

# Three Level NPC Q2Pack Module

## NXH350N100H4Q2F2

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

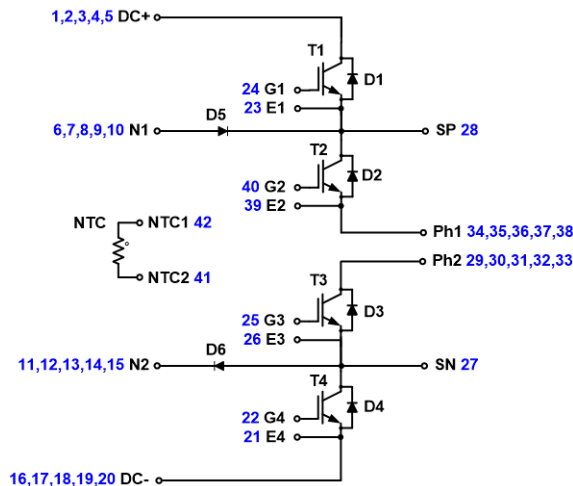


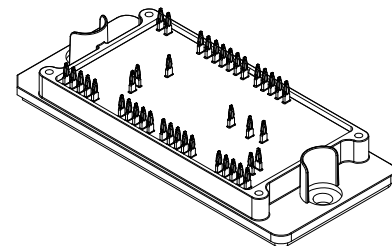
Figure 1. NXH350N100H4Q2F2PG/SG Schematic Diagram



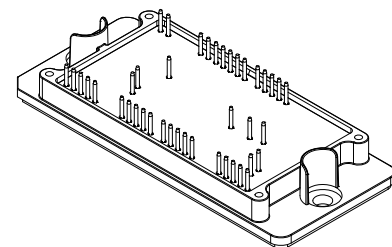
ON Semiconductor®

[www.onsemi.com](http://www.onsemi.com)

### PACKAGE PICTURE

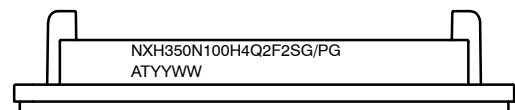


Q2PACK INPC PRESS FIT PINS  
CASE 180BH



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.

# NXH350N100H4Q2F2

## PIN CONNECTIONS

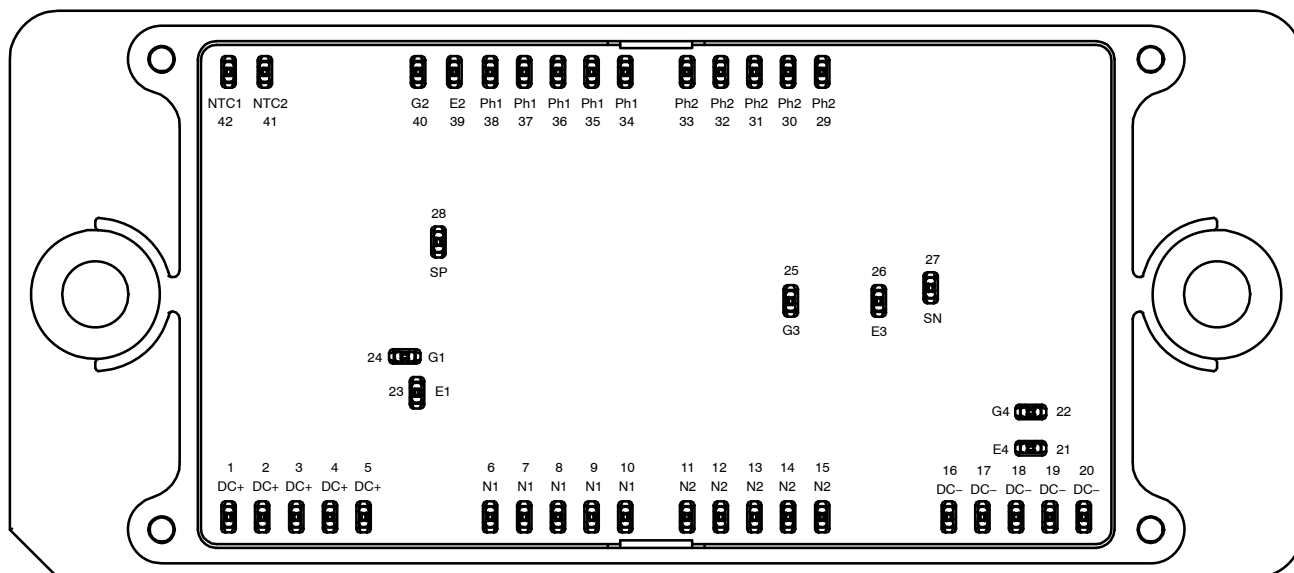


Figure 2. Pin Connections

### ABSOLUTE MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
<b>OUTER IGBT (T1, T4)</b>			
Collector-Emitter Voltage	$V_{CES}$	1000	V
Gate-Emitter Voltage Positive transient gate-emitter voltage ( $T_{\text{pulse}} = 5 \mu\text{s}$ , $D < 0.10$ )	$V_{GE}$	$\pm 20$ 30	V
Continuous Collector Current @ $T_C = 80^\circ\text{C}$	$I_C$	303	A
Pulsed Peak Collector Current @ $T_C = 80^\circ\text{C}$ ( $T_J = 150^\circ\text{C}$ )	$I_{C(\text{Pulse})}$	909	A
Maximum Power Dissipation ( $T_J = 150^\circ\text{C}$ )	$P_{\text{tot}}$	592	W
Minimum Operating Junction Temperature	$T_{J\text{MIN}}$	-40	$^\circ\text{C}$
Maximum Operating Junction Temperature (Note 2)	$T_{J\text{MAX}}$	150	$^\circ\text{C}$
<b>INNER IGBT (T2, T3)</b>			
Collector-Emitter Voltage	$V_{CES}$	1000	V
Gate-Emitter Voltage Positive transient gate-emitter voltage ( $T_{\text{pulse}} = 5 \mu\text{s}$ , $D < 0.10$ )	$V_{GE}$	$\pm 20$ 30	V
Continuous Collector Current @ $T_C = 80^\circ\text{C}$	$I_C$	329	A
Pulsed Peak Collector Current @ $T_C = 80^\circ\text{C}$ ( $T_J = 150^\circ\text{C}$ )	$I_{C(\text{Pulse})}$	987	A
Maximum Power Dissipation ( $T_J = 175^\circ\text{C}$ )	$P_{\text{tot}}$	532	W
Minimum Operating Junction Temperature	$T_{J\text{MIN}}$	-40	$^\circ\text{C}$
Maximum Operating Junction Temperature (Note 2)	$T_{J\text{MAX}}$	150	$^\circ\text{C}$
<b>IGBT INVERSE DIODE (D1, D2, D3, D4)</b>			
Peak Repetitive Reverse Voltage	$V_{RRM}$	1000	V
Continuous Forward Current @ $T_C = 80^\circ\text{C}$	$I_F$	133	A
Repetitive Peak Forward Current ( $T_J = 175^\circ\text{C}$ )	$I_{FRM}$	399	A
Maximum Power Dissipation ( $T_J = 175^\circ\text{C}$ )	$P_{\text{tot}}$	276	W

# NXH350N100H4Q2F2

## ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted) (continued)

Rating	Symbol	Value	Unit
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### IGBT INVERSE DIODE (D1, D2, D3, D4)

Minimum Operating Junction Temperature	T <sub>JMIN</sub>	-40	°C
Maximum Operating Junction Temperature	T <sub>JMAX</sub>	150	°C

### NEUTRAL POINT DIODE (D5, D6)

Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	1200	V
Continuous Forward Current @ T <sub>C</sub> = 80°C	I <sub>F</sub>	98	A
Repetitive Peak Forward Current (T <sub>J</sub> = 175°C)	I <sub>FRM</sub>	294	A
Maximum Power Dissipation (T <sub>J</sub> = 175°C)	P <sub>tot</sub>	239	W
Minimum Operating Junction Temperature	T <sub>JMIN</sub>	-40	°C
Maximum Operating Junction Temperature	T <sub>JMAX</sub>	175	°C

### THERMAL PROPERTIES

Operating Temperature under Switching Condition	T <sub>VJOP</sub>	-40 to +150	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +125	°C

### INSULATION PROPERTIES

Isolation Test Voltage, t = 2 s, 50 Hz (Note 3)	V <sub>is</sub>	4000	V <sub>RMS</sub>
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. Qualification at 175°C per discrete TO247.
3. 4000 VAC<sub>RMS</sub> for 1 second duration is equivalent to 3333 VAC<sub>RMS</sub> for 1 minute duration.

## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise specified)

Characteristic	Test Conditions	Symbol	Min	Typ	Max	Unit
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### OUTER IGBT (T1, T4) CHARACTERISTICS

Collector-Emitter Cutoff Current	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = 1000 V	I <sub>CES</sub>	–	–	1000	μA
Collector-Emitter Saturation Voltage	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 375 A, T <sub>J</sub> = 25°C	V <sub>CE(sat)</sub>	–	1.63	1.80	V
	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 375 A, T <sub>J</sub> = 150°C		–	1.92	–	
Gate-Emitter Threshold Voltage	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 375 mA	V <sub>GE(TH)</sub>	4.1	4.84	5.7	V
Gate Leakage Current	V <sub>GE</sub> = ±20 V, V <sub>CE</sub> = 0 V	I <sub>GES</sub>	–	–	±2000	nA
Turn-on Delay Time	T <sub>J</sub> = 25°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>d(on)</sub>	–	86	–	ns
Rise Time		t <sub>r</sub>	–	30	–	
Turn-off Delay Time		t <sub>d(off)</sub>	–	312	–	
Fall Time		t <sub>f</sub>	–	32	–	
Turn-on Switching Loss per Pulse		E <sub>on</sub>	–	2376	–	μJ
Turn-off Switching Loss per Pulse		E <sub>off</sub>	–	5437	–	
Turn-on Delay Time		T <sub>J</sub> = 125°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>d(on)</sub>	–	79	–
Rise Time	t <sub>r</sub>		–	35	–	
Turn-off Delay Time	t <sub>d(off)</sub>		–	357	–	
Fall Time	t <sub>f</sub>		–	73	–	
Turn-on Switching Loss per Pulse	E <sub>on</sub>		–	4568	–	μJ
Turn-off Switching Loss per Pulse	E <sub>off</sub>		–	7421	–	

# NXH350N100H4Q2F2

## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise specified) (continued)

Characteristic	Test Conditions	Symbol	Min	Typ	Max	Unit
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### OUTER IGBT (T1, T4) CHARACTERISTICS

Input Capacitance	V <sub>CE</sub> = 20 V, V <sub>GE</sub> = 0 V, f = 1 MHz	C <sub>ies</sub>	–	24146	–	pF
Output Capacitance		C <sub>oes</sub>	–	1027	–	
Reverse Transfer Capacitance		C <sub>res</sub>	–	106	–	
Total Gate Charge	V <sub>CE</sub> = 600 V, I <sub>C</sub> = 375 A, V <sub>GE</sub> = 15 V	Q <sub>g</sub>	–	680	–	nC
Thermal Resistance – Chip-to-Heatsink	Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK	R <sub>thJH</sub>	–	0.22	–	K/W
Thermal Resistance – Chip-to-Case		R <sub>thJC</sub>	–	0.12	–	K/W

### NEUTRAL POINT DIODE (D5, D6) CHARACTERISTICS

Diode Forward Voltage	I <sub>F</sub> = 100 A, T <sub>J</sub> = 25°C	V <sub>F</sub>	–	1.50	1.85	V
	I <sub>F</sub> = 100 A, T <sub>J</sub> = 150°C		–	2.07	–	
Reverse Recovery Time	T <sub>J</sub> = 25°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>rr</sub>	–	19	–	ns
Reverse Recovery Charge		Q <sub>rr</sub>	–	229	–	μC
Peak Reverse Recovery Current		I <sub>RRM</sub>	–	19	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	6053	–	A/μs
Reverse Recovery Energy		E <sub>rr</sub>	–	164	–	μJ
Reverse Recovery Time		T <sub>J</sub> = 125°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 120 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>rr</sub>	–	34	–
Reverse Recovery Charge	Q <sub>rr</sub>		–	359	–	μC
Peak Reverse Recovery Current	I <sub>RRM</sub>		–	17	–	A
Peak Rate of Fall of Recovery Current	di/dt		–	4621	–	A/μs
Reverse Recovery Energy	E <sub>rr</sub>		–	211	–	μJ
Thermal Resistance – Chip-to-Heatsink	Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK		R <sub>thJH</sub>	–	0.42	–
Thermal Resistance – Chip-to-Case		R <sub>thJC</sub>	–	0.29	–	K/W

### INNER IGBT (T2, T3) CHARACTERISTICS

Collector-Emitter Cutoff Current	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = 1000 V	I <sub>CES</sub>	–	–	500	μA	
Collector-Emitter Saturation Voltage	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 300 A, T <sub>J</sub> = 25°C	V <sub>CE(sat)</sub>	–	1.27	1.50	V	
	V <sub>GE</sub> = 15 V, I <sub>C</sub> = 300 A, T <sub>J</sub> = 150°C		–	1.34	–		
Gate-Emitter Threshold Voltage	V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 300 mA	V <sub>GE(TH)</sub>	4.1	4.96	5.7	V	
Gate Leakage Current	V <sub>GE</sub> = ±20 V, V <sub>CE</sub> = 0 V	I <sub>GES</sub>	–	–	±1600	nA	
Turn-on Delay Time	T <sub>J</sub> = 25°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>d(on)</sub>	–	69.5	–	ns	
Rise Time		t <sub>r</sub>	–	31	–		
Turn-off Delay Time		t <sub>d(off)</sub>	–	422.5	–		
Fall Time		t <sub>f</sub>	–	51.5	–		
Turn-on Switching Loss per Pulse		E <sub>on</sub>	–	3705	–		μJ
Turn-off Switching Loss per Pulse		E <sub>off</sub>	–	12590	–		
Turn-on Delay Time	T <sub>J</sub> = 125°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>d(on)</sub>	–	66	–	ns	
Rise Time		t <sub>r</sub>	–	30.5	–		
Turn-off Delay Time		t <sub>d(off)</sub>	–	508.5	–		
Fall Time		t <sub>f</sub>	–	64	–		
Turn-on Switching Loss per Pulse		E <sub>on</sub>	–	5777	–		μJ
Turn-off Switching Loss per Pulse		E <sub>off</sub>	–	18390	–		

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### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise specified) (continued)

Characteristic	Test Conditions	Symbol	Min	Typ	Max	Unit
<b>INNER IGBT (T2, T3) CHARACTERISTICS</b>						
Input Capacitance	V <sub>CE</sub> = 20 V, V <sub>GE</sub> = 0 V, f = 1 MHz	C <sub>ies</sub>	–	25260	–	pF
Output Capacitance		C <sub>oes</sub>	–	1009	–	
Reverse Transfer Capacitance		C <sub>res</sub>	–	118	–	
Total Gate Charge	V <sub>CE</sub> = 600 V, I <sub>C</sub> = 300 A, V <sub>GE</sub> = 15 V	Q <sub>g</sub>	–	720	–	nC
Thermal Resistance – Chip-to-Heatsink	Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK	R <sub>thJH</sub>	–	0.24	–	K/W
Thermal Resistance – Chip-to-Case		R <sub>thJC</sub>	–	0.13	–	K/W

### IGBT INVERSE DIODE (D1, D2, D3, D4) CHARACTERISTICS

Diode Forward Voltage	I <sub>F</sub> = 150 A, T <sub>J</sub> = 25°C	V <sub>F</sub>	–	2.06	2.44	V
	I <sub>F</sub> = 150 A, T <sub>J</sub> = 150°C		–	1.77	–	
Reverse Recovery Time	T <sub>J</sub> = 25°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>rr</sub>	–	96	–	ns
Reverse Recovery Charge		Q <sub>rr</sub>	–	5094	–	μC
Peak Reverse Recovery Current		I <sub>RRM</sub>	–	124	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	4571	–	A/μs
Reverse Recovery Energy		E <sub>rr</sub>	–	2069	–	μJ
Reverse Recovery Time		T <sub>J</sub> = 125°C V <sub>CE</sub> = 600 V, I <sub>C</sub> = 170 A V <sub>GE</sub> = -8 V, 15 V, R <sub>G</sub> = 5 Ω	t <sub>rr</sub>	–	192	–
Reverse Recovery Charge	Q <sub>rr</sub>		–	11900	–	μC
Peak Reverse Recovery Current	I <sub>RRM</sub>		–	148	–	A
Peak Rate of Fall of Recovery Current	di/dt		–	4167	–	A/μs
Reverse Recovery Energy	E <sub>rr</sub>		–	4665	–	μJ
Thermal Resistance – Chip-to-Heatsink	Thermal grease, Thickness = 2.1 Mil ±2% λ = 2.9 W/mK		R <sub>thJH</sub>	–	0.39	–
Thermal Resistance – Chip-to-Case		R <sub>thJC</sub>	–	0.25	–	K/W

### THERMISTOR CHARACTERISTICS

Nominal Resistance	T = 25°C	R <sub>25</sub>	–	22	–	kΩ
Nominal Resistance	T = 100°C	R <sub>100</sub>	–	1486	–	kΩ
Deviation of R25		ΔR/R	-5	–	5	%
Power Dissipation		P <sub>D</sub>	–	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
NXH350N100H4Q2F2PG PRESS FIT PINS	NXH350N100H4Q2F2PG	Q2PACK (Pb-free/Halide-free)	12 Units / Blister Tray
NXH350N100H4Q2F2SG SOLDER PINS	NXH350N100H4Q2F2SG	Q2PACK (Pb-free/Halide-free)	12 Units / Blister Tray

