3-Level NPC Inverter Module

NXH600N65L4Q2F2

The NXH600N65L4Q2F2SG/PG 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
- 650 V Field Stop 4 IGBTs
- Low Inductive layout
- Solderable Pins/Press−fit Pins
- Thermistor
- Pb−Free, Halogen Free/BFR Free and RoHS Compliant

Typical Applications

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

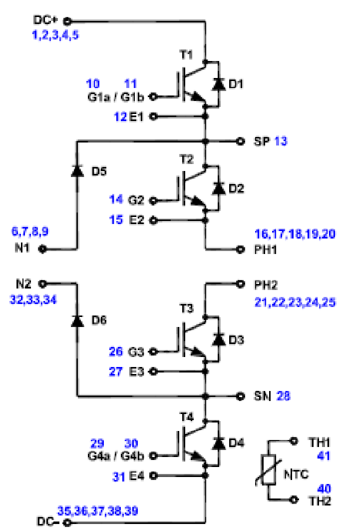
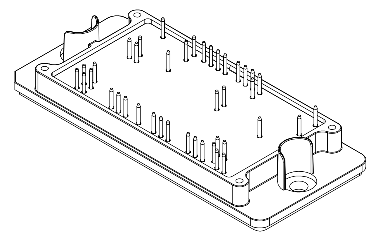
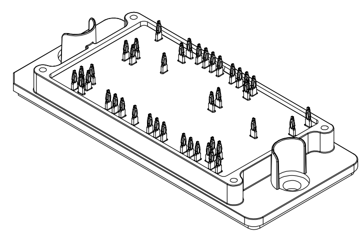


Figure 1. NXH600N65L4Q2F2 Schematic Diagram

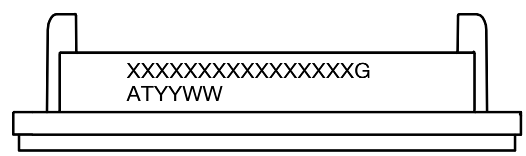


PIM41, 93x47 (SOLDER PIN)
CASE 180BC



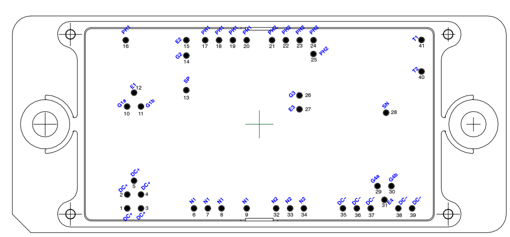
PIM41, 93x47 (PRESS FIT)
CASE 180HD

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 16 of this data sheet.

MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
OUTER IGBT (T1, T4)			
Collector−Emitter Voltage	V_{CES}	650	V
Gate−Emitter Voltage Positive Transient Gate – Emitter Voltage (tpulse = 5 μs, D < 0.10)	V_{GE}	±20 30	V
Continuous Collector Current @ T_c = 80 °C (T_J = 175°C)	I_C	483	A
Pulsed Collector Current (T_J = 175°C)	I_{Cpulse}	1449	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	931	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
INNER IGBT (T2, T3)			
Collector−Emitter Voltage	V_{CES}	650	V
Gate−Emitter Voltage Positive Transient Gate – Emitter Voltage (tpulse = 5 μs, D < 0.10)	V_{GE}	±20 30	V
Continuous Collector Current @ T_c = 80 °C (T_J = 175°C)	I_C	314	A
Pulsed Collector Current (T_J = 175°C)	I_{Cpulse}	942	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	679	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
NEUTRAL POINT DIODE (D5, D6)			
Peak Repetitive Reverse Voltage	V_{RRM}	650	V
Continuous Forward Current @ T_c = 80 °C (T_J = 175°C)	I_F	201	A
Repetitive Peak Forward Current (T_J = 175°C)	I_{FRM}	603	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	477	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
INVERSE DIODES (D1, D2, D3, D4)			
Peak Repetitive Reverse Voltage	V_{RRM}	650	V
Continuous Forward Current @ T_c = 80 °C (T_J = 175°C)	I_F	129	A
Repetitive Peak Forward Current (Tp = 1 ms)	I_{FRM}	387	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	298	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
THERMAL PROPERTIES			
Storage Temperature Range	T_{stg}	−40 to 150	°C
INSULATION PROPERTIES			
Isolation Test Voltage, t = 1 s, 50Hz	V_{is}	4000	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 CONDITIONS

Parameter	Symbol	Min	Max	Unit
Module Operating Junction Temperature	T_J	−40	175	°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°C unless otherwise noted)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
OUTER IGBT (T1, T4)						
Collector–Emitter Cutoff Current	V_{GE} = 0 V, V_{CE} = 650 V	I_{CES}	–	–	100	µA
Collector–Emitter Saturation Voltage	V_{GE} = 15 V, I_C = 600 A, T_J = 25°C	$V_{CE(sat)}$	–	1.61	2.2	V
	V_{GE} = 15 V, I_C = 600 A , T_J = 175°C		–	1.90	–	
Gate–Emitter Threshold Voltage	V_{GE} = V_{CE}, I_C = 2 mA	$V_{GE(TH)}$	3.1	3.94	5.2	V
Gate Leakage Current	V_{GE} = 20 V, V_{CE} = 0 V	I_{GES}	–	–	15	µA
Turn–on Delay Time	T_J = 25°C V_{CE} = 350 V, I_C = 200 A V_{GE} = −9 V to +15 V, R_{Gon} = 15 Ω, R_{Goff} = 23 Ω	$t_{d(on)}$	–	153.91	–	ns
Rise Time		t_r	–	45.54	–	
Turn–off Delay Time		$t_{d(off)}$	–	721.80	–	
Fall Time		t_f	–	10.25	–	
Turn–on Switching Loss per Pulse		E_{on}	–	3.04	–	mJ
Turn off Switching Loss per Pulse		E_{off}	–	6.58	–	
Turn–on Delay Time	T_J = 125°C V_{CE} = 350 V, I_C = 200 A V_{GE} = −9 V to +15 V, R_{Gon} = 15 Ω, R_{Goff} = 23 Ω	$t_{d(on)}$	–	139.84	–	ns
Rise Time		t_r	–	49.03	–	
Turn–off Delay Time		$t_{d(off)}$	–	778.28	–	
Fall Time		t_f	–	31.00	–	
Turn–on Switching Loss per Pulse		E_{on}	–	4.43	–	mJ
Turn off Switching Loss per Pulse		E_{off}	–	8.18	–	
Input Capacitance	V_{CE} =20 V. V_{GE} = 0 V. f = 10 kHz	C_{ies}	–	37100	–	pF
Output Capacitance		C_{oes}	–	1010	–	
Reverse Transfer Capacitance		C_{res}	–	172	–	
Total Gate Charge	V_{CE} = 600 V, I_C = 40 A, V_{GE} = ±15 V	Q_g	–	2180	–	nC
Thermal Resistance – Chip–to–heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.176	–	°C/W
Thermal Resistance – Chip–to–case		R_{thJC}	–	0.102	–	°C/W
NEUTRAL POINT DIODE (D5, D6)						
Diode Forward Voltage	I_F = 250 A, T_J = 25°C	V_F	–	2.47	3.1	V
	I_F = 250 A, T_J = 175°C		–	1.91	–	
Reverse Recovery Time	T_J = 25°C V_{CE} = 350 V, I_C = 200 A V_{GE} = −9 V to +15 V, R_G = 15 Ω	t_{rr}	–	19	–	ns
Reverse Recovery Charge		Q_{rr}	–	480	–	nC
Peak Reverse Recovery Current		I_{RRM}	–	32.5	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	3571.45	–	A/µs
Reverse Recovery Energy		E_{rr}	–	110.56	–	µJ
Reverse Recovery Time	T_J = 125°C V_{CE} = 350 V, I_C = 200 A V_{GE} = −9 V to +15 V, R_G = 15 Ω	t_{rr}	–	55.62	–	ns
Reverse Recovery Charge		Q_{rr}	–	3801.07	–	nC
Peak Reverse Recovery Current		I_{RRM}	–	108.38	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	3387.11	–	A/µs
Reverse Recovery Energy		E_{rr}	–	722.83	–	µJ
Thermal Resistance – Chip–to–heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.279	–	°C/W
Thermal Resistance – Chip–to–case		R_{thJC}	–	0.199	–	°C/W
INNER IGBT (T2,T3)						
Collector–Emitter Cutoff Current	V_{GE} = 0 V, V_{CE} = 650 V	I_{CES}	–	–	100	µA
Collector–Emitter Saturation Voltage	V_{GE} = 15 V, I_C = 450 A, T_J = 25°C	$V_{CE(sat)}$	–	1.59	2.2	V
	V_{GE} = 15 V, I_C =450 A , T_J = 175°C		–	1.75	–	
Gate–Emitter Threshold Voltage	V_{GE} = V_{CE}, I_C = 1.5 mA	$V_{GE(TH)}$	3.1	4.02	5.2	V
Gate Leakage Current	V_{GE} = 20 V, V_{CE} = 0 V	I_{GES}	–	–	15	µA

