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

NXH350N100H4Q2F2P1G, NXH350N100H4Q2F2S1G, NXH350N100H4Q2F2S1G-R, NXH350N100H4Q2F2P1G-R

This high−density, integrated power module combines high−performance IGBTs with rugged anti−parallel diodes.

Features

- Extremely Efficient Trench with Field Stop Technology
- Low Switching Loss Reduces System Power Dissipation
- Module Design Offers High Power Density
- Low Inductive Layout
- Low Package Height
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

Typical Applications

- Solar Inverters
- Uninterruptable Power Supplies Systems

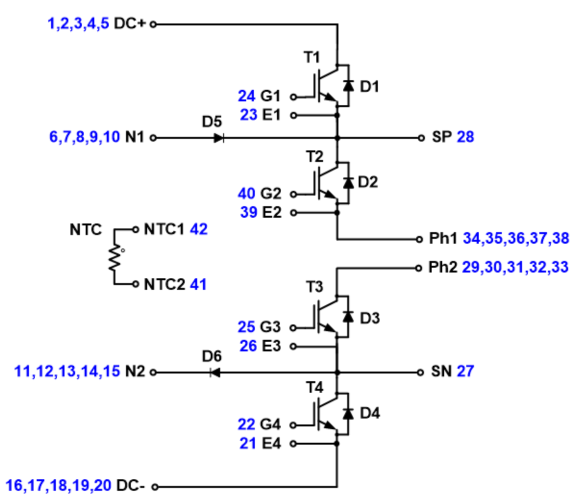
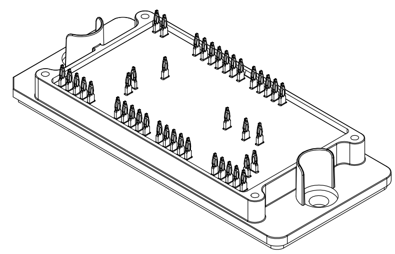
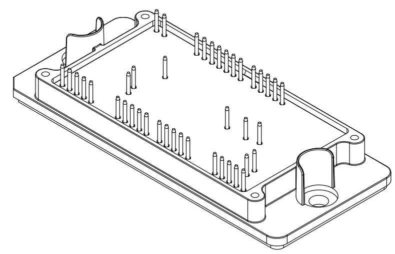