# NXH350N100H4Q2F2

## TYPICAL CHARACTERISTICS – OUTER IGBT, INNER IGBT

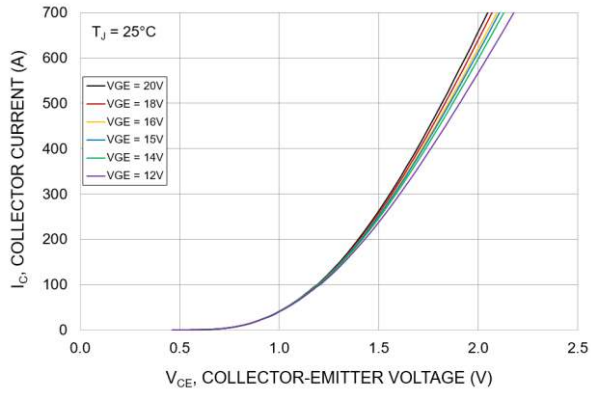


Figure 3. Typical Output Characteristics – Outer IGBT

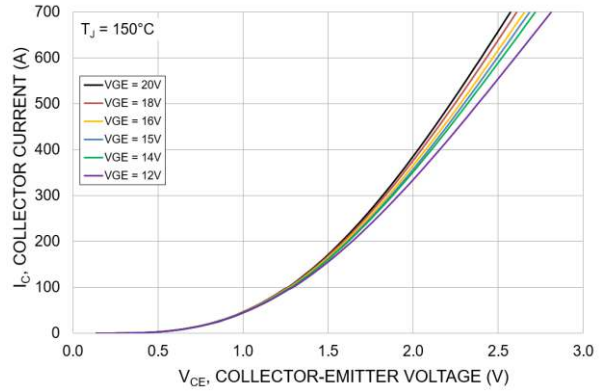


Figure 4. Typical Output Characteristics – Outer IGBT

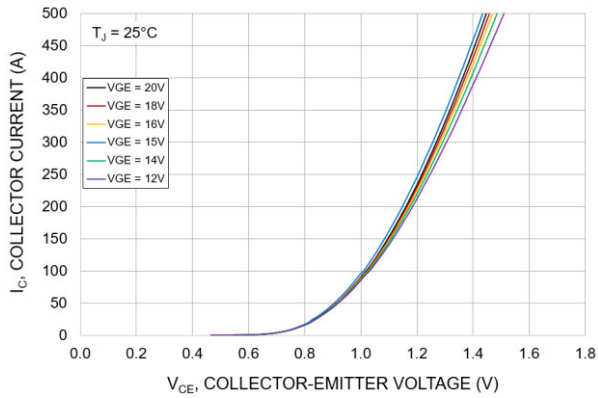


Figure 5. Typical Output Characteristics – Inner IGBT

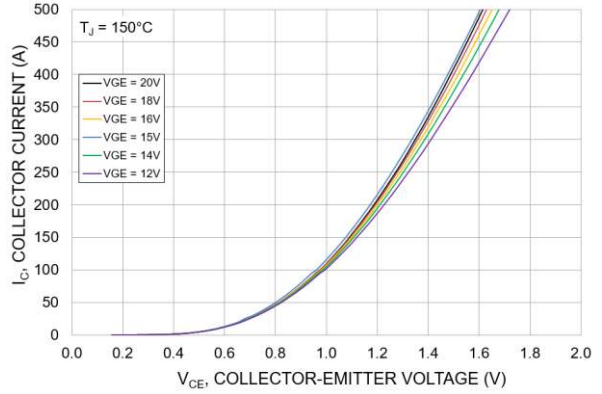


Figure 6. Typical Output Characteristics – Inner IGBT

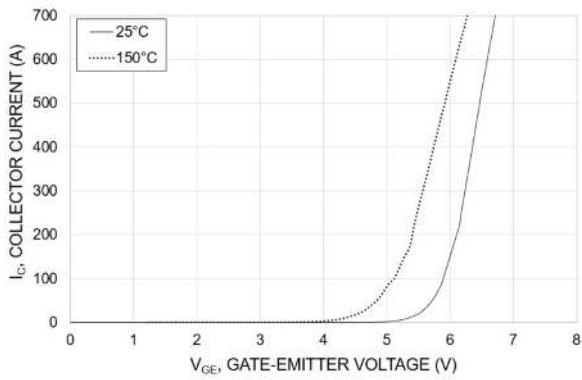


Figure 7. Transfer Characteristics – Outer IGBT

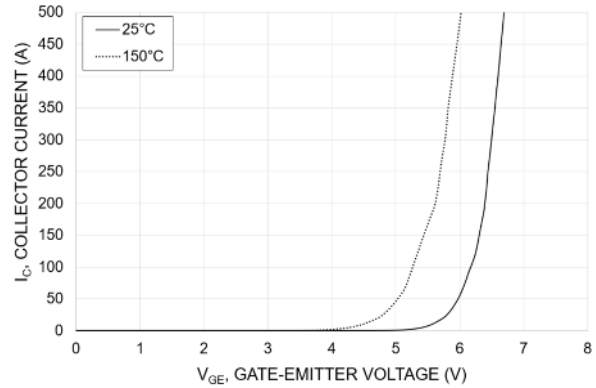
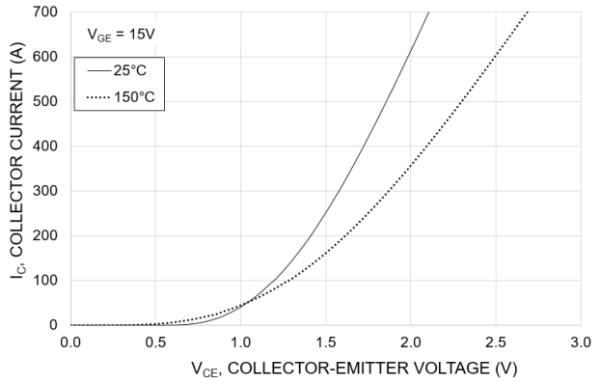


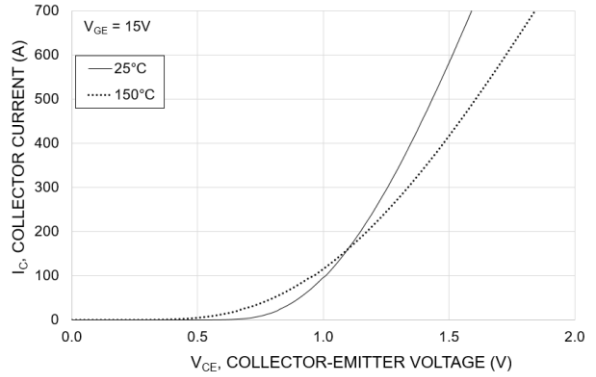
Figure 8. Transfer Characteristics – Inner IGBT

# NXH350N100H4Q2F2

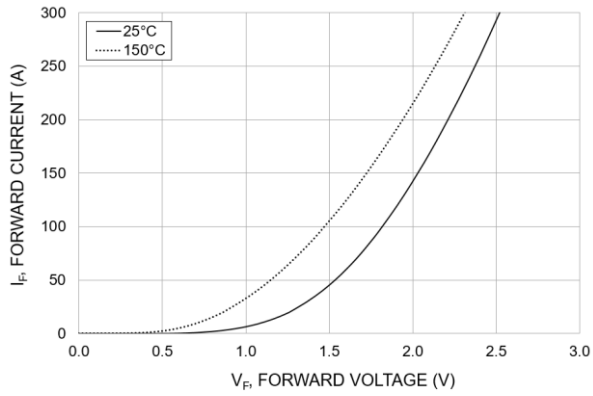
## TYPICAL CHARACTERISTICS – OUTER IGBT, INNER IGBT, IGBT INVERSE DIODE AND NEUTRAL POINT DIODE



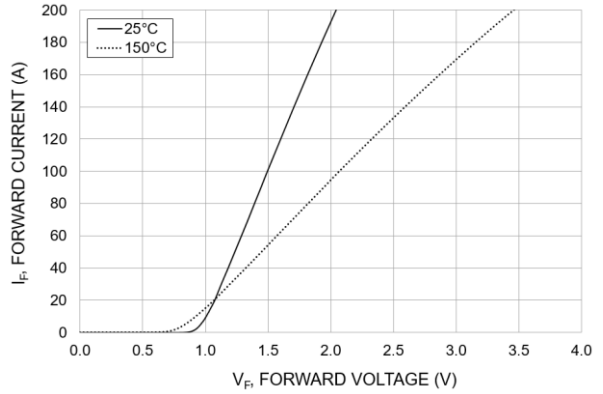
**Figure 9. Typical Saturation Voltage Characteristics – Outer IGBT**



