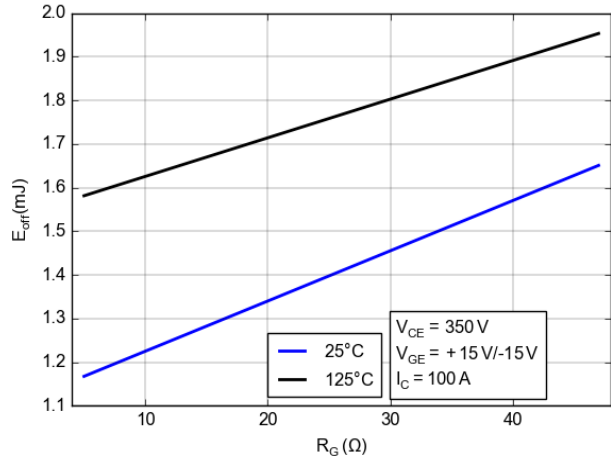


Figure 45. Typical Turn Off Loss vs. R_G

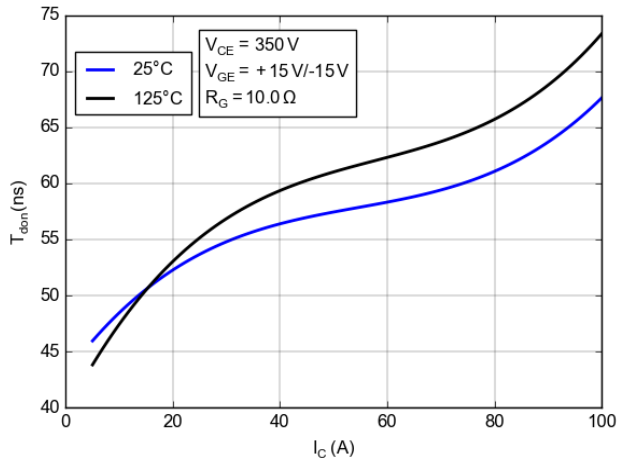


Figure 46. Typical Switching Times T_{don} vs. I_C

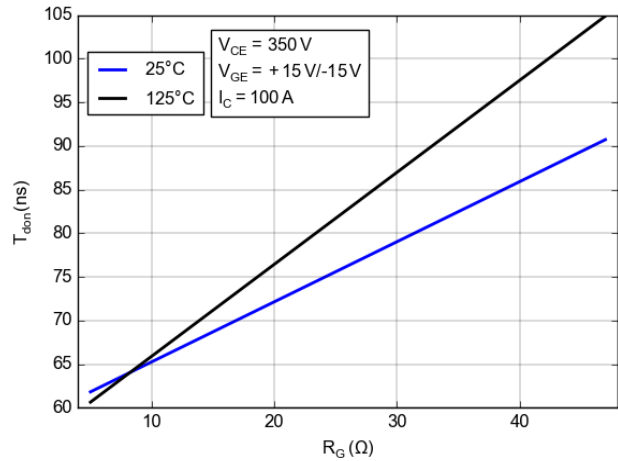


Figure 47. Typical Switching Times T_{don} vs. R_G

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT COMUTATES HALF BRIDGE DIODE (continued)