Figure 1. NXH350N100H4Q2F2P1G/S1G/S1G−R/P1G−R Schematic Diagram

PACKAGE PICTURE

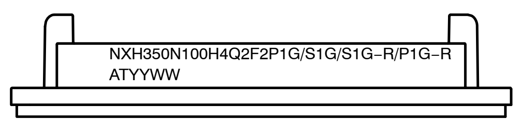


Q2PACK INPC PRESS FIT PINS
CASE 180BH



Q2PACK INPC SOLDER PINS
CASE 180BS

MARKING DIAGRAM



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

PIN CONNECTIONS

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

ORDERING INFORMATION

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

PIN CONNECTIONS

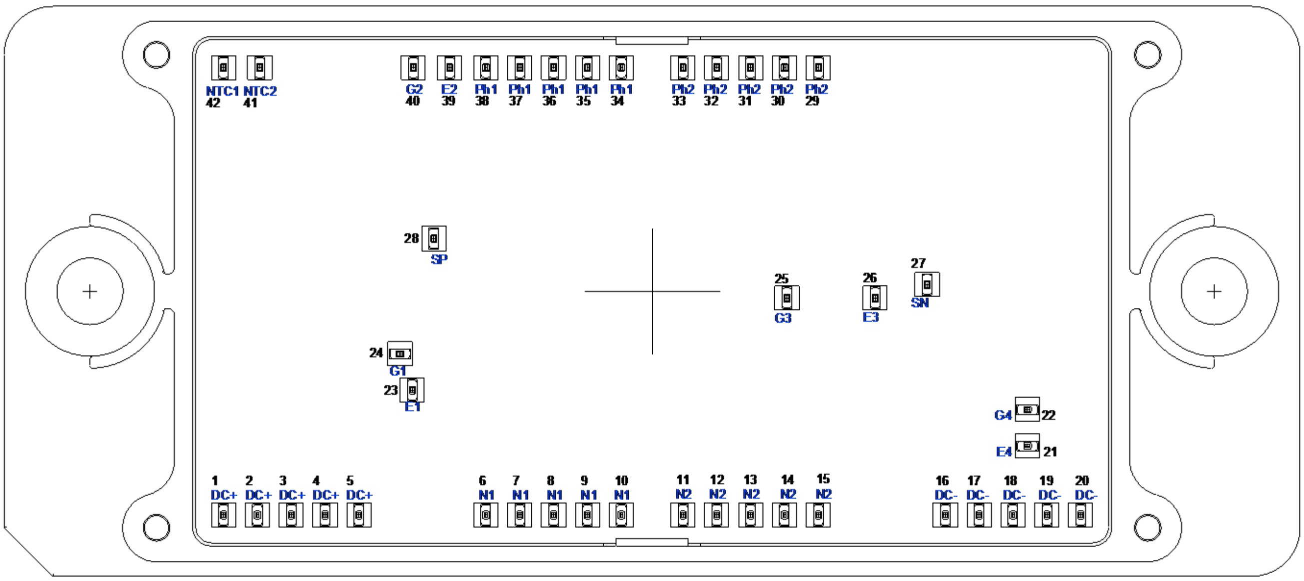


Figure 2. Pin Connections

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

Rating	Symbol	Value	Unit
OUTER IGBT (T1, T4)			
Collector-Emitter Voltage	V_{CES}	1000	V
Gate-Emitter Voltage Positive Transient Gate−Emitter Voltage (T_{pulse} = 5 μs, D < 0.10)	V_{GE}	±20 30	V
Continuous Collector Current @ T_C = 80°C	I_C	303	A
Pulsed Peak Collector Current @ T_C = 80°C (T_J = 150°C)	$I_{C(Pulse)}$	909	A
Maximum Power Dissipation (T_J = 150°C)	P_{tot}	592	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
INNER IGBT (T2, T3)			
Collector-Emitter Voltage	V_{CES}	1000	V
Gate-Emitter Voltage Positive Transient Gate−Emitter Voltage (T_{pulse} = 5 μs, D < 0.10)	V_{GE}	±20 30	V
Continuous Collector Current @ T_C = 80°C	I_C	298	A
Pulsed Peak Collector Current @ T_C = 80°C (T_J = 150°C)	$I_{C(Pulse)}$	894	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	731	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
IGBT INVERSE DIODE (D1, D2, D3, D4)			
Peak Repetitive Reverse Voltage	V_{RRM}	1000	V
Continuous Forward Current @ T_C = 80°C	I_F	133	A
Repetitive Peak Forward Current (T_J = 175°C)	I_{FRM}	399	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	276	W

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

Rating	Symbol	Value	Unit
IGBT INVERSE DIODE (D1, D2, D3, D4)			
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
NEUTRAL POINT DIODE (D5, D6)			
Peak Repetitive Reverse Voltage	V_{RRM}	1200	V
Continuous Forward Current @ T_C = 80°C	I_F	98	A
Repetitive Peak Forward Current (T_J = 175°C)	I_{FRM}	294	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	239	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
THERMAL PROPERTIES			
Operating Temperature under Switching Condition	T_{VJOP}	−40 to +150	°C
Storage Temperature Range	T_{stg}	−40 to +125	°C
INSULATION PROPERTIES			
Isolation Test Voltage, t = 1 s, 50 Hz (Note 2)	V_{is}	4000	V_{RMS}
Creepage Distance		12.7	mm
Comparative Tracking Index	CTI	> 600	

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Refer to ELECTRICAL CHARACTERISTICS and/or APPLICATION INFORMATION for Safe Operating parameters.
2. 4000 VAC_{RMS} for 1 second duration is equivalent to 3333 VAC_{RMS} for 1 minute duration.

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

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

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

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

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

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

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

ORDERING INFORMATION

Part Number	Marking	Package	Shipping
NXH350N100H4Q2F2P1G, NXH350N100H4Q2F2P1G−R PRESS FIT PINS	NXH350N100H4Q2F2P1G, NXH350N100H4Q2F2P1G−R	Q2PACK (Pb−Free/Halide−Free)	12 Units / Blister Tray
NXH350N100H4Q2F2S1G, NXH350N100H4Q2F2S1G−R SOLDER PINS	NXH350N100H4Q2F2S1G, NXH350N100H4Q2F2S1G−R	Q2PACK (Pb−Free/Halide−Free)	12 Units / Blister Tray