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



**Figure 11. Inverse Diode Forward Characteristics**



**Figure 12. Buck Diode Forward Characteristics**

# NXH350N100H4Q2F2

## TYPICAL SWITCHING CHARACTERISTICS – OUTER IGBT

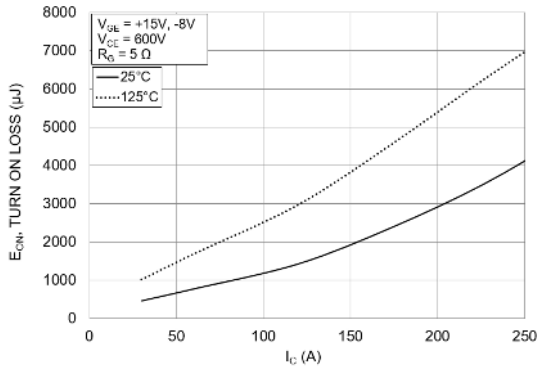


Figure 13. Typical Turn On Loss vs.  $I_C$

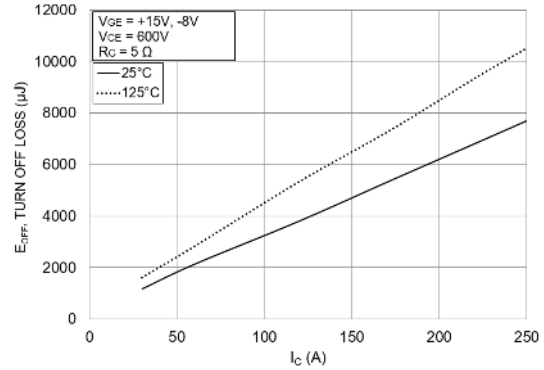


Figure 14. Typical Turn Off Loss vs.  $I_C$

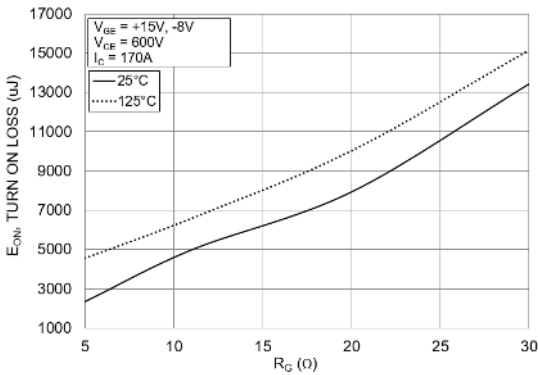


Figure 15. Typical Turn On Loss vs.  $R_G$

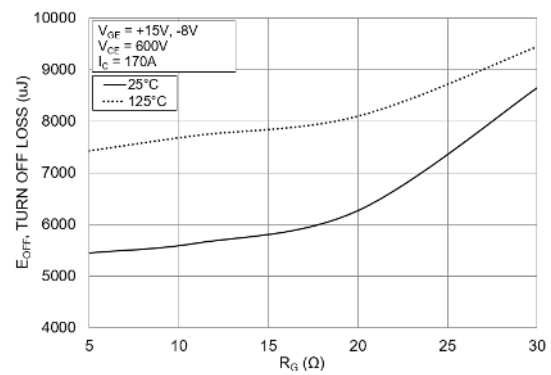


Figure 16. Typical Turn Off Loss vs.  $R_G$

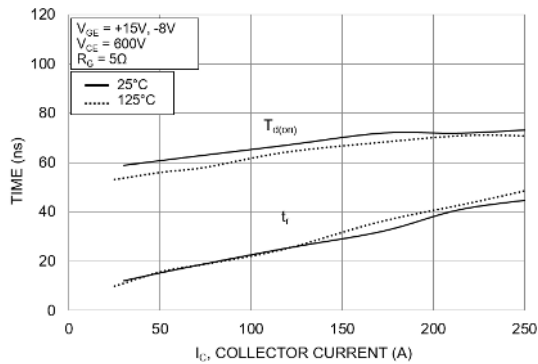


Figure 17. Typical Turn On Switching Time vs.  $I_C$

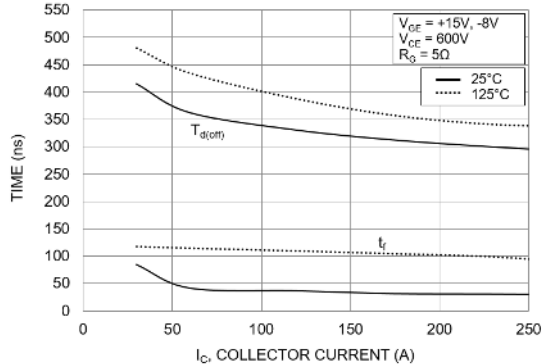


Figure 18. Typical Turn Off Switching Time vs.  $I_C$

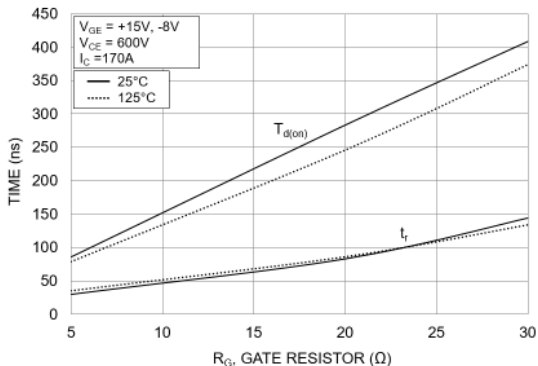


Figure 19. Typical Turn On Switching Time vs.  $R_G$

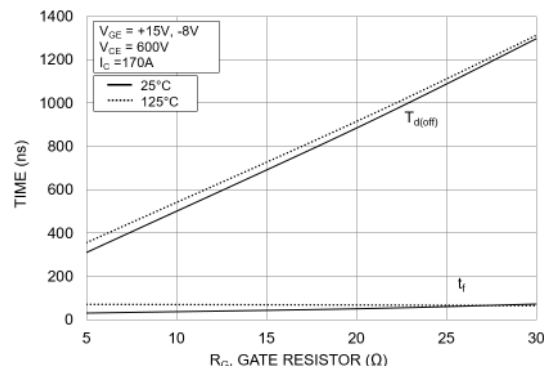


Figure 20. Typical Turn On Switching Time vs.  $R_G$



# NXH350N100H4Q2F2

## TYPICAL SWITCHING CHARACTERISTICS – INNER IGBT

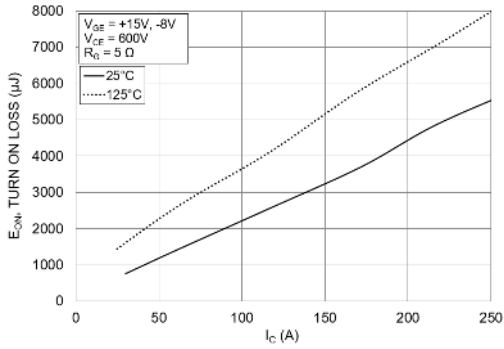


Figure 21. Typical Turn On Loss vs.  $I_C$

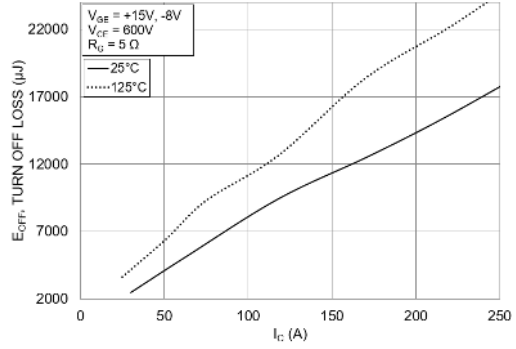


Figure 22. Typical Turn Off Loss vs.  $I_C$

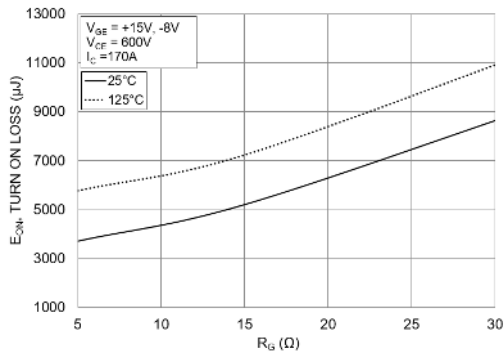


Figure 23. Typical Turn On Loss vs.  $R_G$

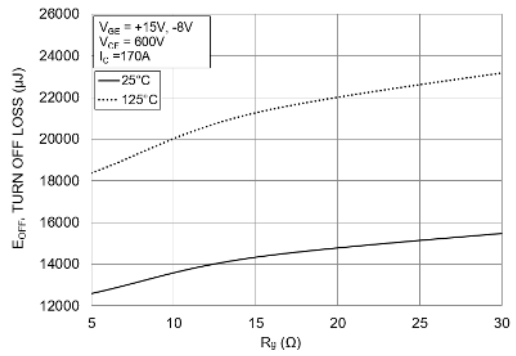


Figure 24. Typical Turn Off Loss vs.  $R_G$