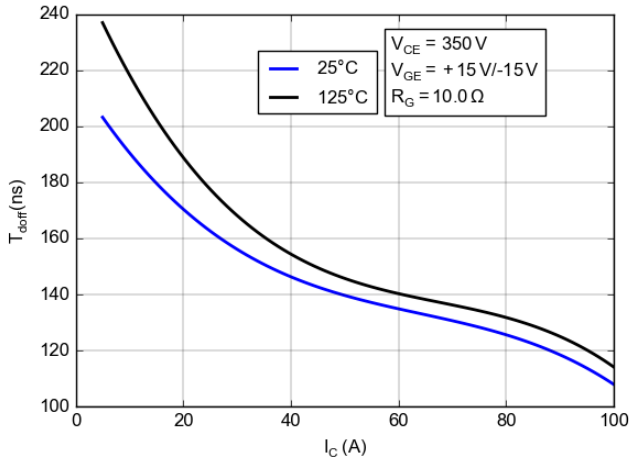


Figure 48. Typical Switching Times Tdoff vs. I_C

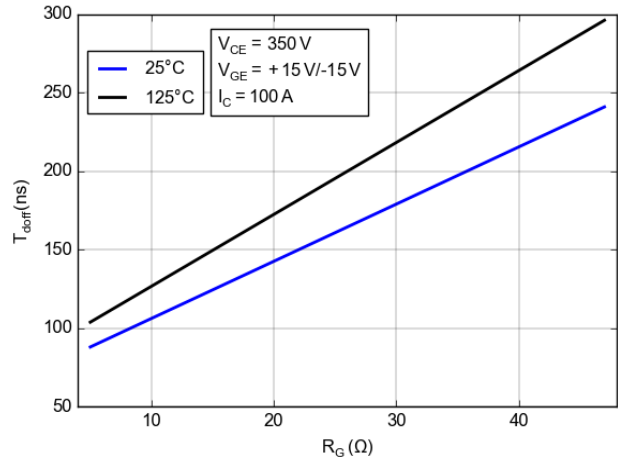


Figure 49. Typical Switching Times Tdoff vs. R_G

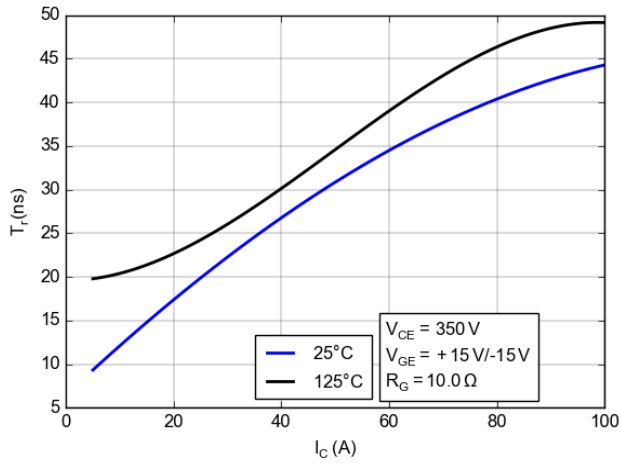


Figure 50. Typical Switching Times Tron vs. I_C

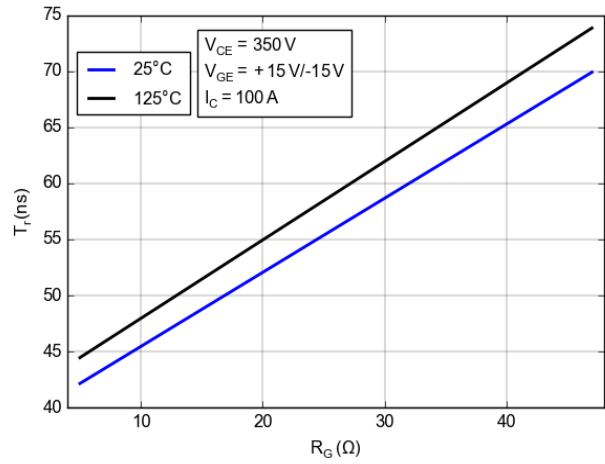


Figure 51. Typical Switching Times Tron vs. R_G

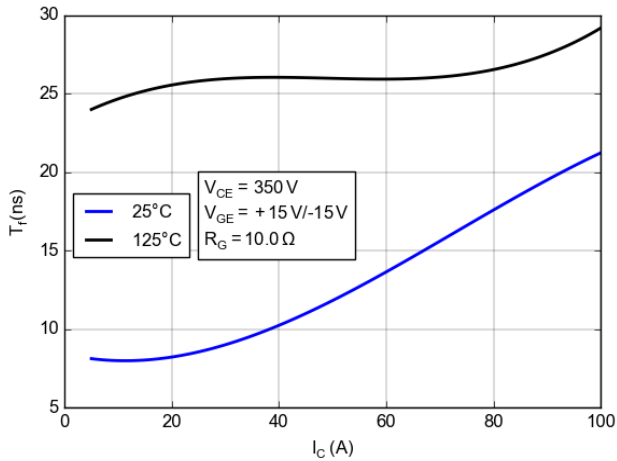


Figure 52. Typical Switching Times Tf vs. I_C

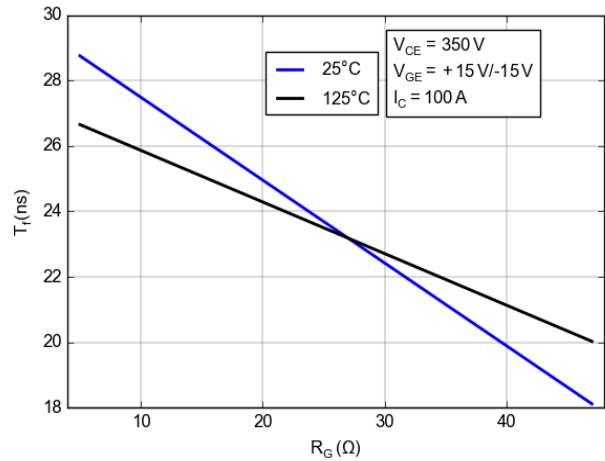


Figure 53. Typical Switching Times Tf vs. R_G

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT COMUTATES HALF BRIDGE DIODE (continued)