TYPICAL CHARACTERISTICS – OUTER IGBT, INNER IGBT

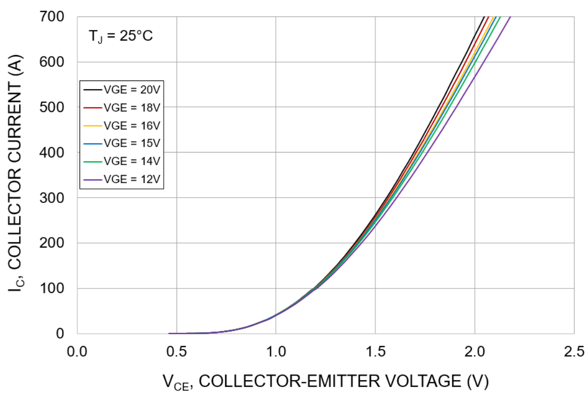


Figure 3. Typical Output Characteristics – Outer IGBT

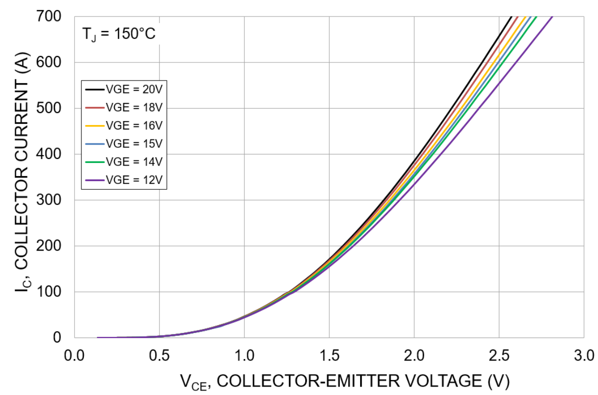


Figure 4. Typical Output Characteristics – Outer IGBT

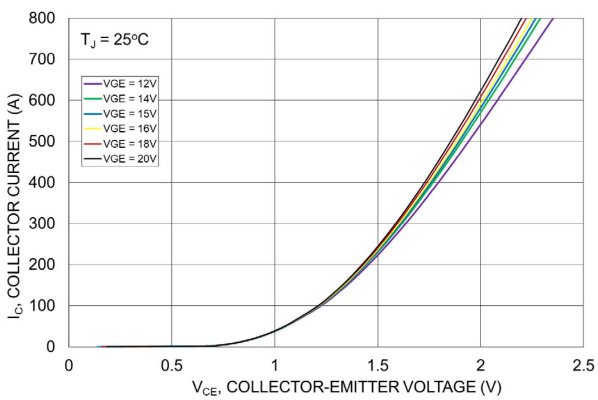


Figure 5. Typical Output Characteristics – Inner IGBT

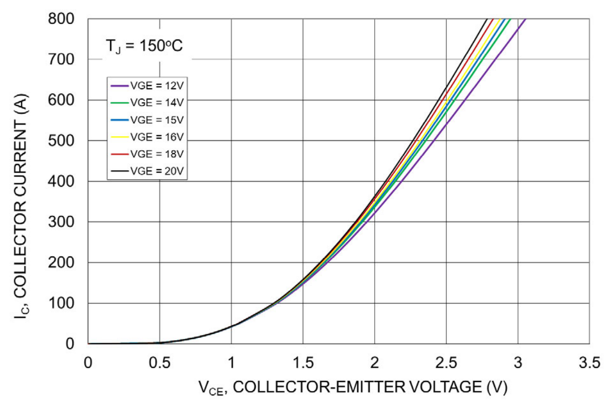


Figure 6. Typical Output Characteristics – Inner IGBT

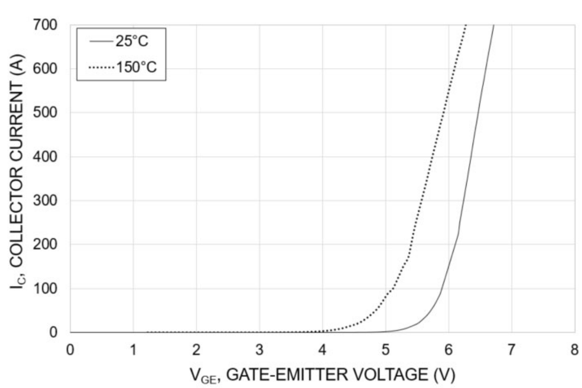


Figure 7. Transfer Characteristics – Outer IGBT

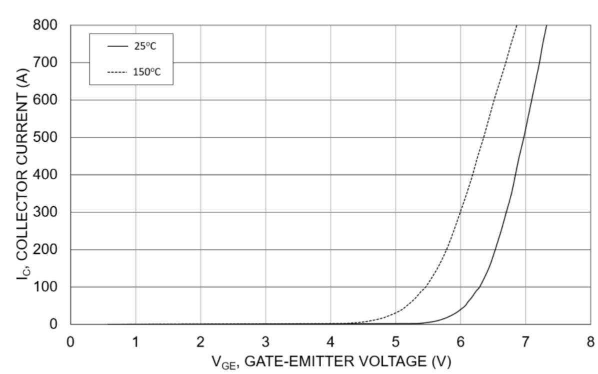


Figure 8. Transfer Characteristics – Inner IGBT

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

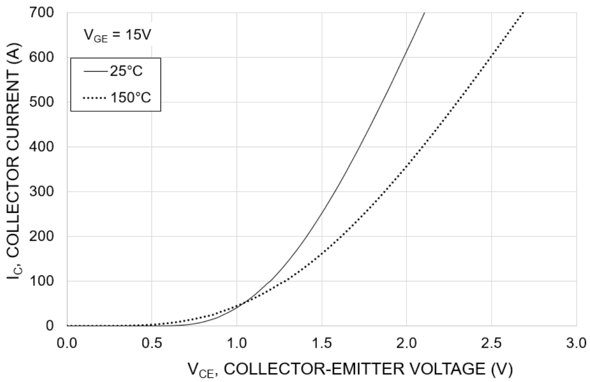


Figure 9. Typical Saturation Voltage Characteristics − Outer IGBT