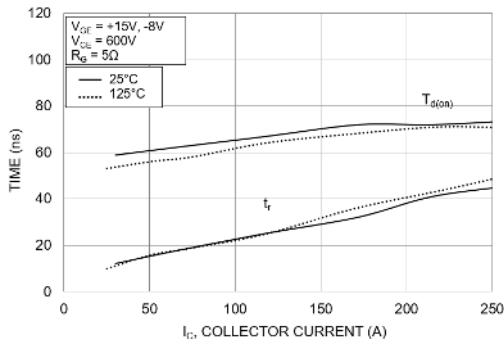


Figure 25. Typical Turn On Switching Time vs.  $I_C$

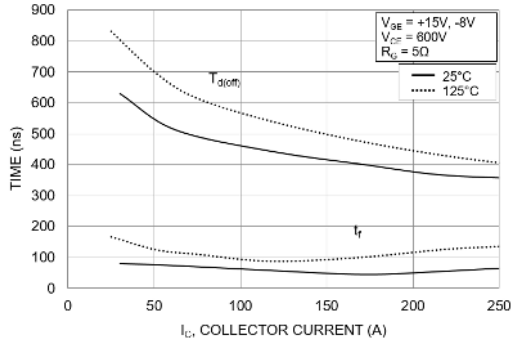


Figure 26. Typical Turn Off Switching Time vs.  $I_C$

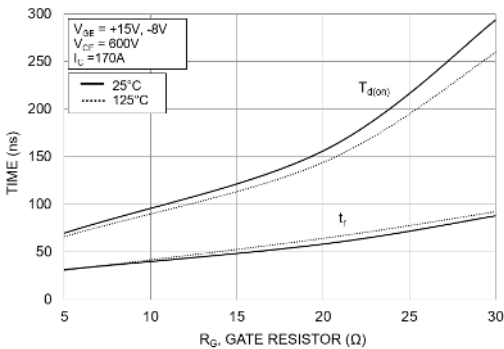


Figure 27. Typical Turn On Switching Time vs.  $R_G$

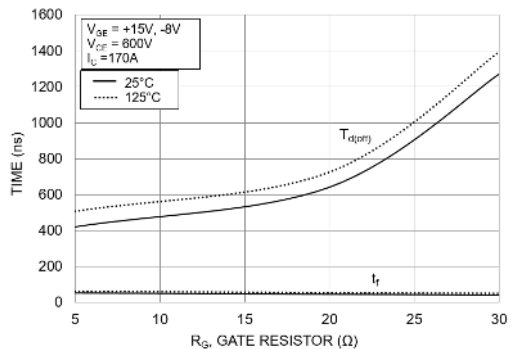


Figure 28. Typical Turn On Switching Time vs.  $R_G$

TYPICAL SWITCHING CHARACTERISTICS – INVERSE DIODE

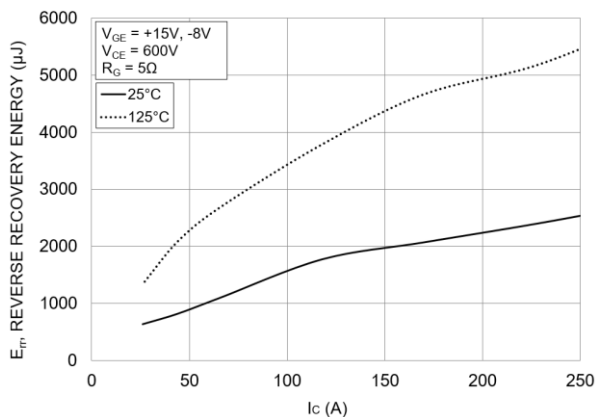


Figure 29. Typical Reverse Recovery Energy Loss vs.  $I_C$

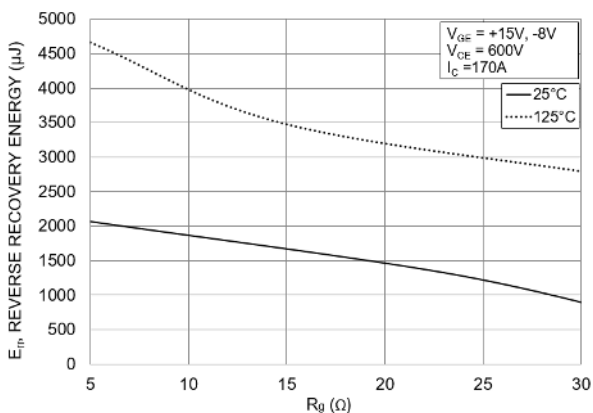


Figure 30. Typical Reverse Recovery Energy Loss vs.  $R_G$

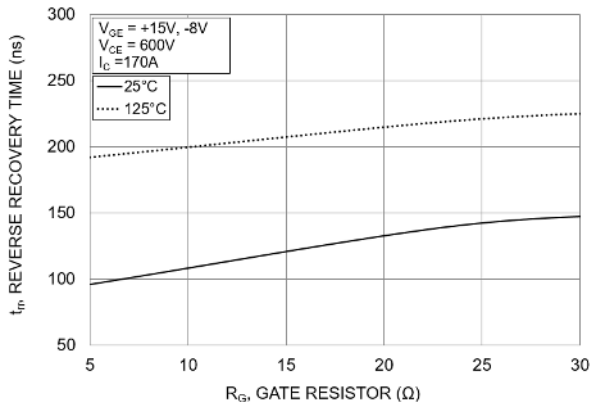


Figure 31. Typical Reverse Recovery Time vs.  $R_G$

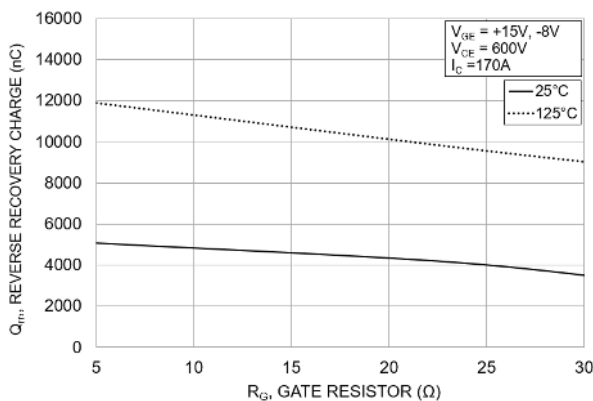


Figure 32. Typical Reverse Recovery Charge vs.  $R_G$

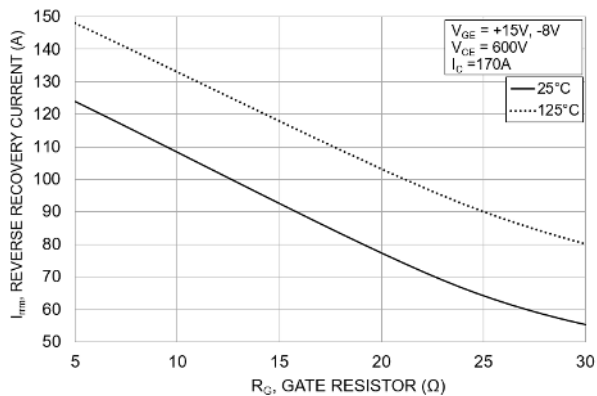


Figure 33. Typical Reverse Recovery Peak Current vs.  $R_G$

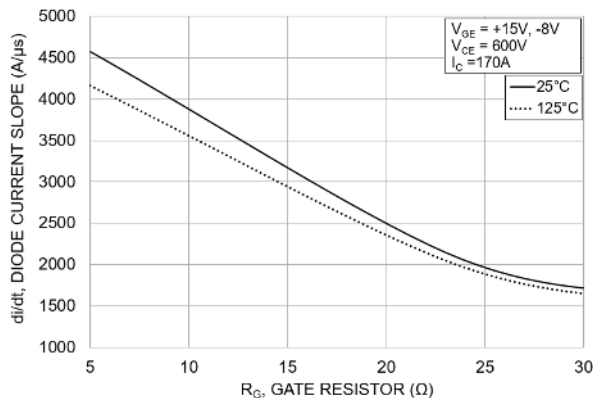


Figure 34. Typical  $di/dt$  vs.  $R_G$

# NXH350N100H4Q2F2

## TYPICAL SWITCHING CHARACTERISTICS – NEUTRAL POINT DIODE

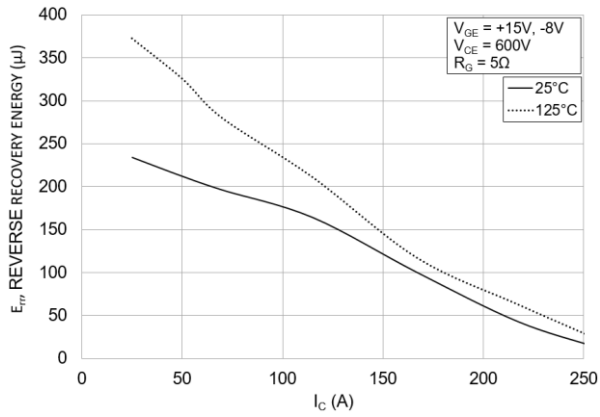


Figure 35. Typical Reverse Recovery Energy Loss vs.  $I_C$

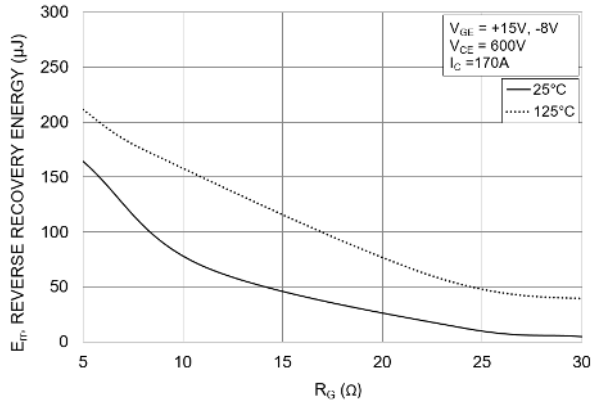


Figure 36. Typical Reverse Recovery Energy Loss vs.  $R_G$

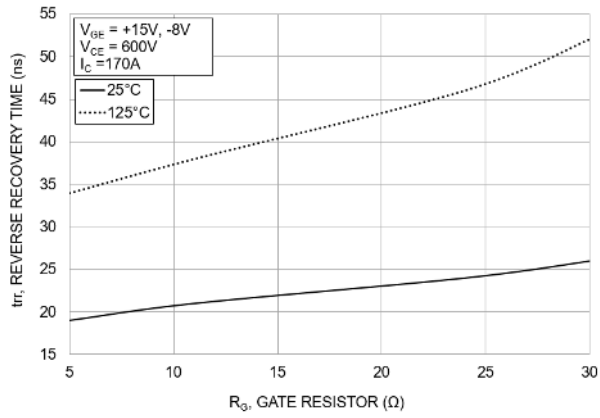


Figure 37. Typical Reverse Recovery Time vs.  $R_G$