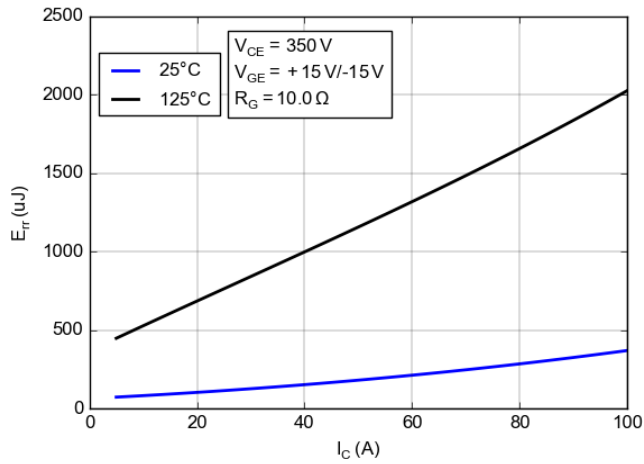


Figure 54. Typical Reverse Recovery Energy vs. I_C

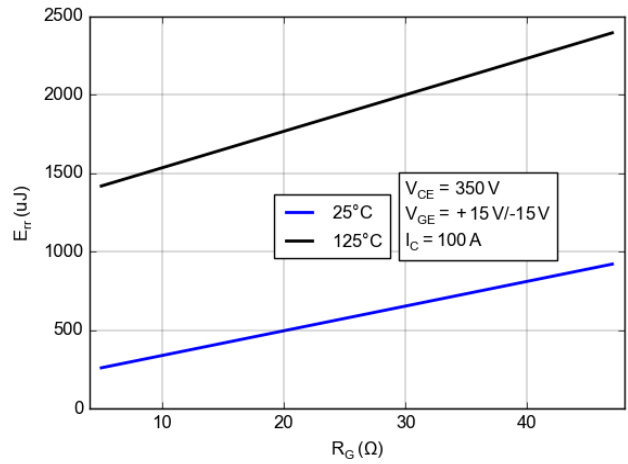


Figure 55. Typical Reverse Recovery Energy vs. R_G

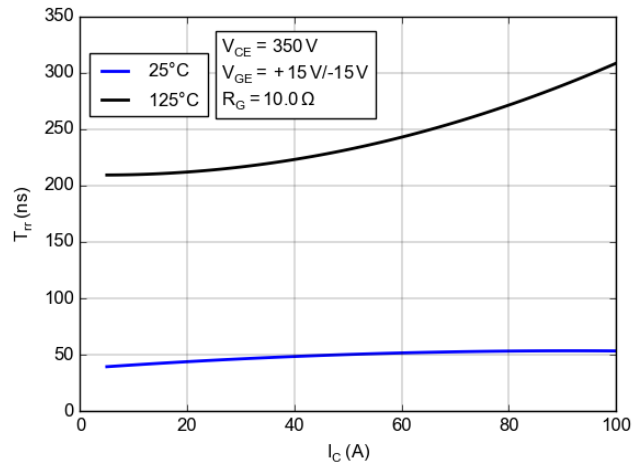


Figure 56. Typical Reverse Recovery Time vs. I_C

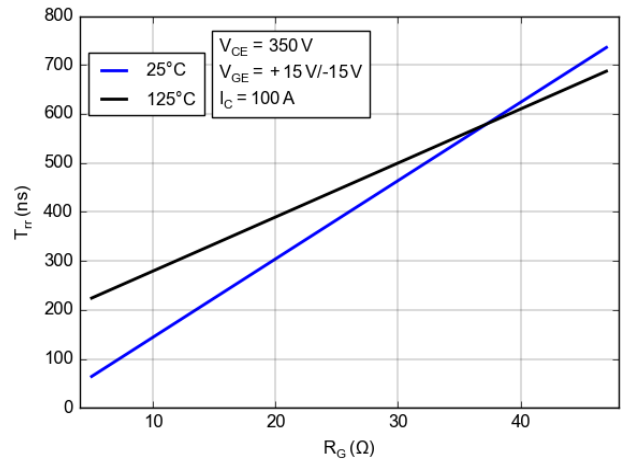


Figure 57. Typical Reverse Recovery Time vs. R_G

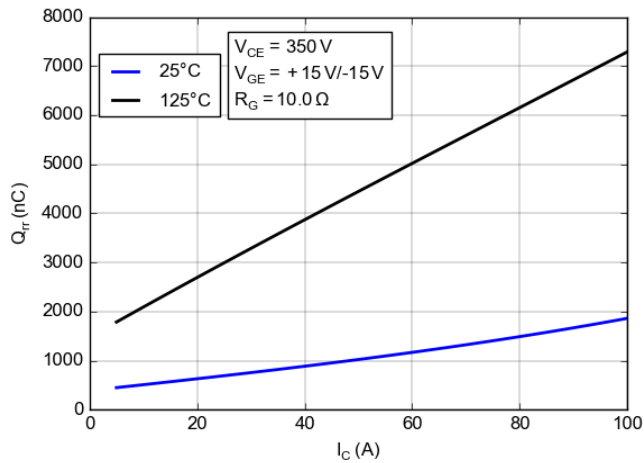


Figure 58. Typical Reverse Recovery Charge vs. I_C

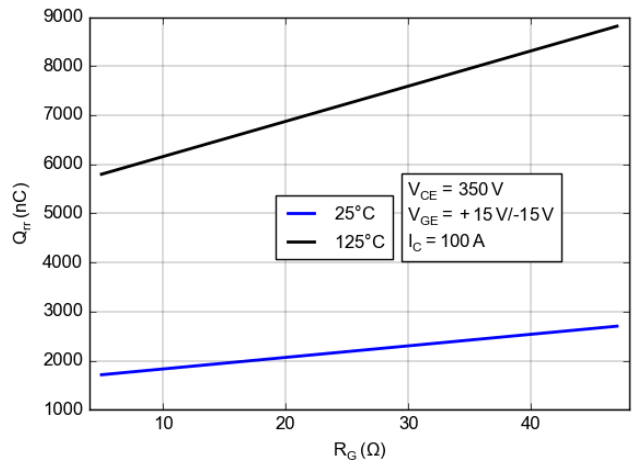


Figure 59. Typical Reverse Recovery Charge vs. R_G

TYPICAL CHARACTERISTICS – NEUTRAL POINT IGBT COMUTATES HALF BRIDGE DIODE (continued)