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
INNER IGBT (T2,T3)						
Turn–on Delay Time	T_J = 25°C V_{CE} = 350 V, I_C = 200 A V_{GE} = –9 V to +15 V, R_{Gon} = 15 Ω, R_{Goff} = 21 Ω	$t_{d(on)}$	–	211.52	–	ns
Rise Time		t_r	–	63.62	–	
Turn–off Delay Time		$t_{d(off)}$	–	922.97	–	
Fall Time		t_f	–	26	–	
Turn–on Switching Loss per Pulse		E_{on}	–	4.06	–	mJ
Turn off Switching Loss per Pulse		E_{off}	–	5.57	–	
Turn–on Delay Time	T_J = 125°C V_{CE} = 350 V, I_C = 200 A V_{GE} = –9 V to +15 V, R_{Gon} = 15 Ω, R_{Goff} = 21 Ω	$t_{d(on)}$	–	187.15	–	ns
Rise Time		t_r	–	72.07	–	
Turn–off Delay Time		$t_{d(off)}$	–	991.52	–	
Fall Time		t_f	–	24.12	–	
Turn–on Switching Loss per Pulse		E_{on}	–	4.84	–	mJ
Turn off Switching Loss per Pulse		E_{off}	–	6.37	–	
Input Capacitance	V_{CE} = 20 V, V_{GE} = 0 V, f = 10 kHz	C_{ies}	–	27600	–	pF
Output Capacitance		C_{oes}	–	814	–	
Reverse Transfer Capacitance		C_{res}	–	131	–	
Total Gate Charge	V_{CE} = 480 V, I_C = 375 A, V_{GE} = ±15 V	Q_g	–	1580	–	nC
Thermal Resistance – Chip–to–heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.224	–	°C/W
Thermal Resistance – Chip–to–case		R_{thJC}	–	0.140	–	°C/W
INVERSE DIODES (D1, D2, D3, D4)						
Diode Forward Voltage	I_F = 150 A, T_J = 25°C	V_F	–	2.45	3.1	V
	I_F = 150 A, T_J = 175°C		–	1.75	–	
Reverse Recovery Time	T_J = 25°C V_{CE} = 350 V, IC = 200 A V_{GE} = –9 V to +15 V, R_G = 15 Ω	t_{rr}	–	16.55	–	ns
Reverse Recovery Charge		Q_{rr}	–	178.92	–	nC
Peak Reverse Recovery Current		I_{RRM}	–	16.33	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	2682.93	–	A/μs
Reverse Recovery Energy		E_{rr}	–	33.93	–	uJ
Reverse Recovery Time	T_J = 125°C V_{CE} = 350 V, I_C = 200 A V_{GE} = –9 V to +15 V, R_G = 15 Ω	t_{rr}	–	54.93	–	ns
Reverse Recovery Charge		Q_{rr}	–	2113.76	–	nC
Peak Reverse Recovery Current		I_{RRM}	–	64.50	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	2445.66	–	A/μs
Reverse Recovery Energy		E_{rr}	–	459.95	–	μJ
Thermal Resistance – Chip–to–heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.420	–	°C/W
Thermal Resistance – Chip–to–case		R_{thJC}	–	0.319	–	°C/W
THERMISTOR CHARACTERISTICS						
Nominal Resistance	T = 25°C	R_{25}	–	5	–	kΩ
Nominal Resistance	T = 100°C	R_{100}	–	490.6	–	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%		–	3435	–	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.

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

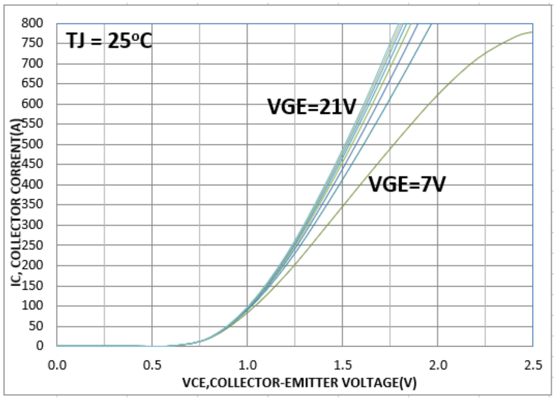


Figure 2. Typical Output Characteristics

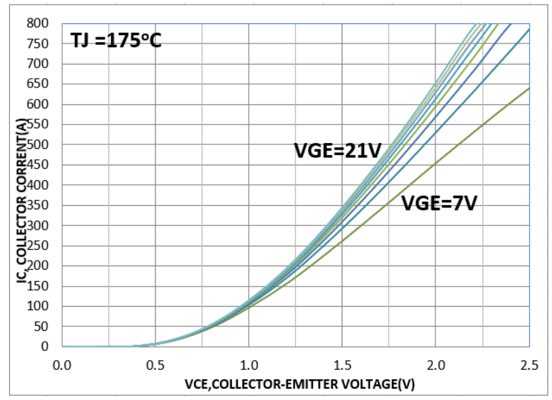


Figure 3. Typical Output Characteristics

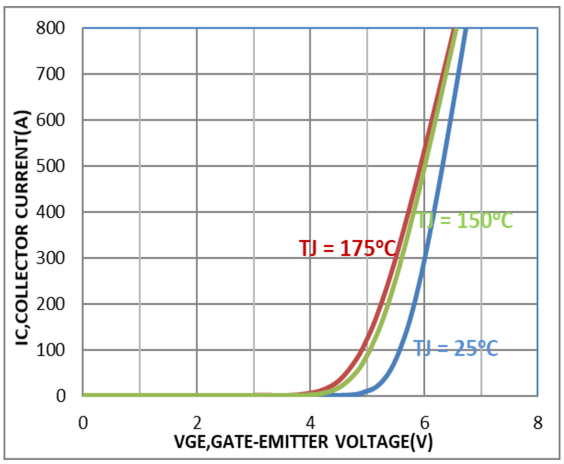


Figure 4. Typical Transfer Characteristics

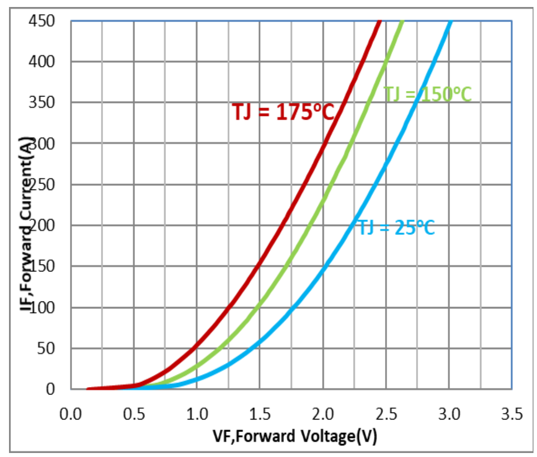


Figure 5. Diode Forward Characteristics

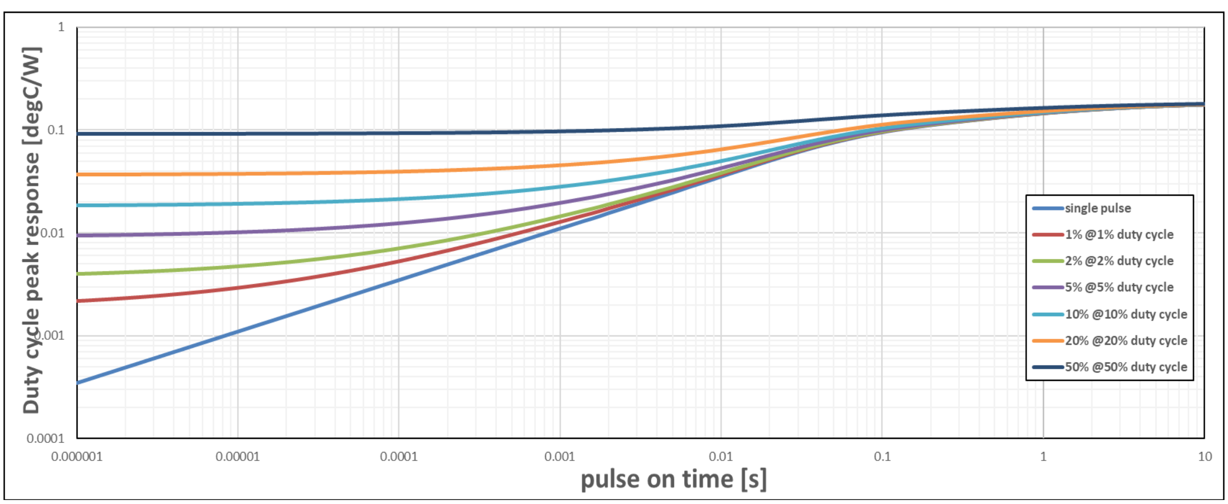


Figure 6. Transient Thermal Impedance (T1,T4)

TYPICAL CHARACTERISTICS – IGBT T1, T4 AND DIODE D5, D6 (CONTINUED)

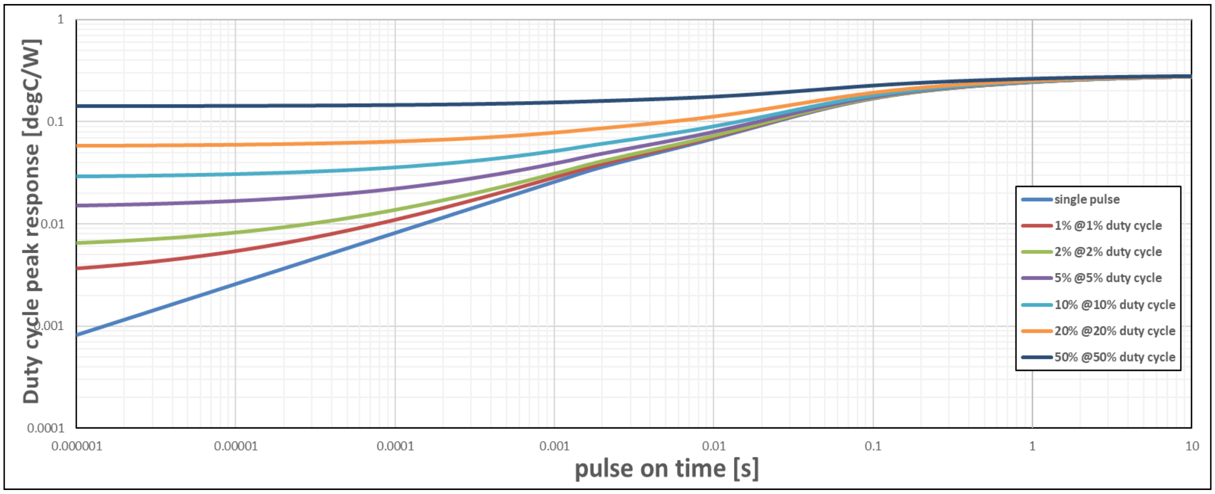


Figure 7. Transient Thermal Impedance (D5, D6)