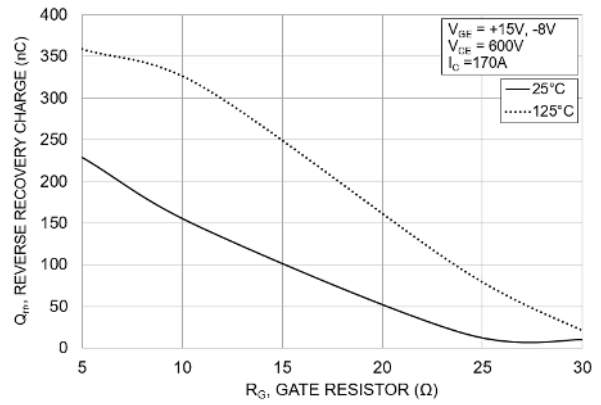


Figure 38. Typical Reverse Recovery Charge vs.  $R_G$

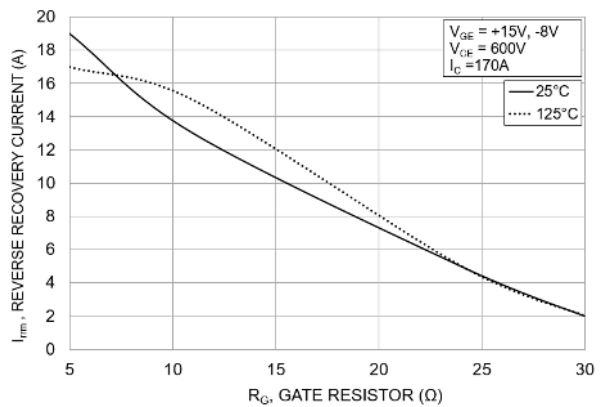


Figure 39. Typical Reverse Recovery Peak Current vs.  $R_G$

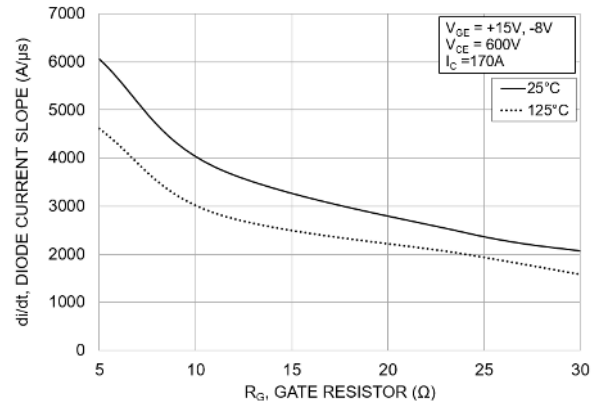


Figure 40. Typical  $di/dt$  vs.  $R_G$

# NXH350N100H4Q2F2

## TRANSIENT THERMAL IMPEDANCE

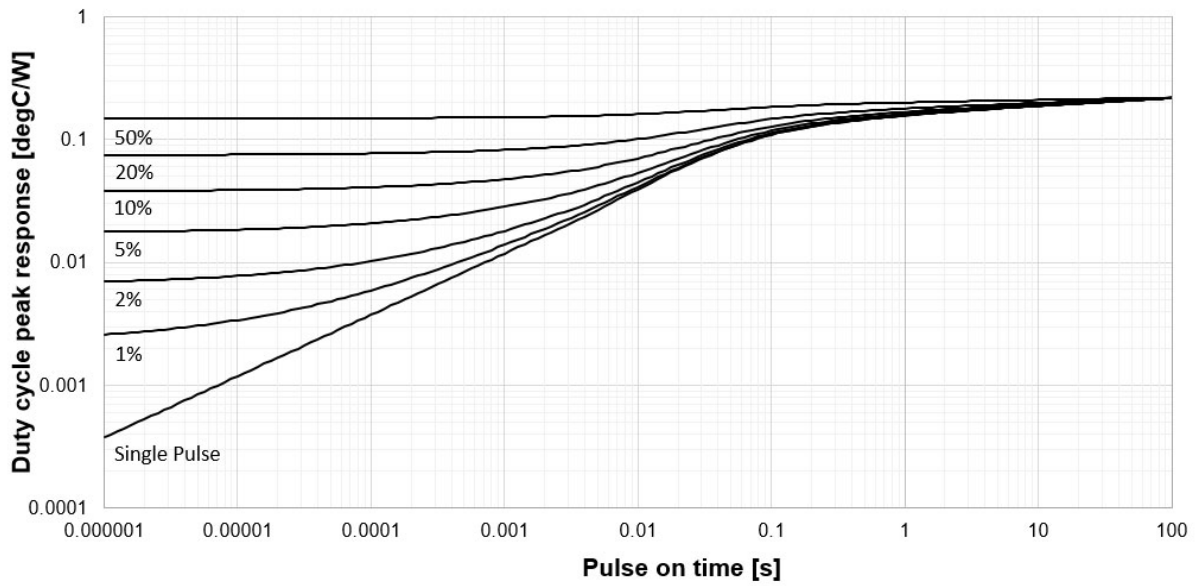


Figure 41. Transient Thermal Impedance – Outer IGBT

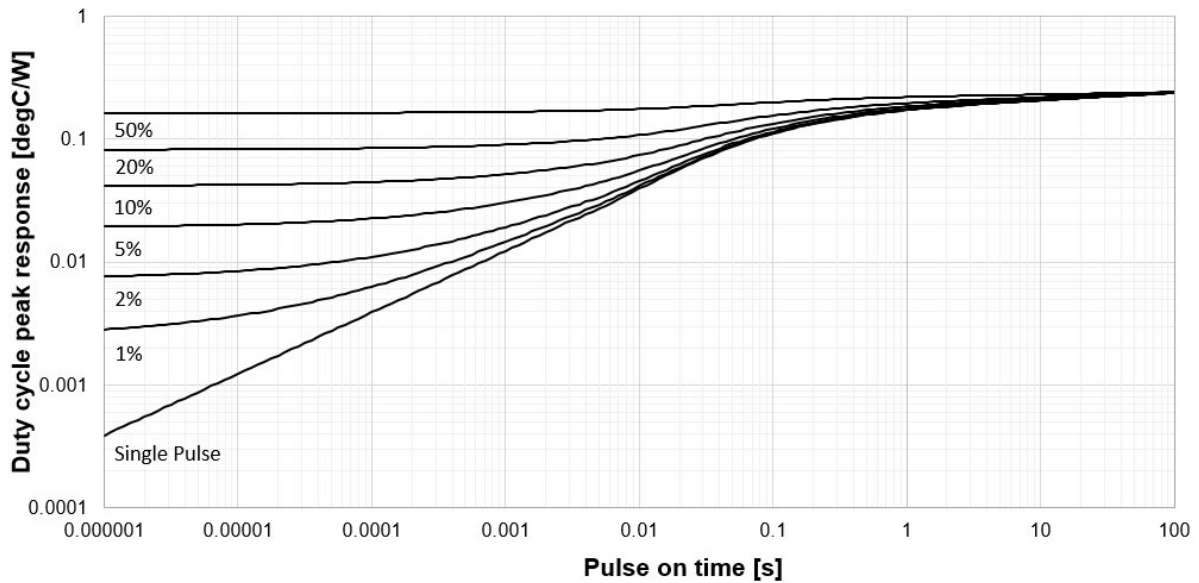


Figure 42. Transient Thermal Impedance – Inner IGBT

# NXH350N100H4Q2F2

## TRANSIENT THERMAL IMPEDANCE (Continued)

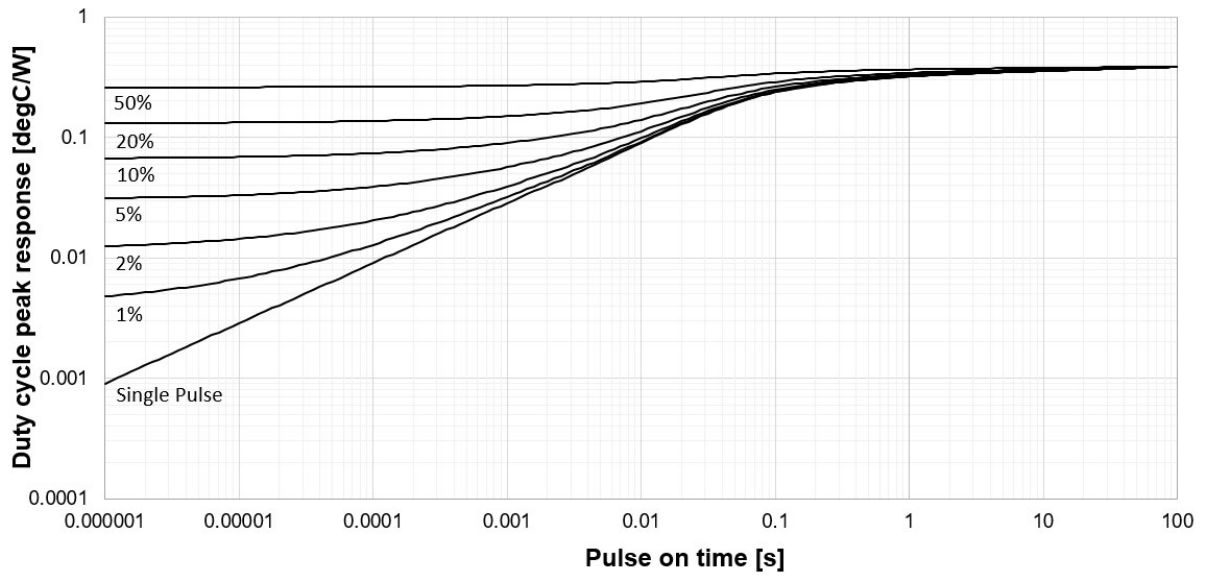


Figure 43. Transient Thermal Impedance – Inverse Diode

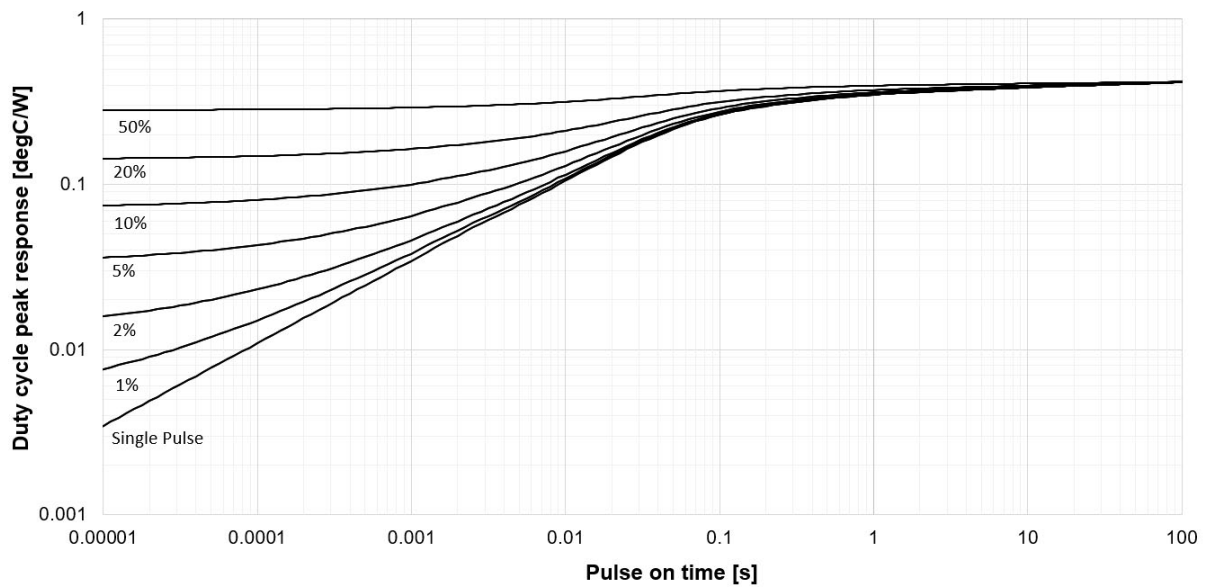


Figure 44. Transient Thermal Impedance – Neutral Point Diode

# NXH350N100H4Q2F2

## SAFE OPERATING AREA

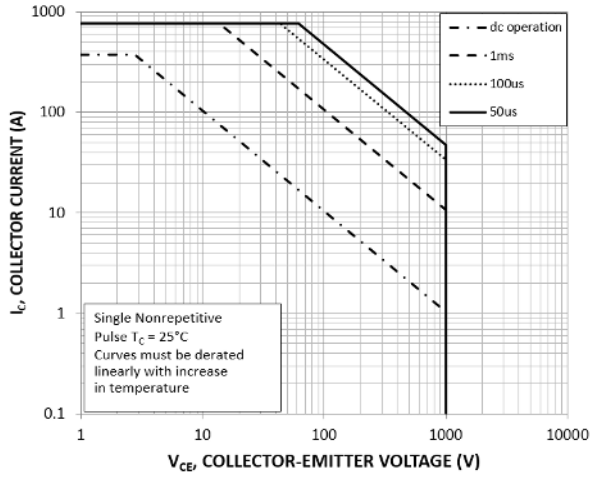


Figure 45. FBSOA – Outer IGBT

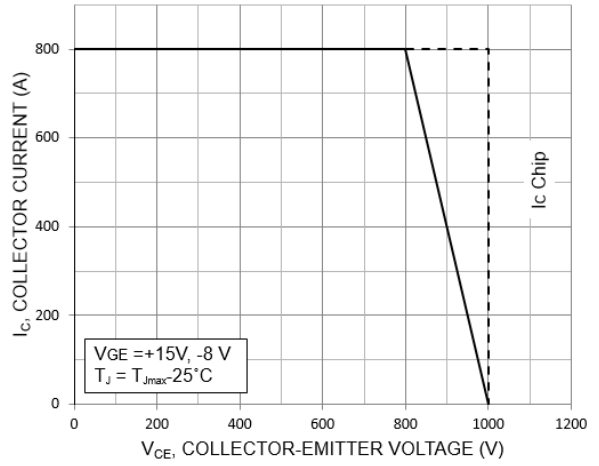


Figure 46. RBSOA – Outer IGBT

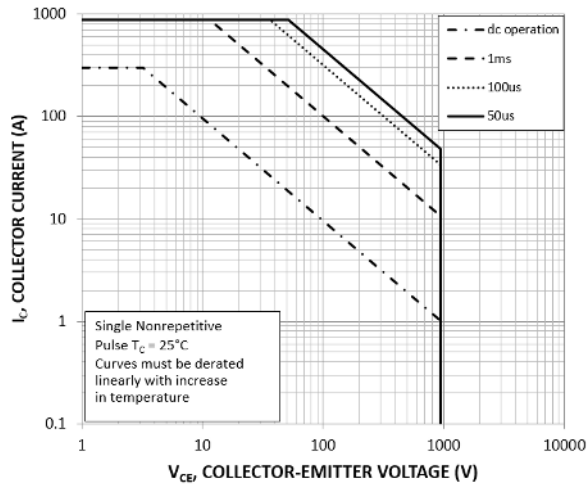


Figure 47. FBSOA – Inner IGBT

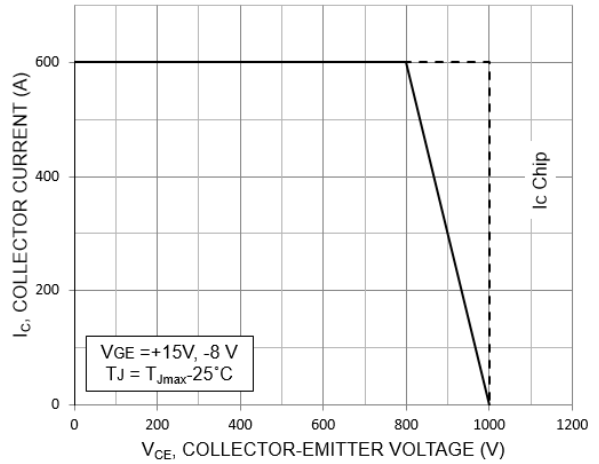


Figure 48. RBSOA – Inner IGBT

# NXH350N100H4Q2F2

## GATE CHARGE AND CAPACITANCE

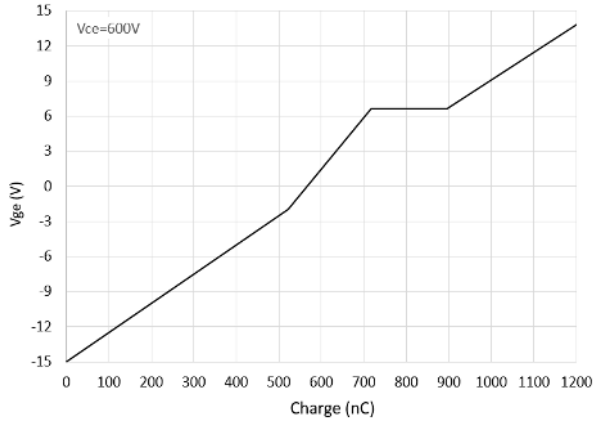


Figure 49. Gate Voltage vs. Gate Charge – Outer IGBT

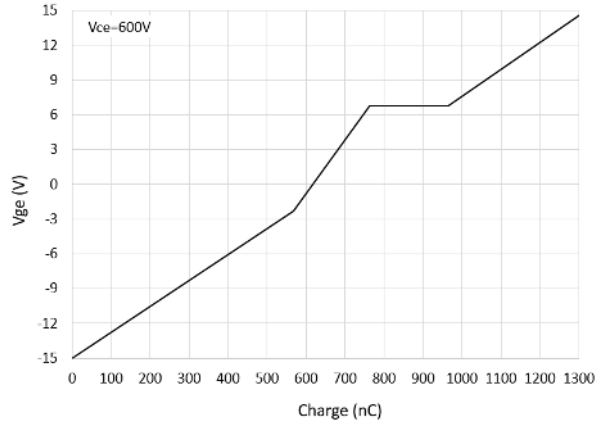


Figure 50. Gate Voltage vs. Gate Charge – Inner IGBT