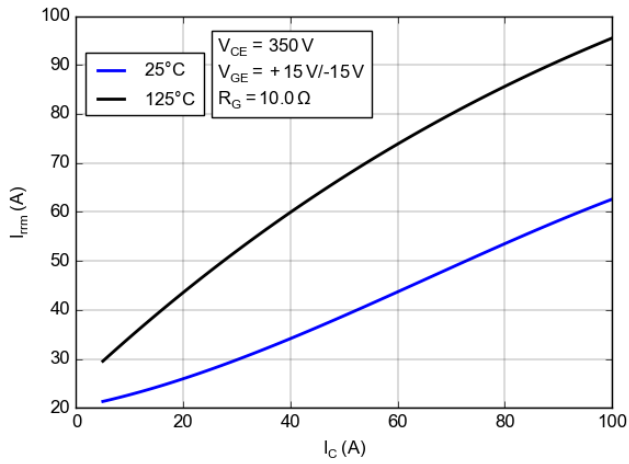


Figure 60. Typical Reverse Recovery Current vs. I_C

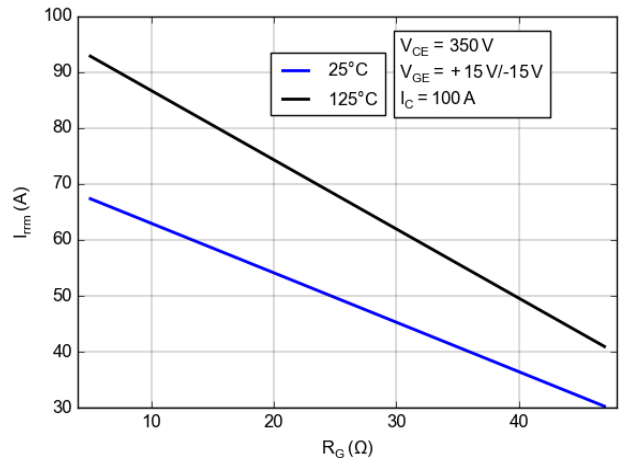


Figure 61. Typical Reverse Recovery Current vs. R_G

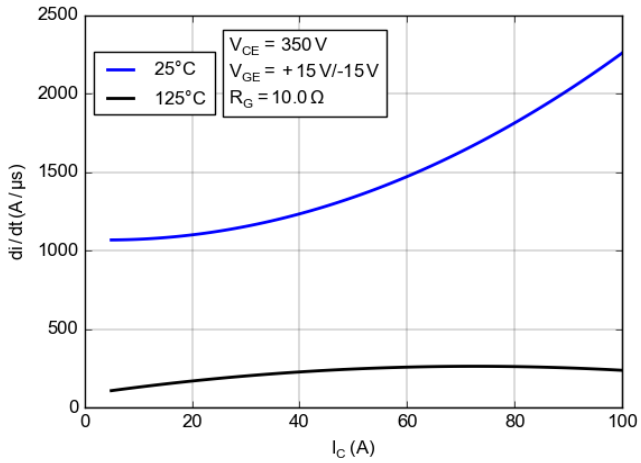


Figure 62. Typical di/dt vs. I_C