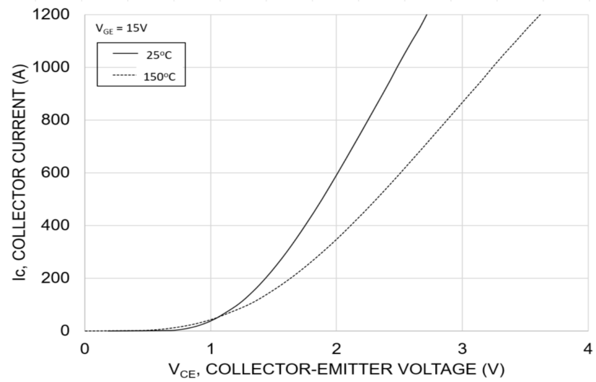


Figure 10. Typical Saturation Voltage Characteristics − Inner IGBT

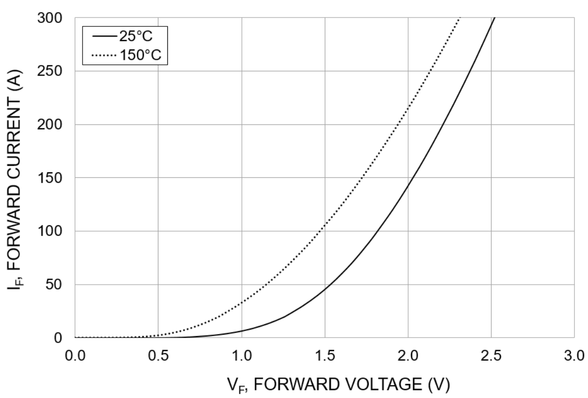


Figure 11. Inverse Diode Forward Characteristics

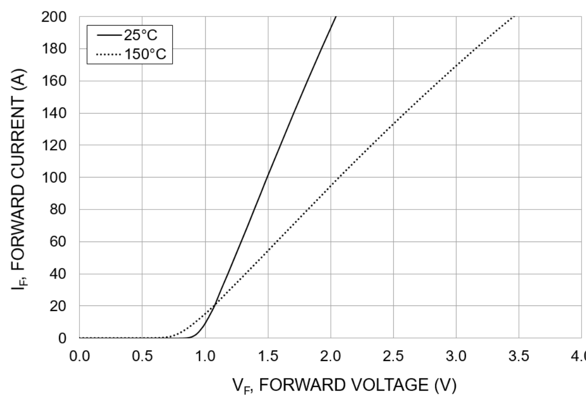


Figure 12. Buck Diode Forward Characteristics

TYPICAL SWITCHING CHARACTERISTICS – OUTER IGBT

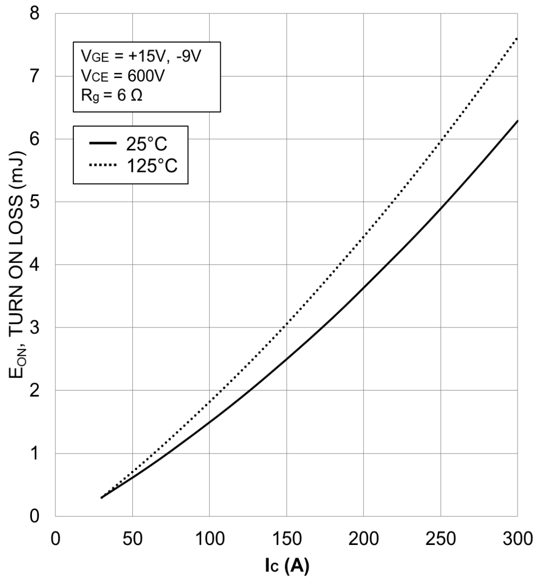


Figure 13. Typical Turn On Loss vs. I_C

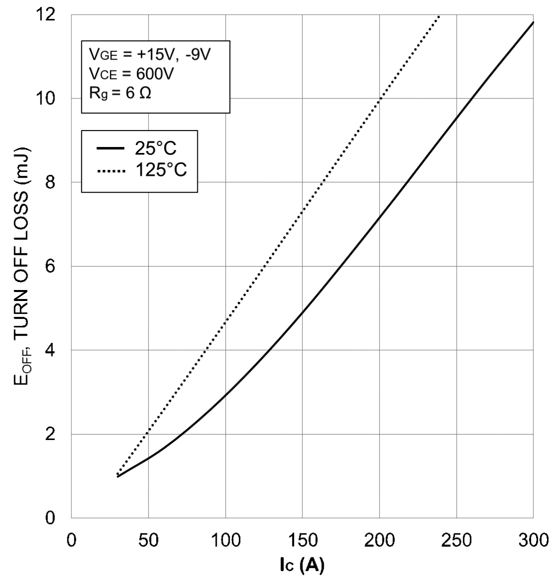


Figure 14. Typical Turn Off Loss vs. I_C

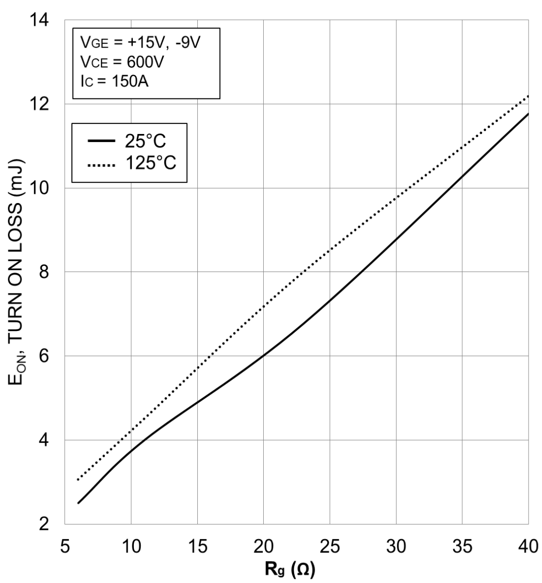


Figure 15. Typical Turn On Loss vs. R_G

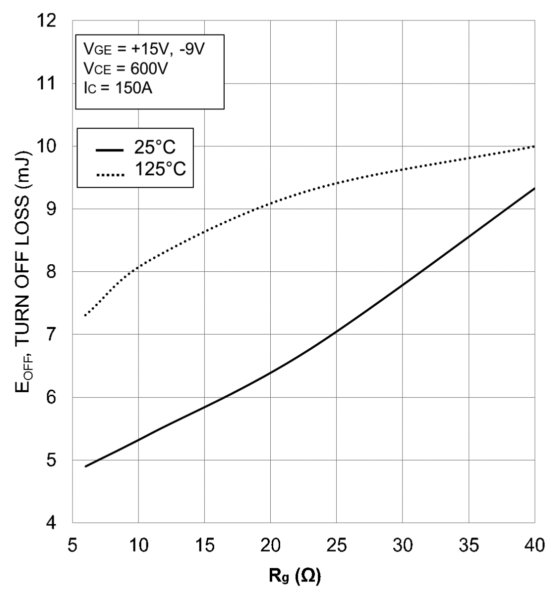


Figure 16. Typical Turn Off Loss vs. R_G

TYPICAL SWITCHING CHARACTERISTICS – OUTER IGBT (CONTINUED)