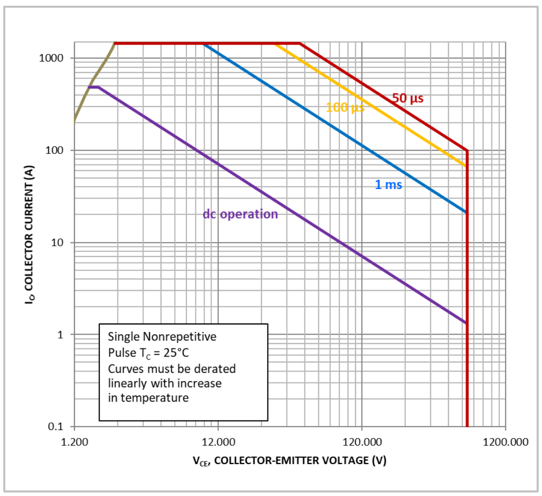


Figure 8. FBSOA (T1, T4)

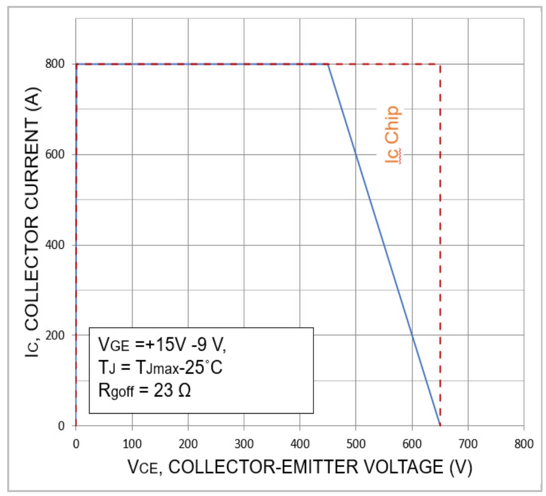


Figure 9. RBSOA (T1, T4)

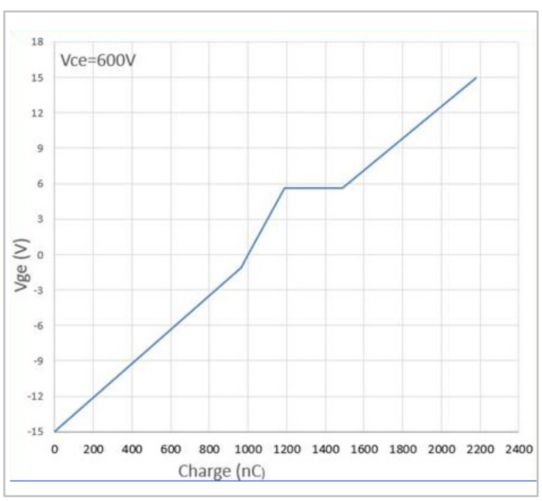


Figure 10. Gate Voltage vs. Gate Charge

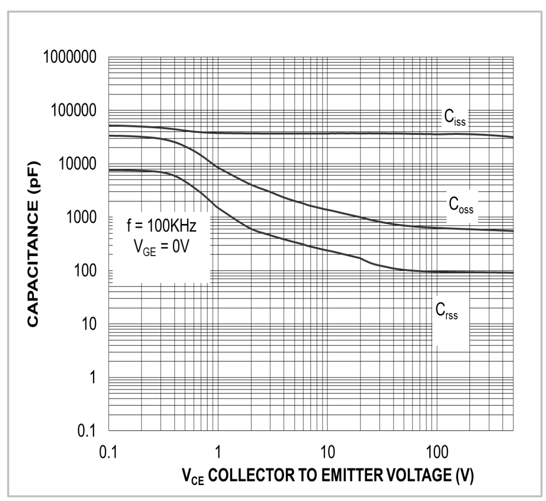


Figure 11. Capacitance

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

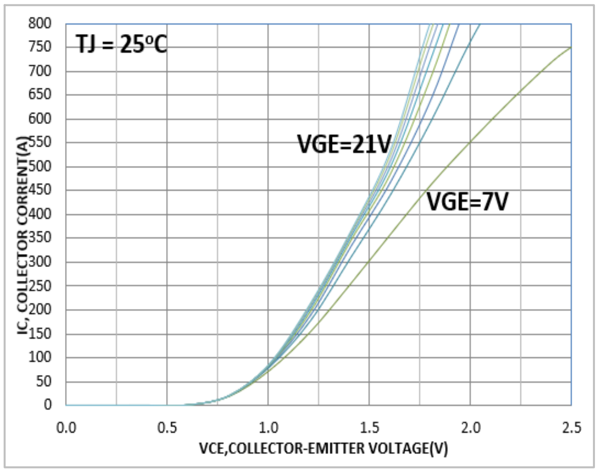


Figure 12. Typical Output Characteristics

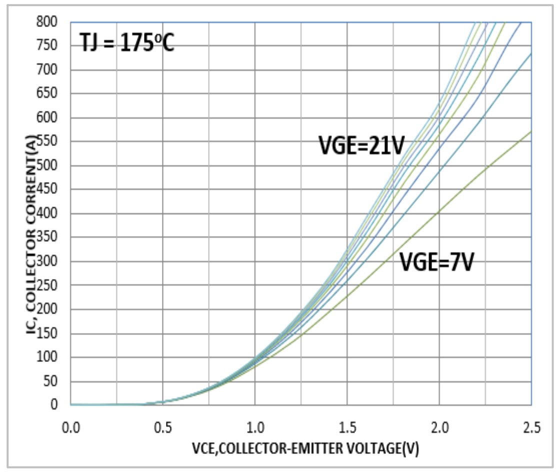


Figure 13. Typical Output Characteristics

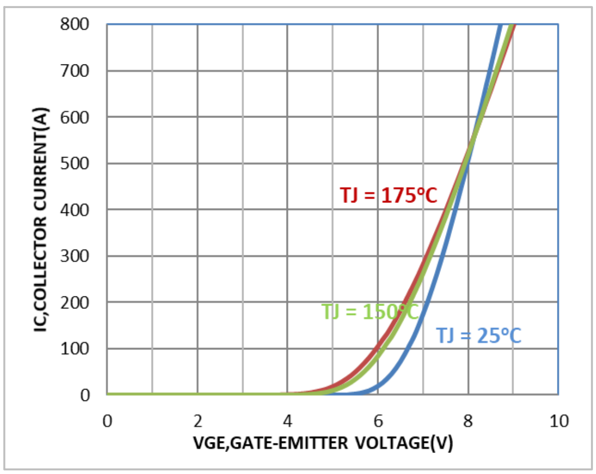


Figure 14. Typical Transfer Characteristics

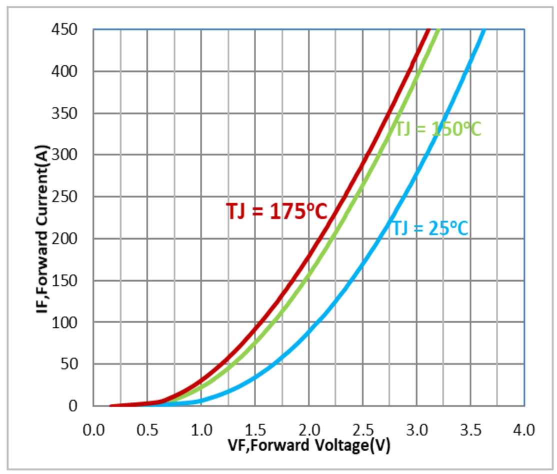


Figure 15. Diode Forward Characteristics

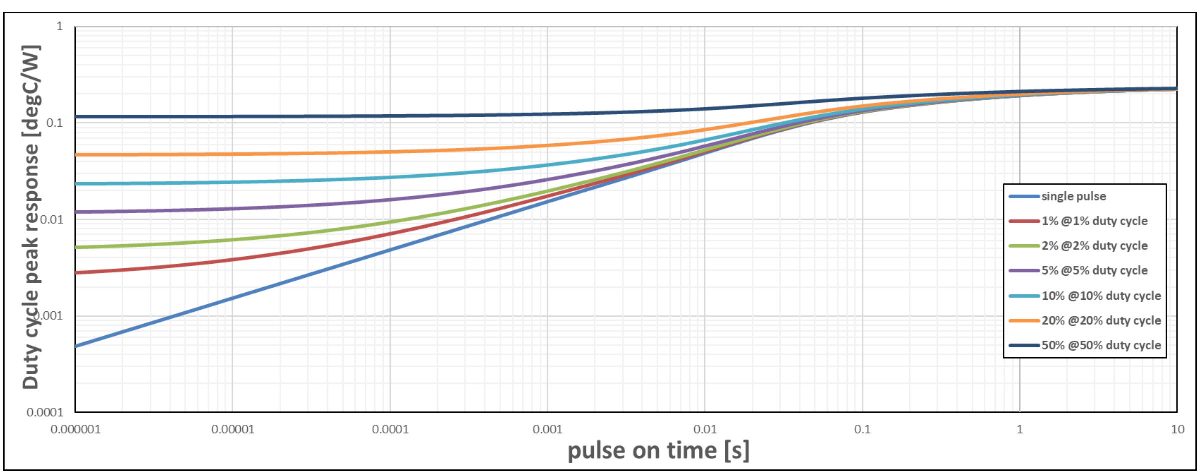


Figure 16. Transient Thermal Impedance (T2, T3)