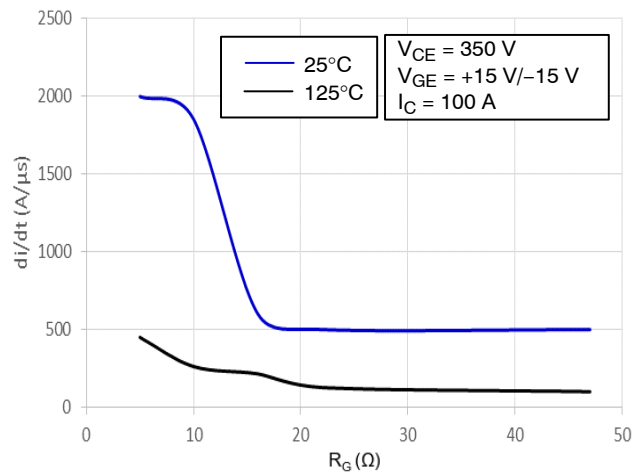


Figure 63. Typical di/dt vs. R_G

NXH100T120L3Q0S1NG

TYPICAL CHARACTERISTICS – THERMISTOR

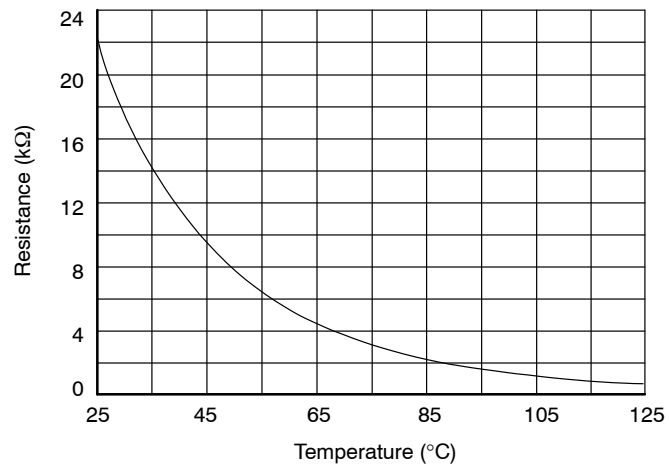


Figure 64. Thermistor Characteristics

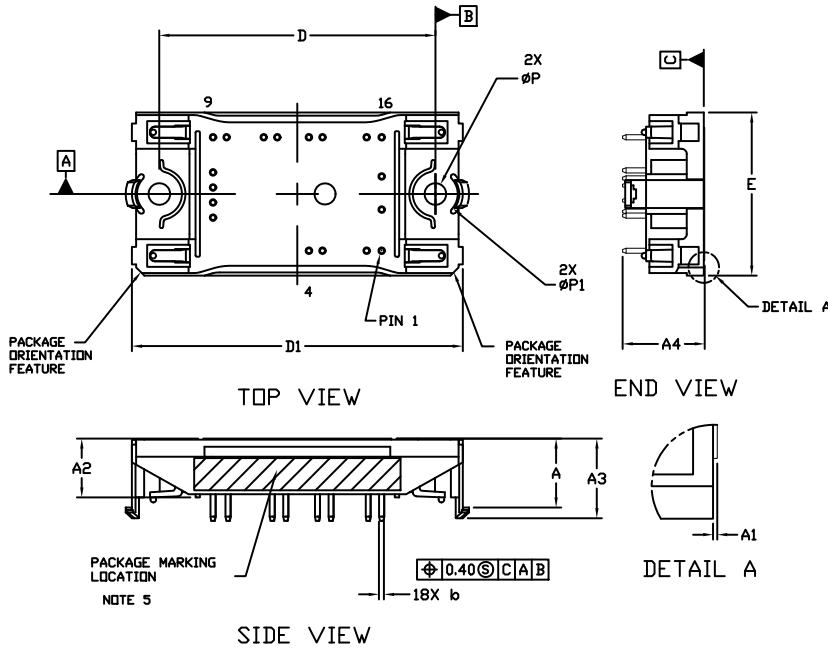
PACKAGE MARKING AND ORDERING INFORMATION