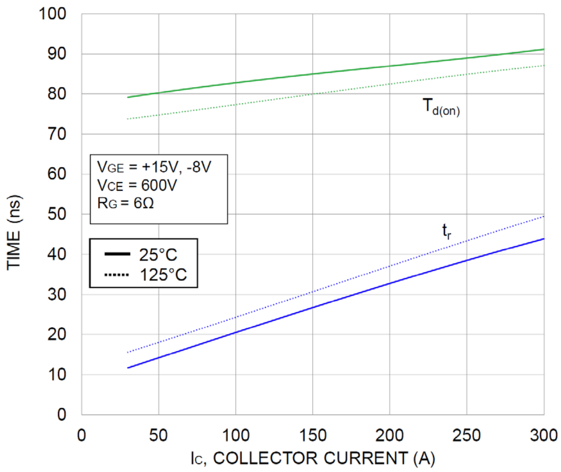


Figure 17. Typical Turn On Switching Time vs. I_C

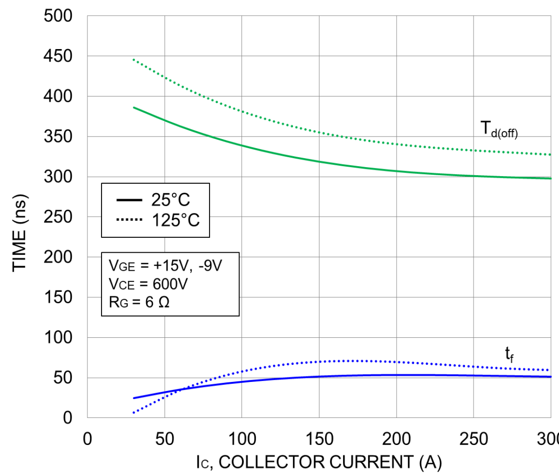


Figure 18. Typical Turn Off Switching Time vs. I_C

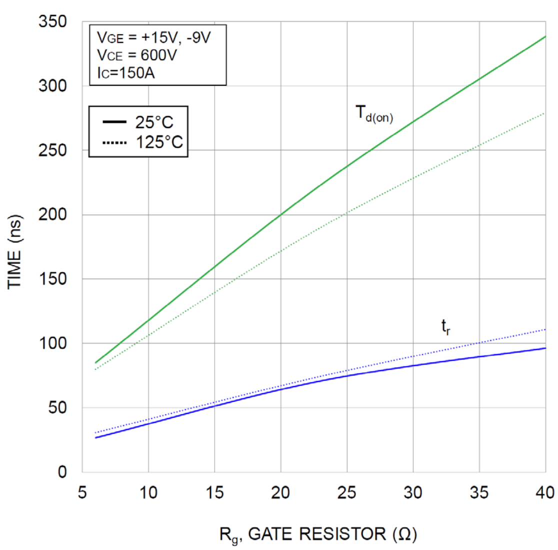


Figure 19. Typical Turn On Switching Time vs. R_G

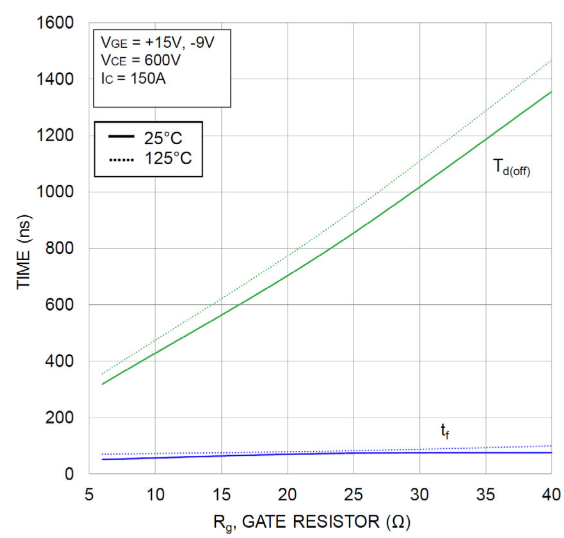


Figure 20. Typical Turn Off Switching Time vs. R_G

TYPICAL SWITCHING CHARACTERISTICS – INNER IGBT

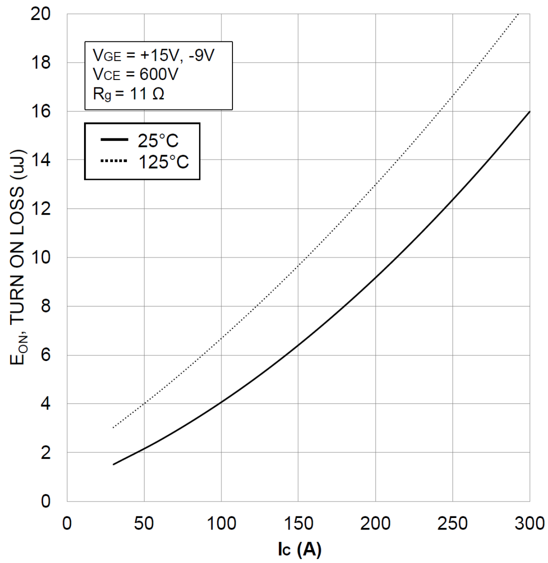


Figure 21. Typical Turn On Loss vs. I_C

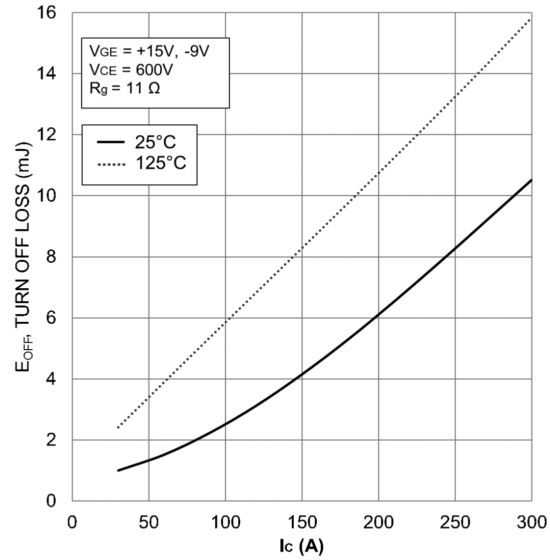


Figure 22. Typical Turn Off Loss vs. I_C

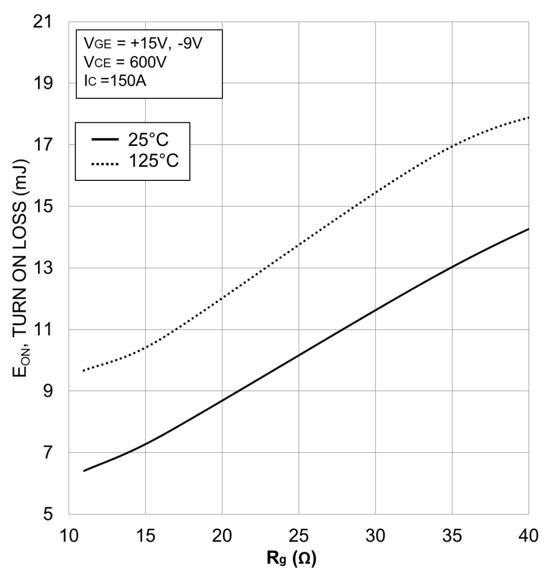


Figure 23. Typical Turn On Loss vs. R_G

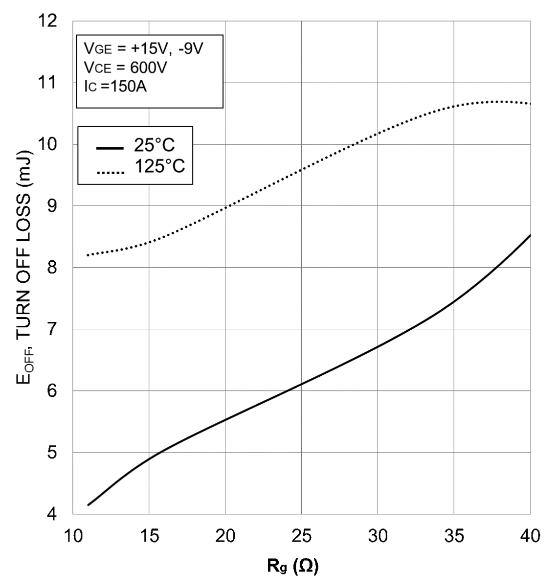


Figure 24. Typical Turn Off Loss vs. R_G

TYPICAL SWITCHING CHARACTERISTICS – INNER IGBT (CONTINUED)