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

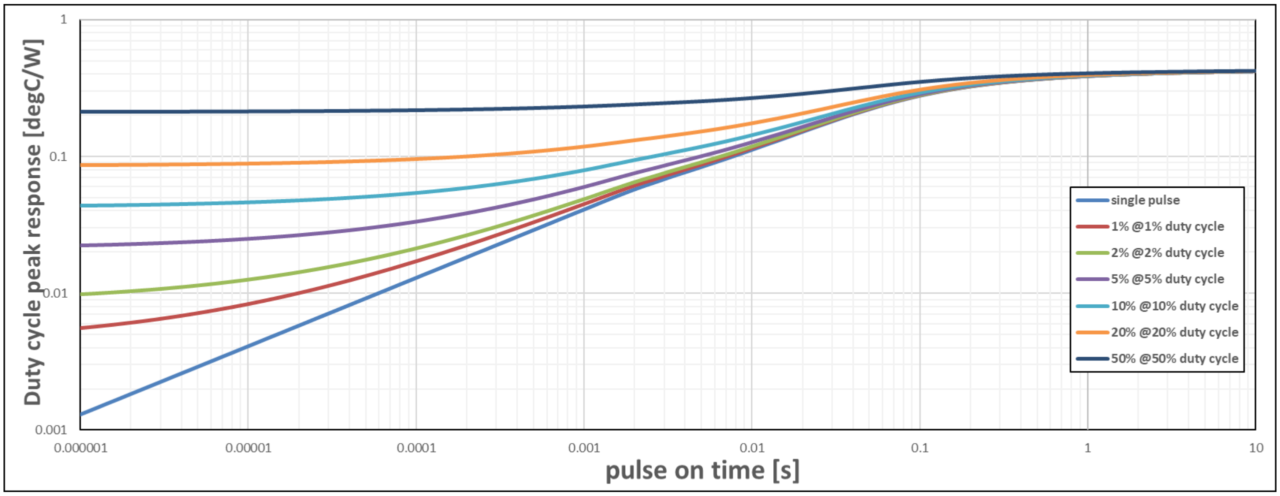


Figure 17. Transient Thermal Impedance (D1, D2, D3, D4)

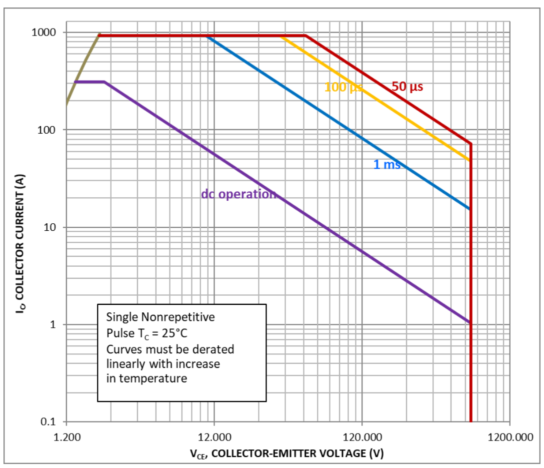


Figure 18. FBSOA (T2, T3)

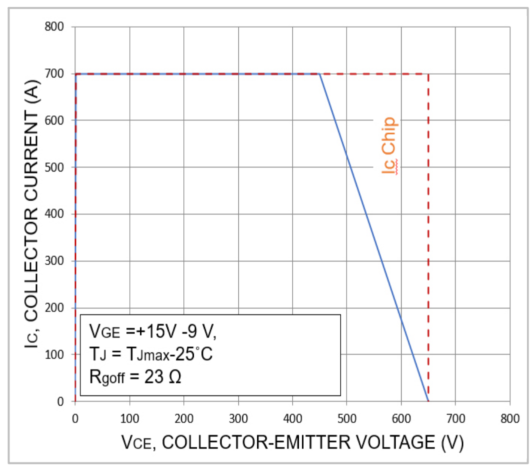


Figure 19. RBSOA (T2, T3)

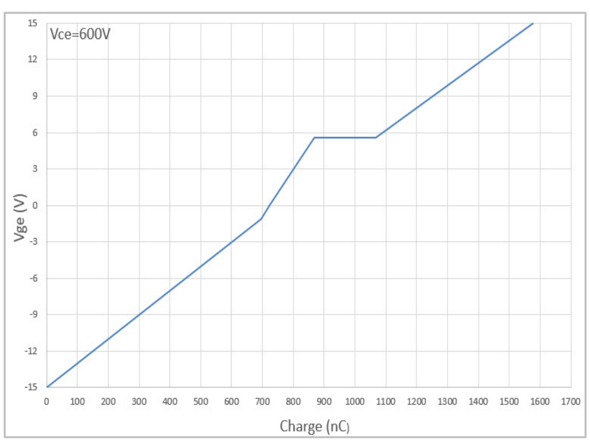


Figure 20. Gate Voltage vs. Gate Charge

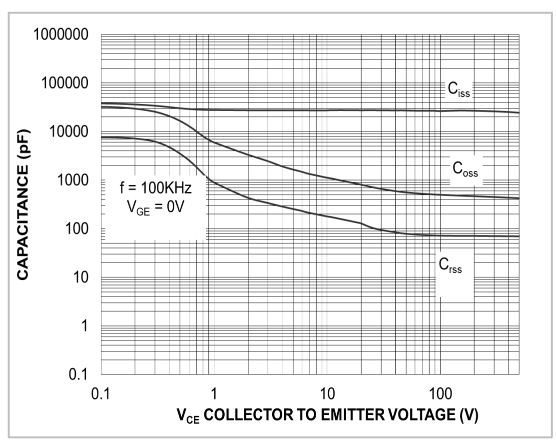


Figure 21. Capacitance

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

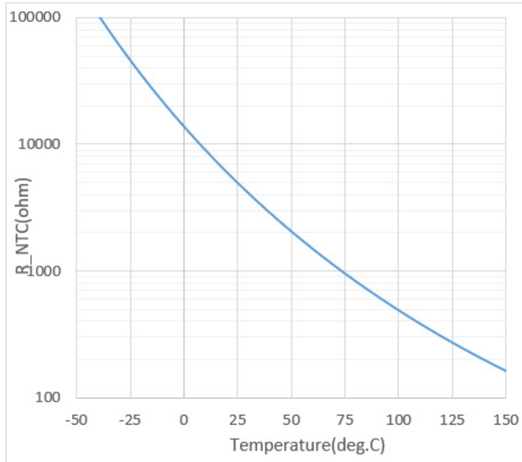


Figure 22. NTC vs. Temperature Curve

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

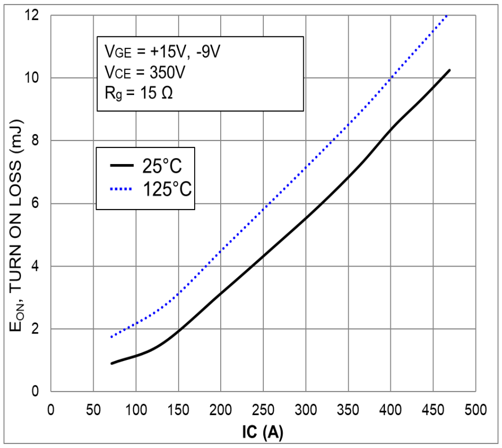


Figure 23. Typical Switching Loss Eon vs. IC

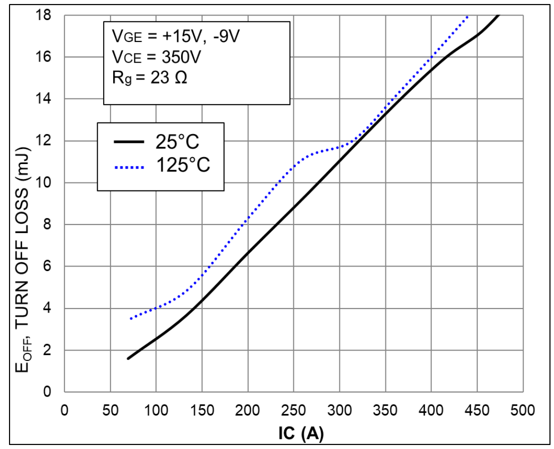


Figure 24. Typical Switching Eoff vs. IC

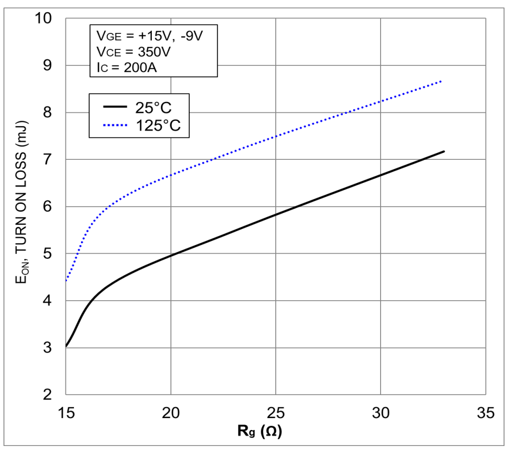


Figure 25. Typical Switching Eon vs. R_G

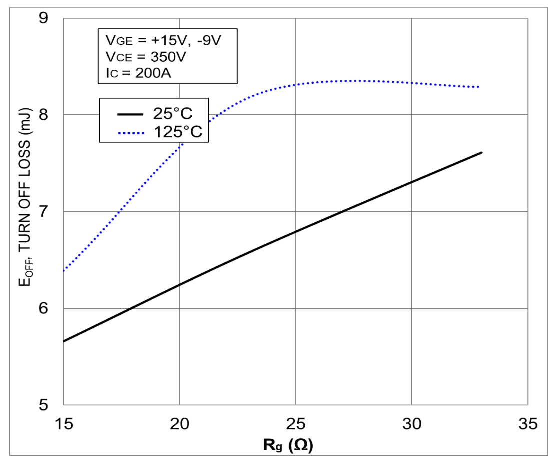


Figure 26. Typical Switching Eoff vs. R_G

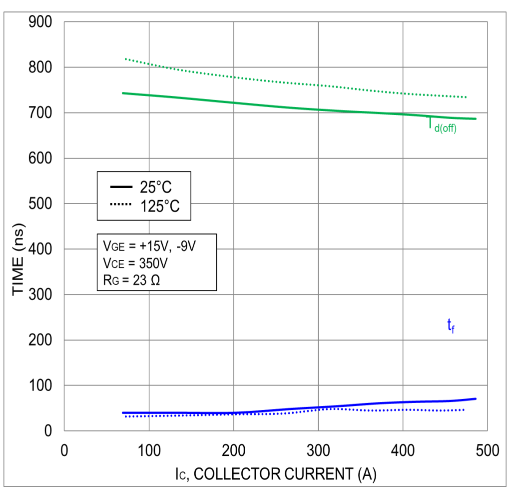


Figure 27. Typical Switching Time vs. IC

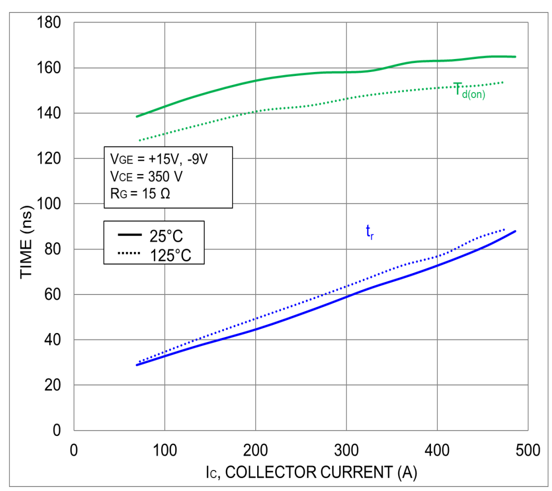


Figure 28. Typical Switching Time vs. IC

TYPICAL CHARACTERISTICS – T1/T4 IGBT COMUTATES D5/D6 DIODE (CONTINUED)