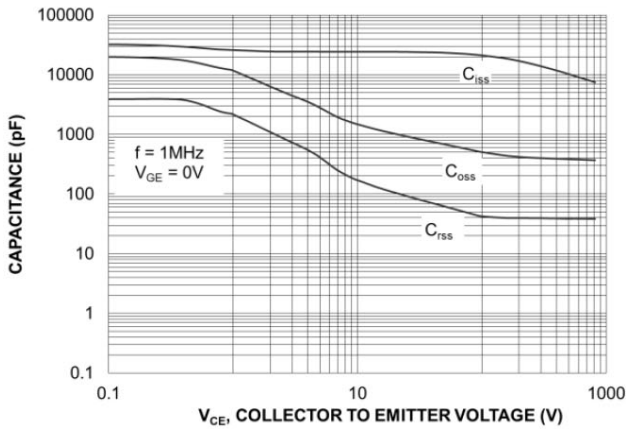


Figure 51. Capacitance Charge – Outer IGBT

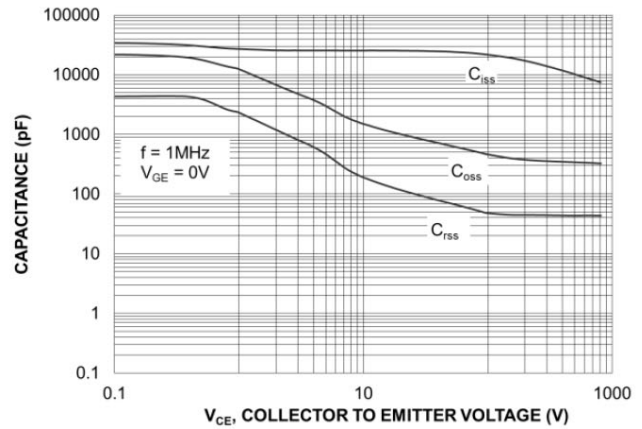


Figure 52. Capacitance Charge – Inner IGBT

## TYPICAL CHARACTERISTICS – THERMISTOR

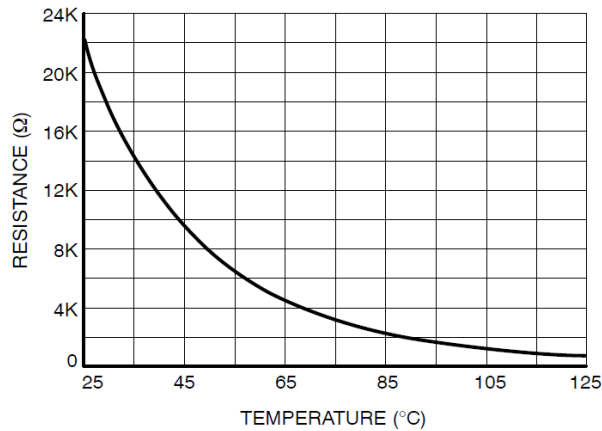


Figure 53. Thermistor Characteristics

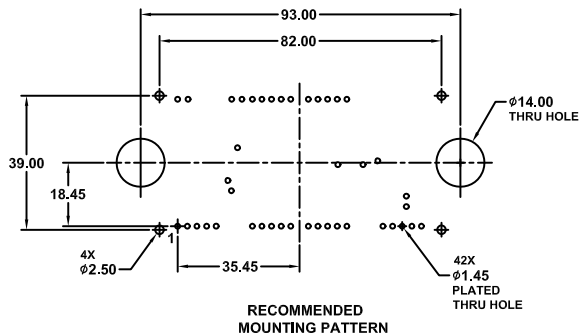
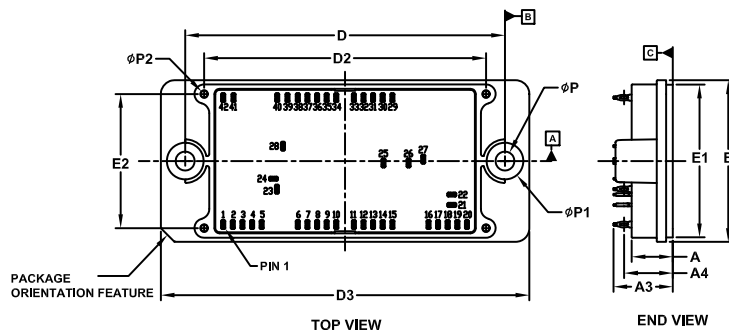
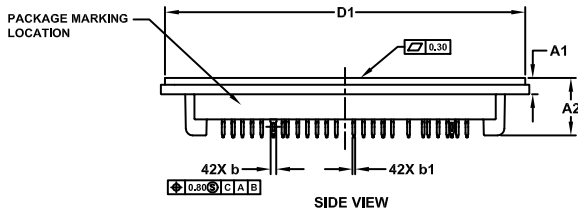
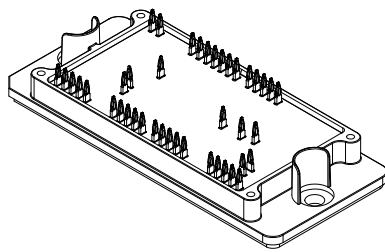
# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

ON Semiconductor®



## PIM42, 93x47 (PRESSFIT) CASE 180BH ISSUE 0

DATE 06 AUG 2019

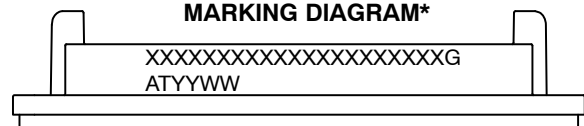


NOTES:

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			PIN POSITION		PIN POSITION			
	MIN.	NOM.	MAX.	X	Y	PIN	X	Y	
A	11.70	12.00	12.30	1	0.00	0.00	22	66.50	8.70
A1	4.40	4.70	5.00	2	2.80	0.00	23	15.60	10.30
A2	16.40	16.70	17.00	3	5.60	0.00	24	14.60	13.30
A3	16.90	17.30	17.70	4	8.40	0.00	25	46.60	17.90
A4	13.97	14.18	14.39	5	11.20	0.00	26	53.90	17.90
b	1.61	1.66	1.71	6	21.70	0.00	27	58.20	19.00
b1	0.75	0.80	0.85	7	24.50	0.00	28	17.40	22.80
D	92.90	93.00	93.10	8	27.30	0.00	29	49.20	36.90
D1	104.45	104.75	105.05	9	30.10	0.00	30	46.40	36.90
D2	81.80	82.00	82.20	10	32.90	0.00	31	43.60	36.90
D3	106.90	107.20	107.50	11	38.00	0.00	32	40.80	36.90
E	46.70	47.00	47.30	12	40.80	0.00	33	38.00	36.90
E1	44.10	44.40	44.70	13	43.60	0.00	34	32.90	36.90