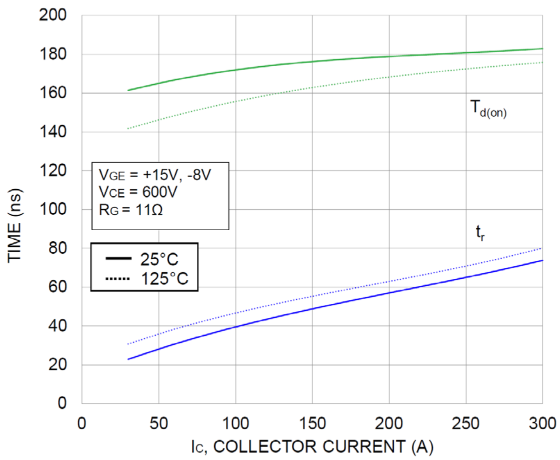


Figure 25. Typical Turn On Switching Time vs. I_C

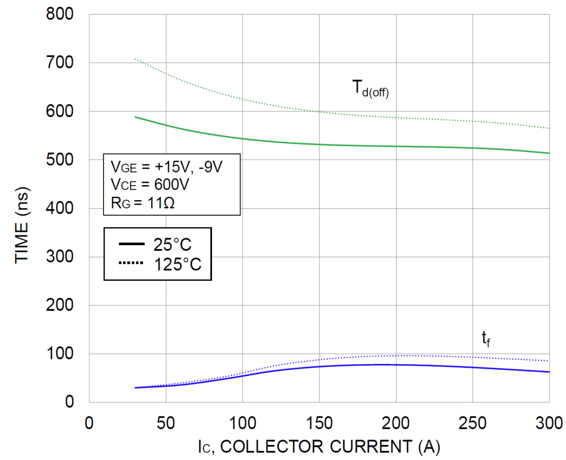


Figure 26. Typical Turn Off Switching Time vs. I_C

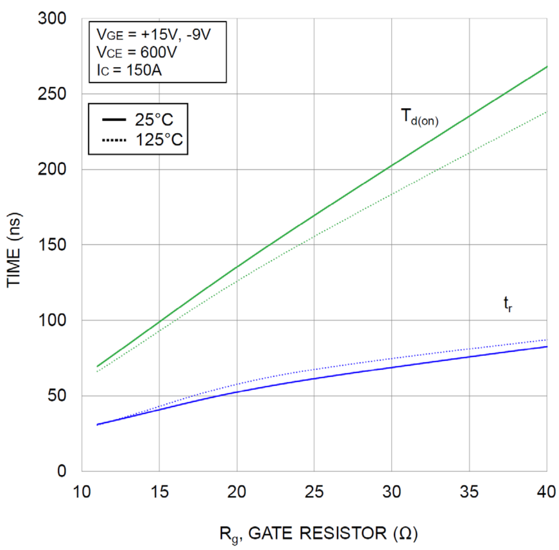


Figure 27. Typical Turn On Switching Time vs. R_G

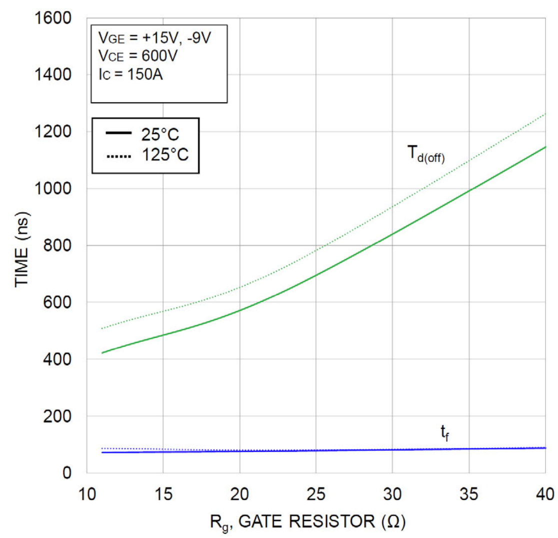


Figure 28. Typical Turn Off Switching Time vs. R_G

TYPICAL SWITCHING CHARACTERISTICS – INVERSE DIODE

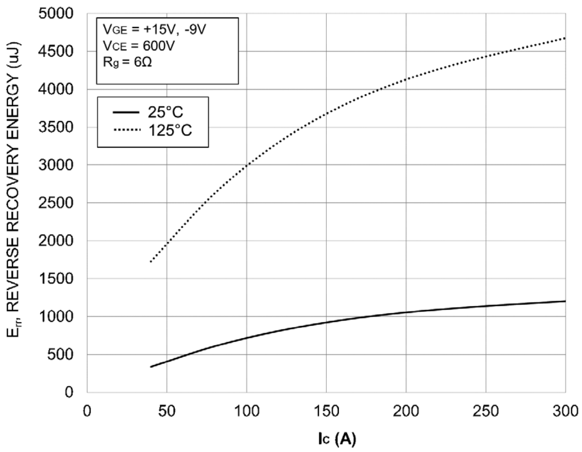


Figure 29. Typical Reverse Recovery Energy Loss vs. I_C