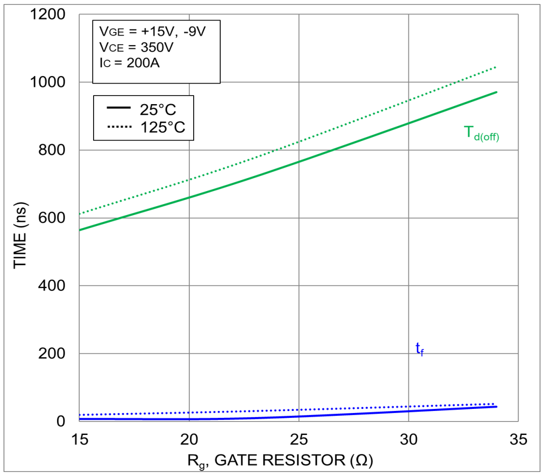


Figure 29. Typical Switching Time vs. R_G

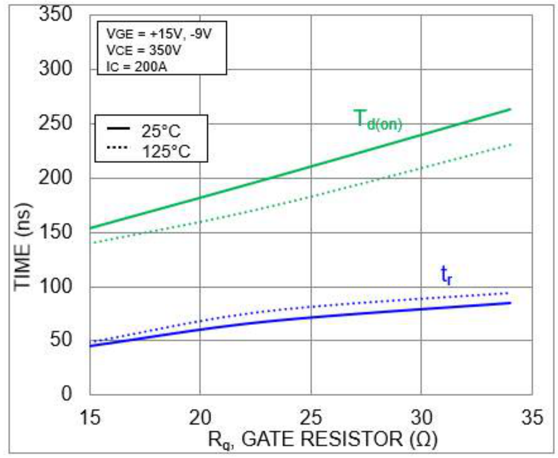


Figure 30. Typical Switching Time vs. R_G

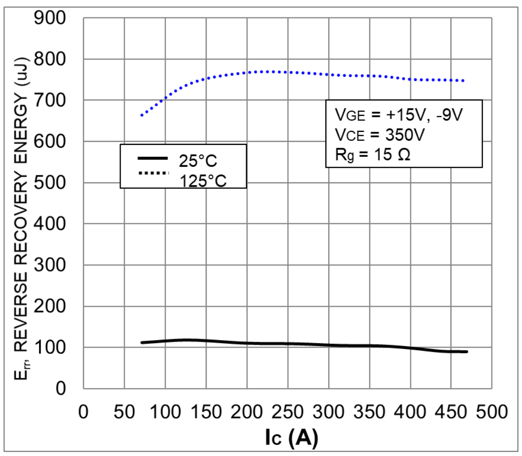


Figure 31. Typical Reverse Recovery Energy vs. IC

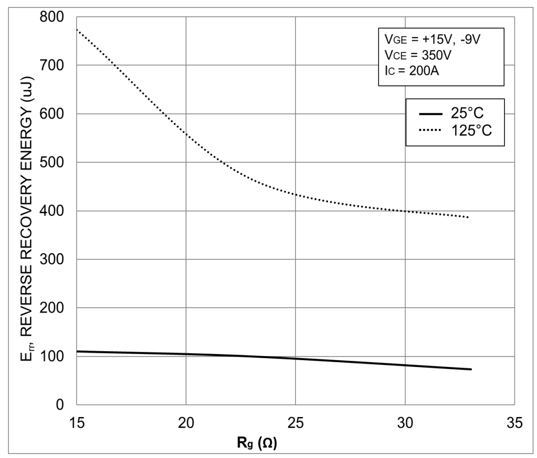


Figure 32. Typical Reverse Recovery Energy vs. Rg

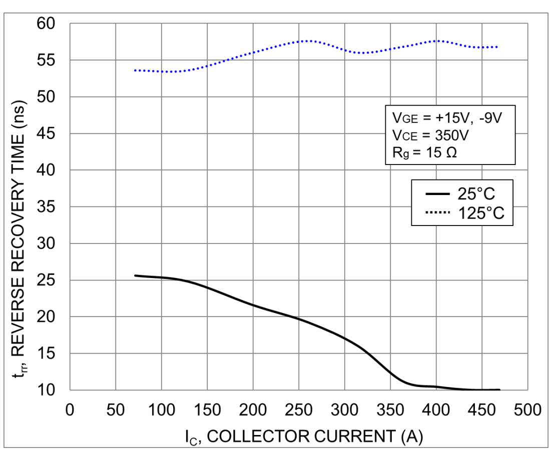


Figure 33. Typical Reverse Recovery Time vs. IC

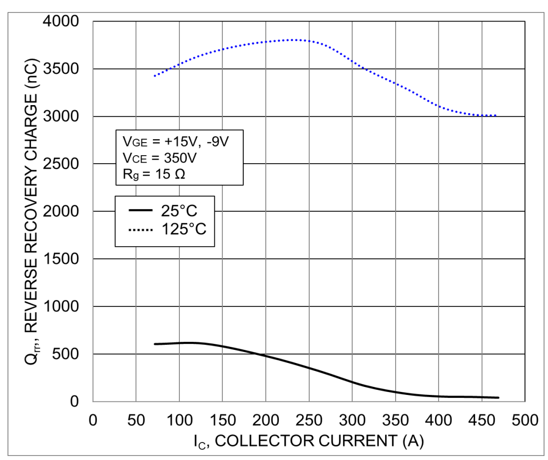


Figure 34. Typical Reverse Recovery Charge vs. IC

TYPICAL CHARACTERISTICS – T1/T4 IGBT COMUTATES D5/D6 DIODE (CONTINUED)