E2	38.80	39.00	39.10	14	46.40	0.00	35	30.10	36.90
P	5.40	5.50	5.60	15	49.20	0.00	36	27.30	36.90
P1	10.60	10.70	10.80	16	59.70	0.00	37	24.50	36.90
P2	1.80	2.00	2.20	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 "μ", 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

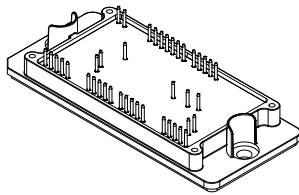
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# MECHANICAL CASE OUTLINE

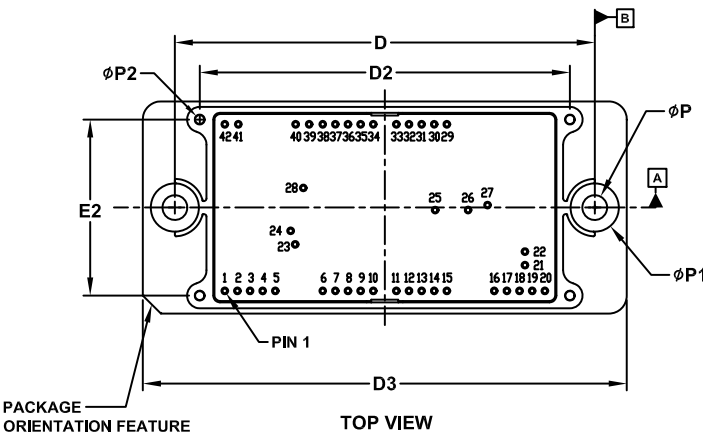
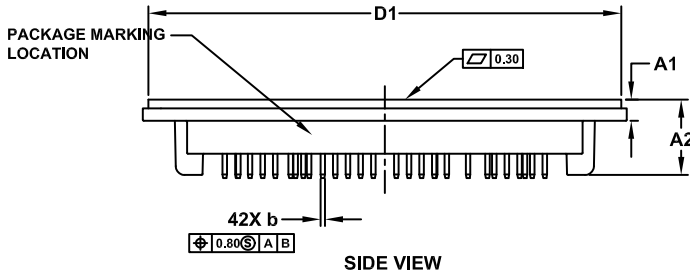
## PACKAGE DIMENSIONS

ON Semiconductor®



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

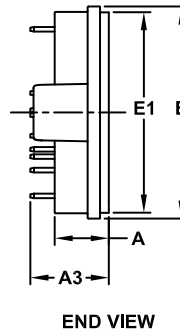
DATE 03 DEC 2019



**NOTES:**

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5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES.

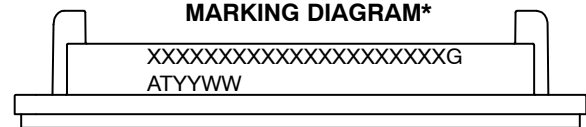
DIM	MILLIMETERS		
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b	0.95	1.00	1.05
D	92.90	93.00	93.10
D1	104.45	104.75	105.05
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D3	106.90	107.20	107.50
E	46.70	47.00	47.30
E1	44.10	44.40	44.70
E2	38.80	39.00	39.10
P	5.40	5.50	5.60
P1	10.60	10.70	10.80
P2	1.80	2.00	2.20



**NOTE 4**

PIN	PIN POSITION		PIN	PIN POSITION	
	X	Y		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  
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\*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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