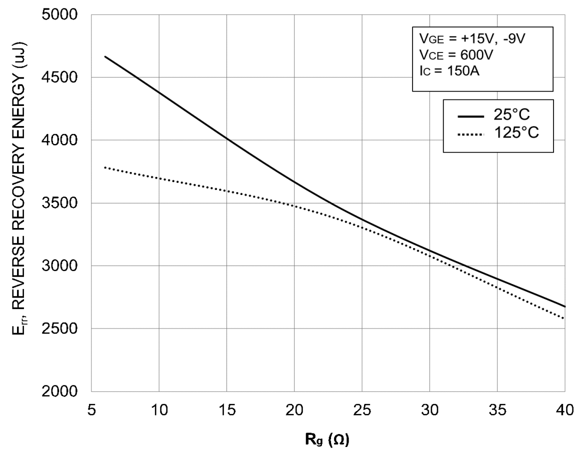


Figure 30. Typical Reverse Recovery Energy Loss vs. R_G

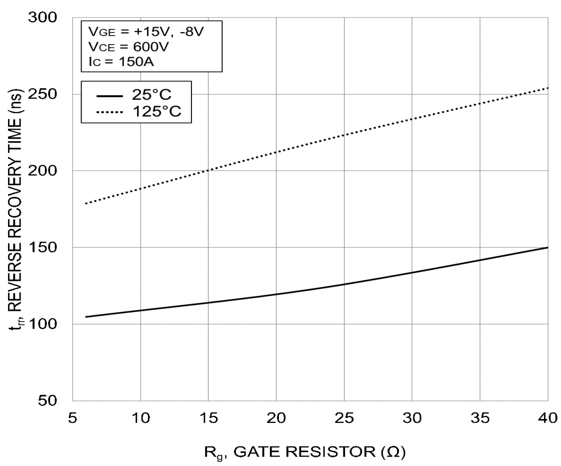


Figure 31. Typical Reverse Recovery Time vs. R_G

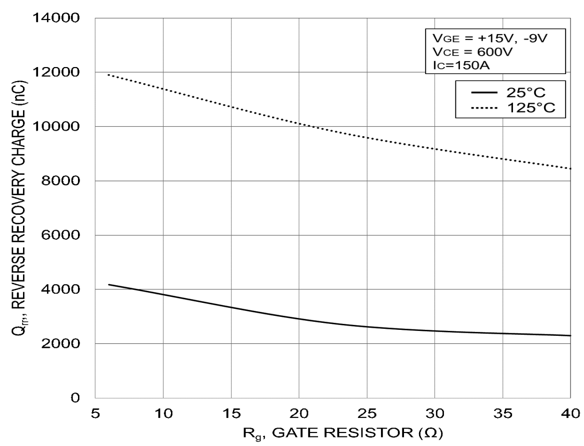


Figure 32. Typical Reverse Recovery Charge vs. R_G

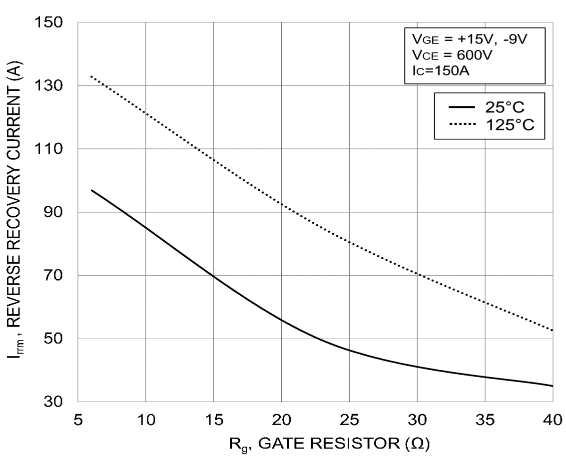


Figure 33. Typical Reverse Recovery Peak Current vs. R_G

TYPICAL SWITCHING CHARACTERISTICS – NEUTRAL POINT DIODE

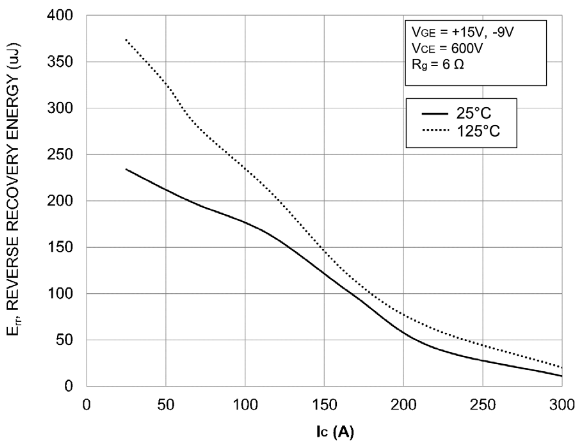


Figure 34. Typical Reverse Recovery Energy Loss vs. I_C