Orderable Part Number	Marking	Package	Shipping
NXH100T120L3Q0S1NG Q0PACK	NXH100T120L3Q0S1NG	Q0PACK – Case 180AH (Pb-Free and Halide-Free)	24 Units / Blister Tray

NXH100T120L3Q0S1NG

PACKAGE DIMENSIONS

PIM18, 55x32.5 / Q0PACK
CASE 180AH
ISSUE B



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO THE PLATED TERMINALS AND IS MEASURED BETWEEN 1.00 AND 3.00 FROM THE TERMINAL TIP.
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.

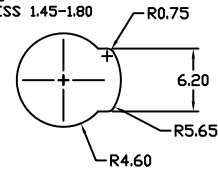
DIM	MILLIMETERS	
	MIN.	NOM.
A	13.50	13.90
A1	0.10	0.30
A2	11.50	11.90
A3	15.65	16.05
A4	16.35	REF
b	0.95	1.05
D	54.80	55.20
D1	65.60	66.20
E	32.20	32.80
P	4.20	4.40
P1	8.90	9.10

MOUNTING HOLE POSITION

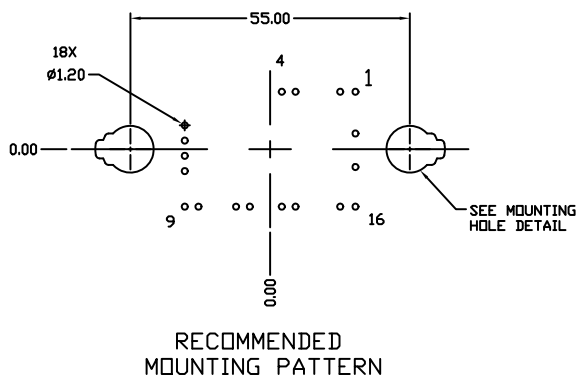
NOTE 4

PIN	PIN POSITION		PIN	PIN POSITION		PIN	PIN POSITION		PIN	PIN POSITION	
	X	Y		X	Y		X	Y		X	Y
1	16.80	11.30	10	-14.10	-10.70	1	16.80	-11.30	10	-14.10	10.70
2	13.80	11.30	11	-6.70	-10.70	2	13.80	-11.30	11	-6.70	10.70
3	5.00	11.30	12	-4.00	-10.70	3	5.00	-11.30	12	-4.00	10.70
4	2.30	11.30	13	2.30	-10.70	4	2.30	-11.30	13	2.30	10.70
5	-16.80	4.70	14	5.00	-10.70	5	-16.80	-4.70	14	5.00	10.70
6	-16.80	1.70	15	13.80	-10.70	6	-16.80	-1.70	15	13.80	10.70
7	-16.80	-1.30	16	16.80	-10.70	7	-16.80	1.30	16	16.80	10.70
8	-16.80	-4.30	17	16.80	-3.50	8	-16.80	4.30	17	16.80	3.50
9	-16.80	-10.70	18	16.80	3.10	9	-16.80	10.70	18	16.80	-3.10

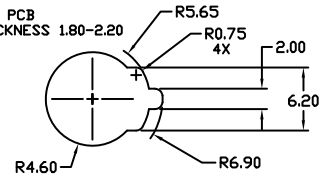
FOR PCB THICKNESS 1.45-1.80



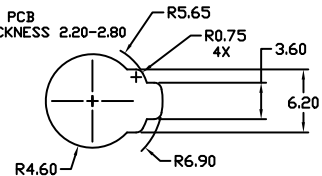
MOUNTING FOOTPRINT ON PAGE 2




FOR PCB THICKNESS 1.80-2.20



FOR PCB THICKNESS 2.20-2.80



MOUNTING HOLE DETAIL

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