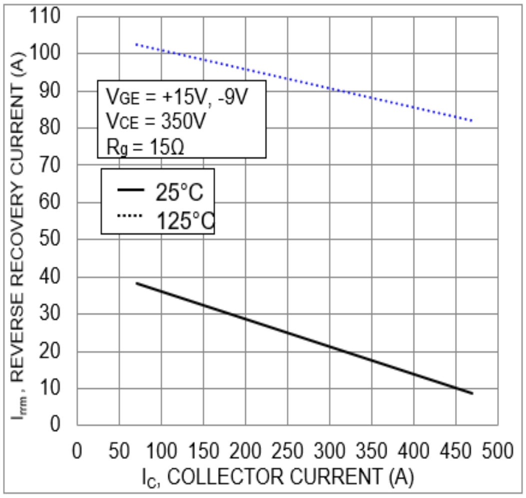


Figure 35. Typical Reverse Recovery Current vs. IC

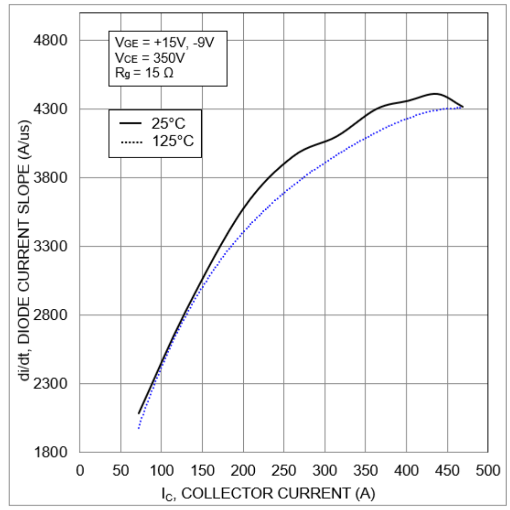


Figure 36. Typical di/dt vs. IC

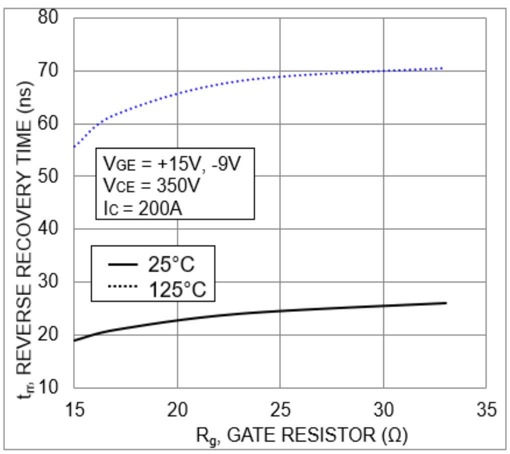


Figure 37. Typical Reverse Recovery Time vs. Rg

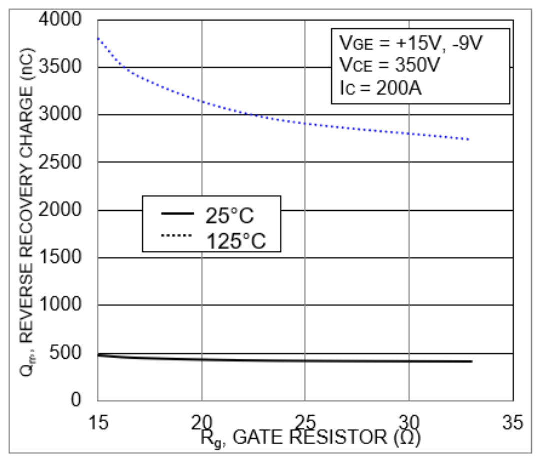


Figure 38. Typical Reverse Recovery Charge vs. Rg

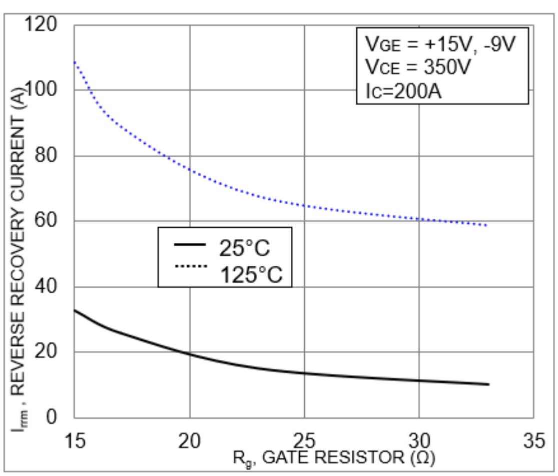


Figure 39. Typical Reverse Recovery Current vs. Rg

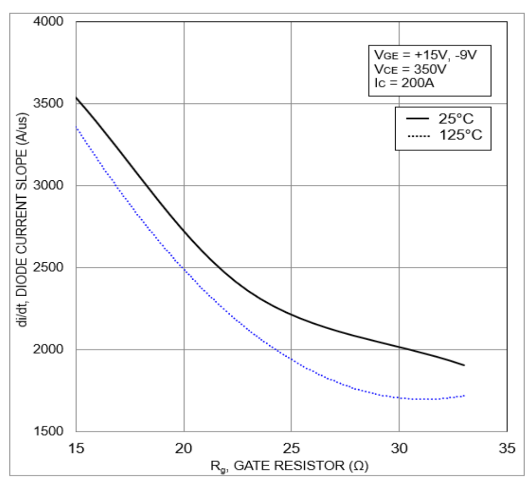


Figure 40. Typical di/dt vs. R_G

TYPICAL CHARACTERISTICS – T2/T3 IGBT COMUTATES D1/D4 DIODE

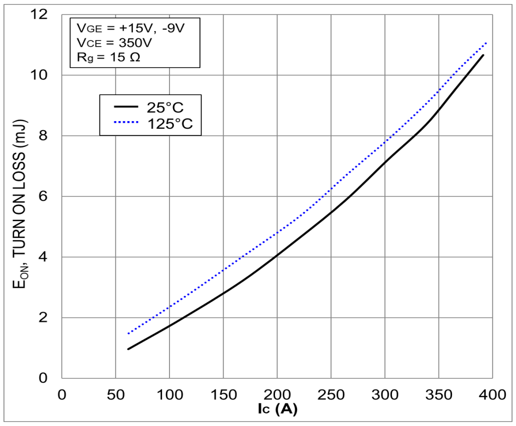


Figure 41. Typical Switching Loss Eon vs. IC

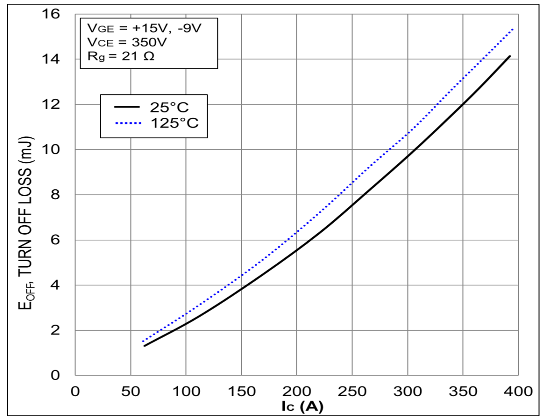


Figure 42. Typical Switching Loss Eoff vs. IC

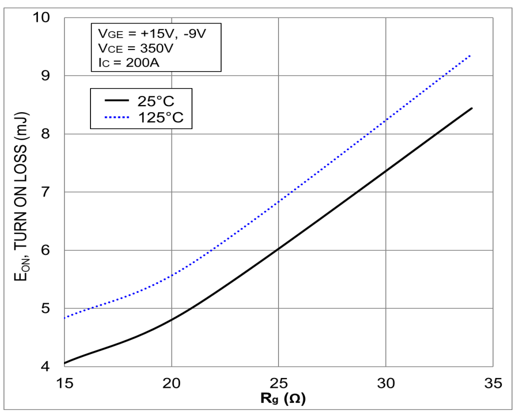


Figure 43. Typical Switching Loss Eon vs. Rg

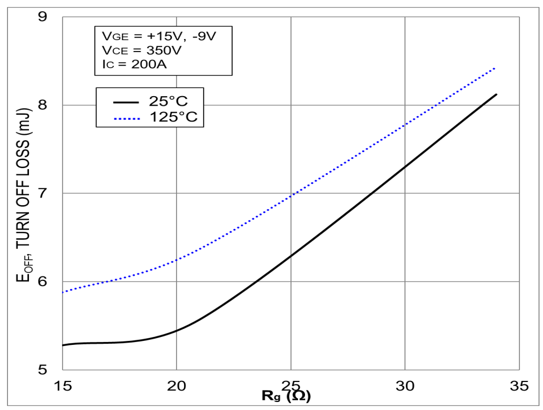


Figure 44. Typical Switching Loss Eoff vs. Rg

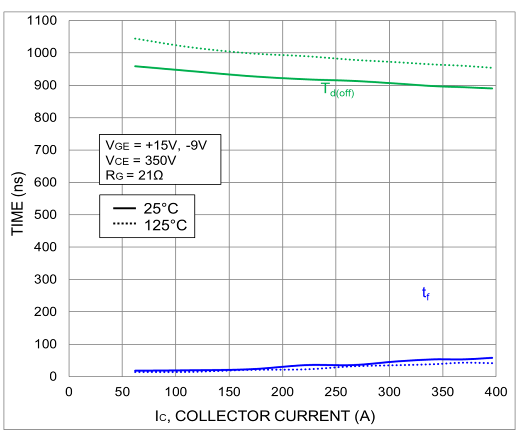


Figure 45. Typical Turn−Off Switching Time vs. IC

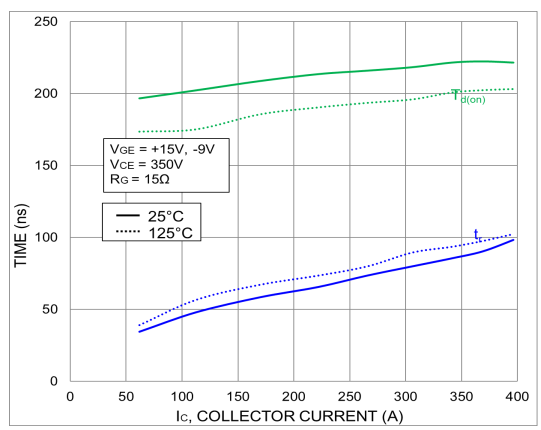


Figure 46. Typical Turn−On Switching Time vs. IC

TYPICAL CHARACTERISTICS – T2/T3 IGBT COMUTATES D1/D4 DIODE (CONTINUED)

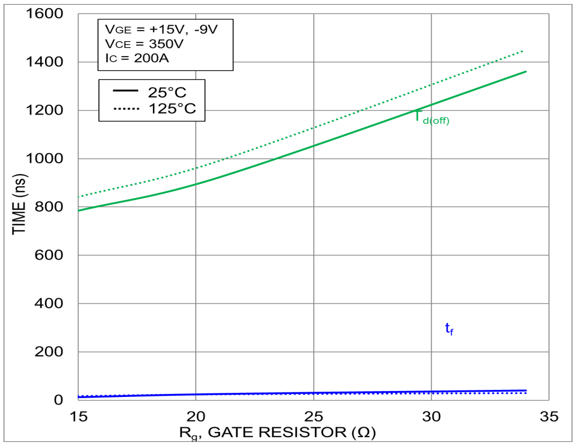


Figure 47. Typical Turn−Off Switching Time vs. Rg

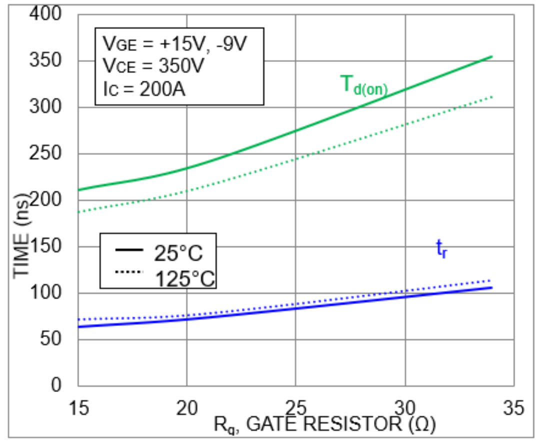


Figure 48. Typical Turn−On Switching Time vs.Rg

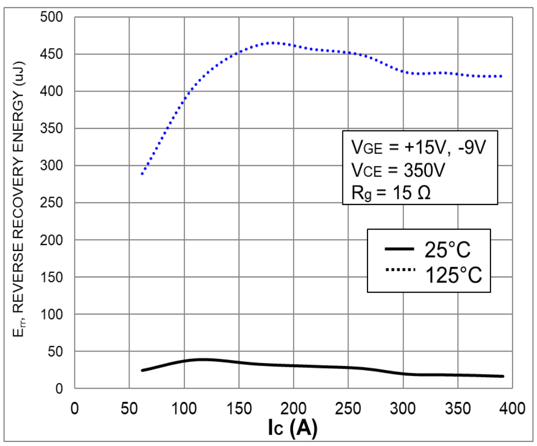


Figure 49. Typical Reverse Recovery Energy Loss vs. IC

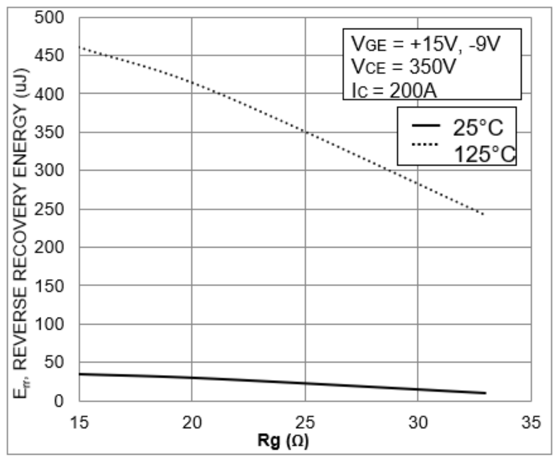


Figure 50. Typical Reverse Recovery Energy Loss vs. Rg

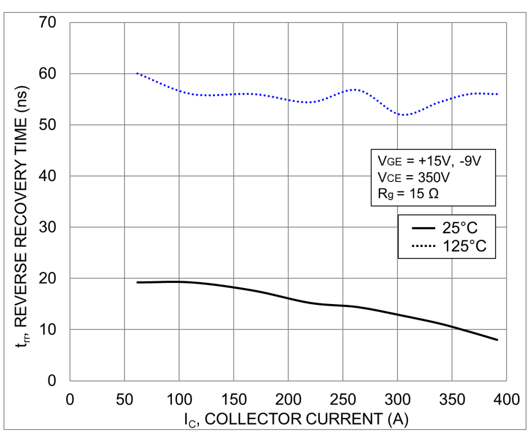


Figure 51. Typical Reverse Recovery Time vs. IC

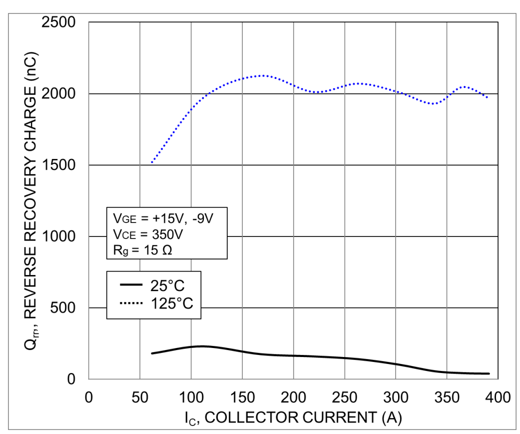


Figure 52. Typical Reverse Recovery Charge vs. IC

TYPICAL CHARACTERISTICS – T2/T3 IGBT COMUTATES D1/D4 DIODE (CONTINUED)

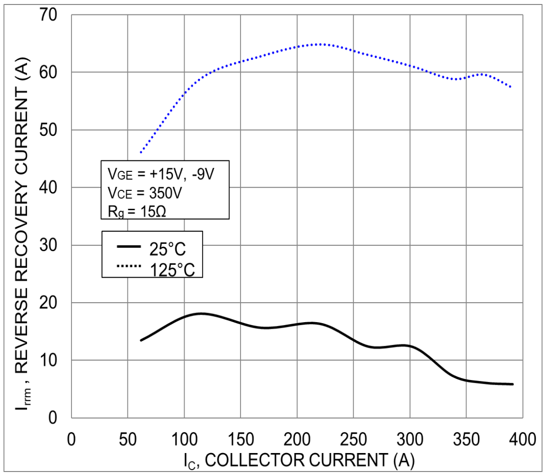


Figure 53. Typical Reverse Recovery Current vs. IC

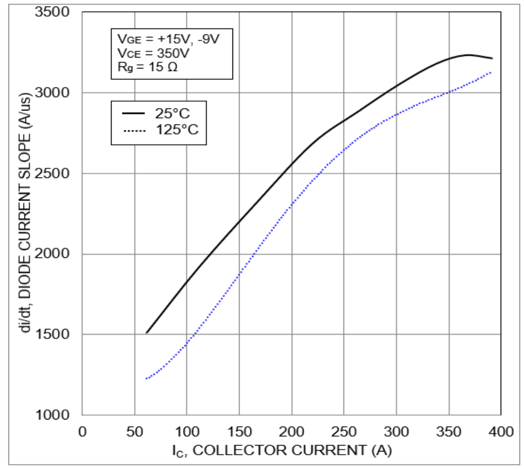


Figure 54. Typical di/dt Current Slope vs. IC

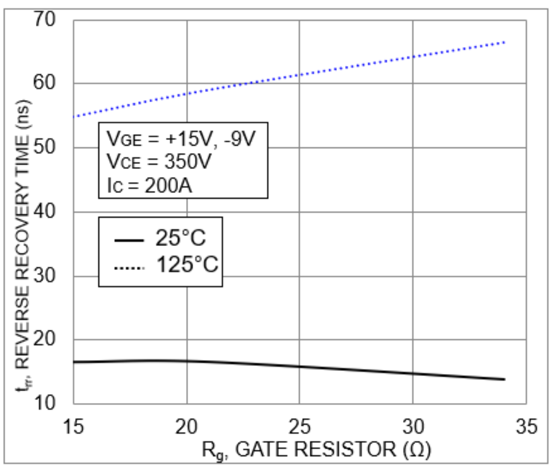


Figure 55. Typical Reverse Recovery Time vs. Rg

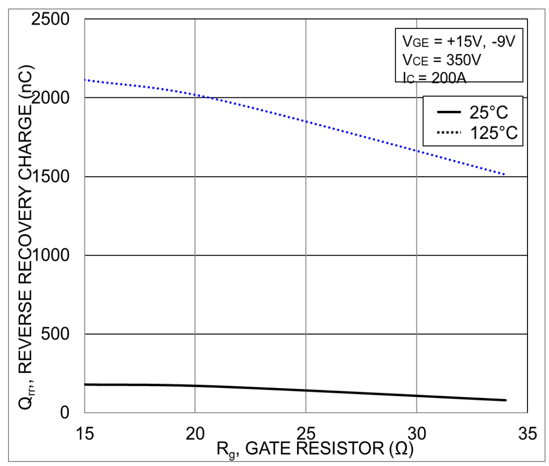


Figure 56. Typical Reverse Recovery Charge vs. Rg

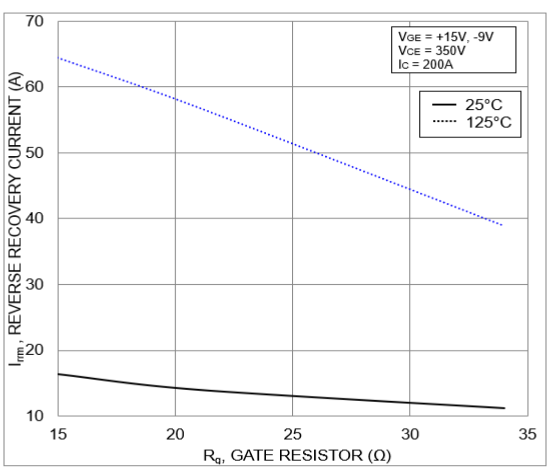


Figure 57. Typical Reverse Recovery Peak Current vs. Rg

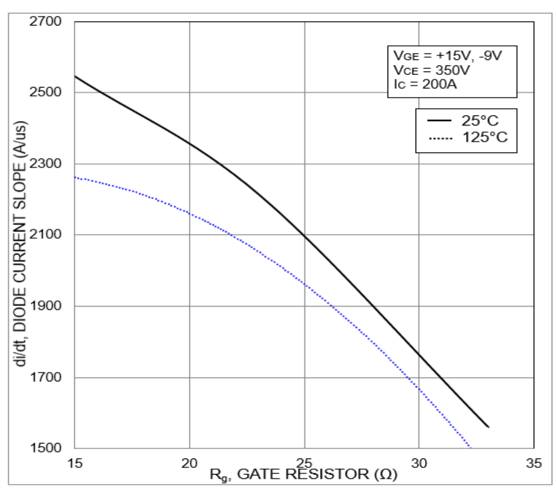


Figure 58. Typical di/dt vs. R_G

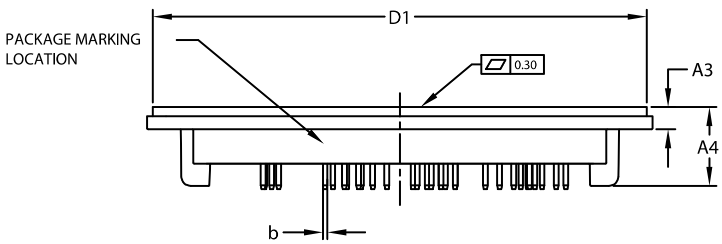
ORDERING INFORMATION

Device Order Number	Marking	Package	Shipping
NXH600N65L4Q2F2SG	NXH600N65L4Q2F2SG	Q2PACK (Pb – Free and Halide – Free)	12 Units / Blister Tray
NXH600N65L4Q2F2PG	NXH600N65L4Q2F2PG	Q2PACK (Pb – Free and Halide – Free)	12 Units / Blister Tray

PIM41, 93x47 (SOLDER PIN)

CASE 180BC
ISSUE O

DATE 27 SEP 2021

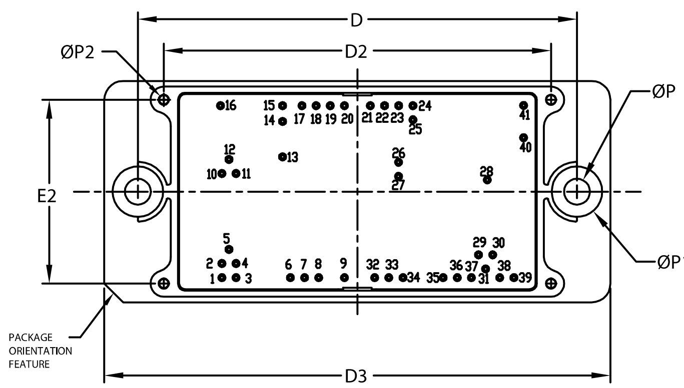


SIDE VIEW

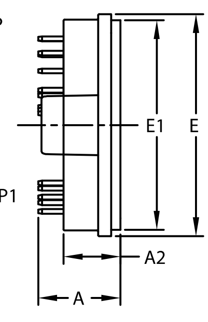
NOTES:

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

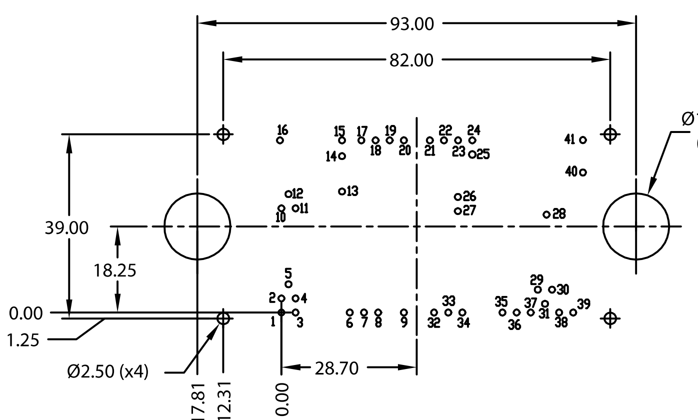
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	16.90	17.30	17.70
A2	11.70	12.00	12.30
A3	4.40	4.70	5.00
A4	16.40	16.70	17.00
b	0.95	1.00	1.05
D	92.90	93.00	93.10
D1	104.45	104.75	105.05
D2	81.80	82.00	82.20
D3	106.90	107.20	107.50
E	46.70	47.00	47.30
E1	44.10	44.40	44.70
E2	38.80	39.00	39.20
P	5.40	5.50	5.60
P1	10.60	10.70	10.80
P2	1.80	2.00	2.20



TOP VIEW



END VIEW



RECOMMENDED MOUNTING PATTERN

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

NOTE 4

PIN	PIN POSITION X	PIN POSITION Y
1	0.00	0.00
2	0.00	3.00
3	3.00	0.00
4	3.00	3.00
5	1.50	6.00
6	14.50	0.00
7	17.50	0.00
8	20.50	0.00
9	25.95	0.00
10	0.00	22.10
11	3.00	22.10
12	1.50	25.10
13	12.85	25.65
14	12.85	33.15
15	12.85	36.50
16	-0.30	36.50
17	16.95	36.50
18	19.95	36.50
19	22.95	36.50
20	25.95	36.50
21	31.45	36.50
22	34.45	36.50

PIN	PIN POSITION X	PIN POSITION Y
23	37.45	36.50
24	40.45	36.50
25	40.45	33.50
26	37.40	24.50
27	37.40	21.50
28	56.20	20.75
29	54.35	4.85
30	57.35	4.85
31	55.85	1.85
32	32.35	0.00
33	35.35	0.00
34	38.35	0.00
35	46.85	0.00
36	49.85	0.00
37	52.85	0.00
38	58.85	0.00
39	61.85	0.00
40	63.90	29.70
41	63.90	36.55

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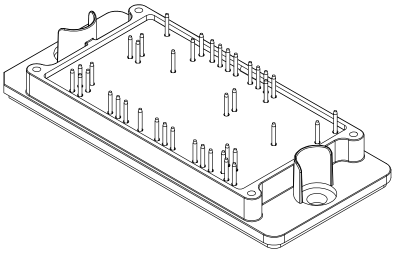
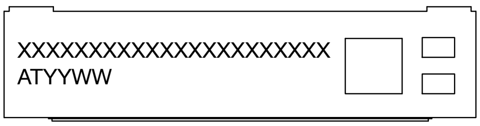
DESCRIPTION:	PIM41, 93x47 (SOLDER PIN)	PAGE 1 OF 2



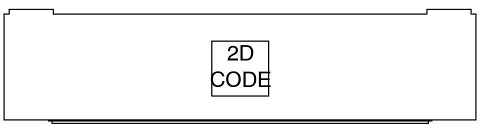
PIM41, 93x47 (SOLDER PIN)
CASE 180BC
ISSUE O

DATE 27 SEP 2021

GENERIC
MARKING DIAGRAM*



FRONTSIDE MARKING



BACKSIDE MARKING

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

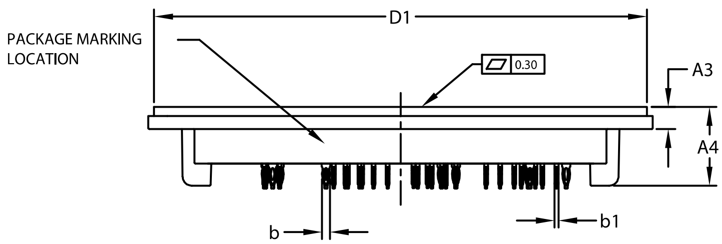
*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, "G" or microdot " ▪", may or may not be present. Some products may not follow the Generic Marking.

DOCUMENT NUMBER:	98AON38148H	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	PIM41, 93x47 (SOLDER PIN)	PAGE 2 OF 2

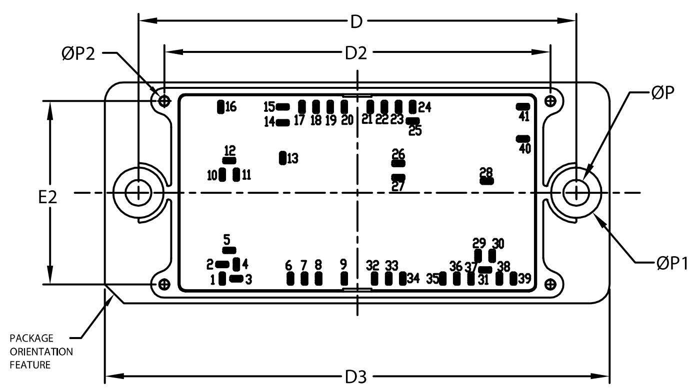
onsemi

PIM41, 93x47 (PRESS FIT)
CASE 180HD
ISSUE O

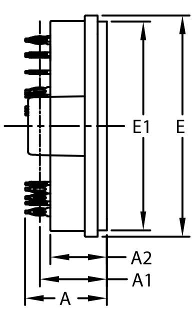
DATE 22 SEP 2021



SIDE VIEW



TOP VIEW



END VIEW

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009
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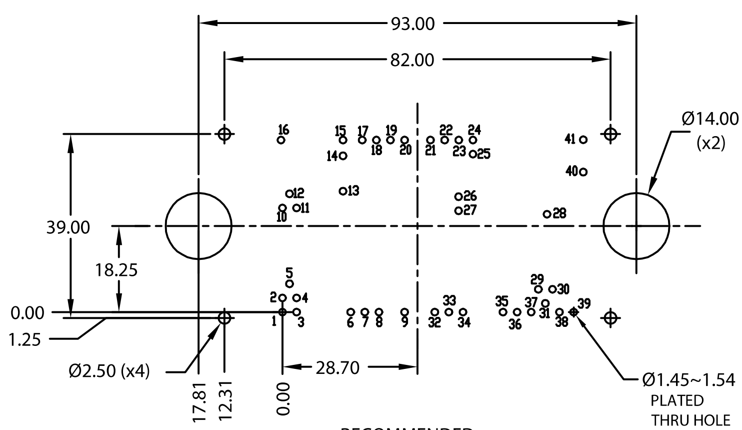
4. PIN POSITION TOLERANCE IS ± 0.4mm
5. PACKAGE MARKING IS LOCATED AS SHOWN ON THE SIDE OPPOSITE THE PACKAGE ORIENTATION FEATURES

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



RECOMMENDED
MOUNTING PATTERN

NOTE 4

PIN	PIN POSITION	
	X	Y
1	0.00	0.00
2	0.00	3.00
3	3.00	0.00
4	3.00	3.00
5	1.50	6.00
6	14.50	0.00
7	17.50	0.00
8	20.50	0.00
9	25.95	0.00
10	0.00	22.10
11	3.00	22.10
12	1.50	25.10
13	12.85	25.65
14	12.85	33.15
15	12.85	36.50
16	-0.30	36.50
17	16.95	36.50
18	19.95	36.50
19	22.95	36.50
20	25.95	36.50
21	31.45	36.50
22	34.45	36.50

PIN	PIN POSITION	
	X	Y
23	37.45	36.50
24	40.45	36.50
25	40.45	33.50
26	37.40	24.50
27	37.40	21.50
28	56.20	20.75
29	54.35	4.85
30	57.35	4.85
31	55.85	1.85
32	32.35	0.00
33	35.35	0.00
34	38.35	0.00
35	46.85	0.00
36	49.85	0.00
37	52.85	0.00
38	58.85	0.00
39	61.85	0.00
40	63.90	29.70
41	63.90	36.55

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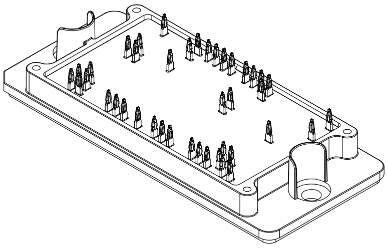
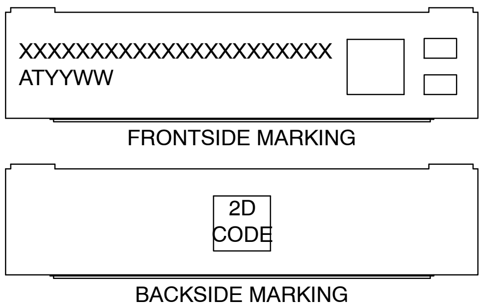
DESCRIPTION:	**PIM41, 93x47 (PRESS FIT)**	**PAGE 1 OF 2**



PIM41, 93x47 (PRESS FIT)
CASE 180HD
ISSUE O

DATE 22 SEP 2021

**GENERIC
MARKING DIAGRAM***



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.

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DESCRIPTION:	**PIM41, 93x47 (PRESS FIT)**	**PAGE 2 OF 2**

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