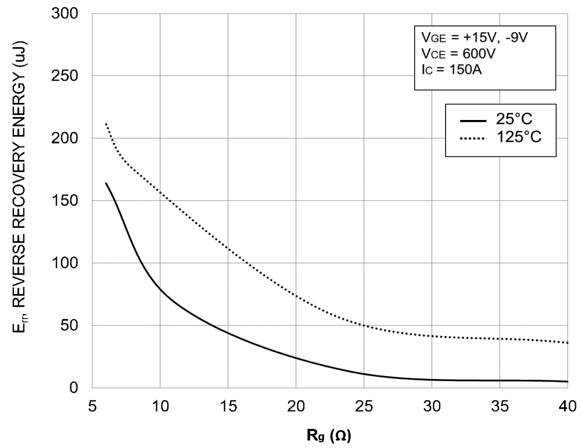


Figure 35. Typical Reverse Recovery Energy Loss vs. R_G

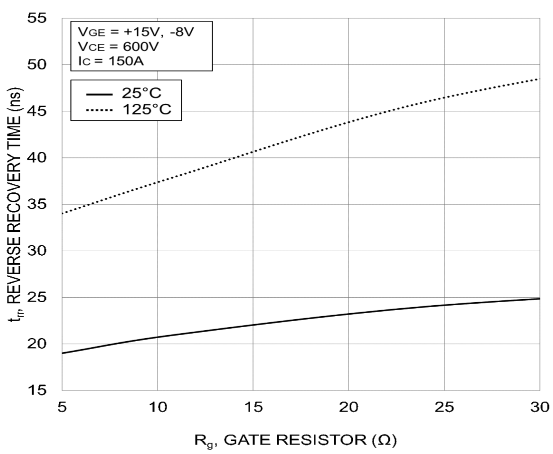


Figure 36. Typical Reverse Recovery Time vs. R_G

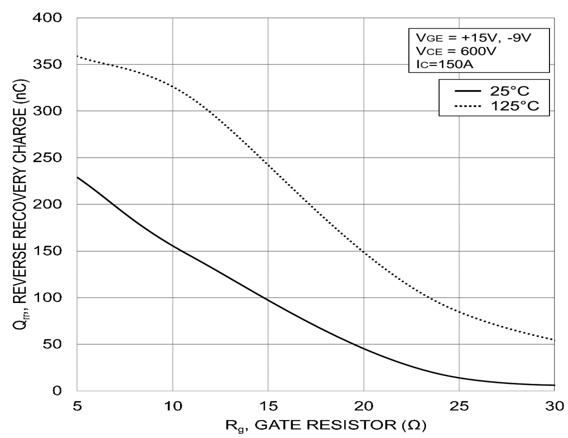


Figure 37. Typical Reverse Recovery Charge vs. R_G

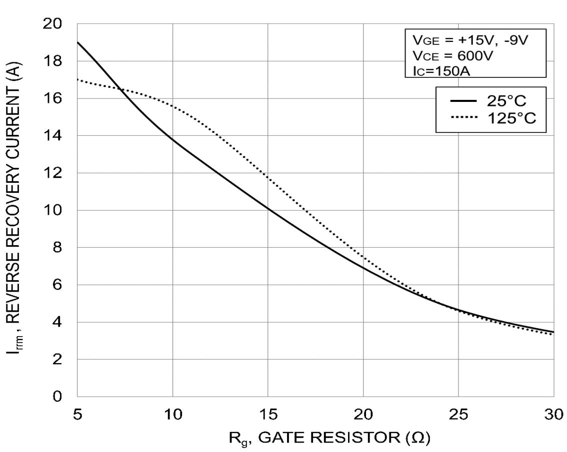


Figure 38. Typical Reverse Recovery Peak Current vs. R_G

TRANSIENT THERMAL IMPEDANCE

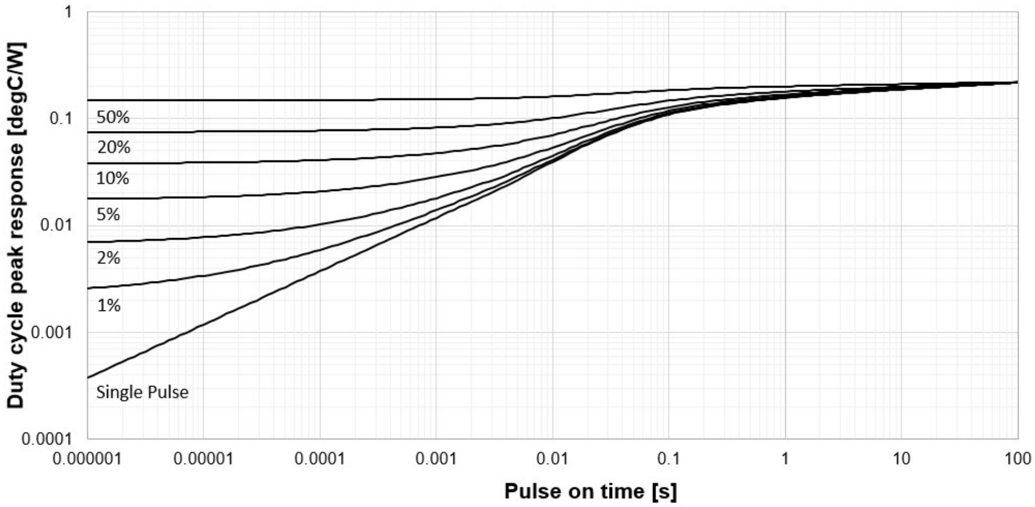


Figure 39. Transient Thermal Impedance – Outer IGBT

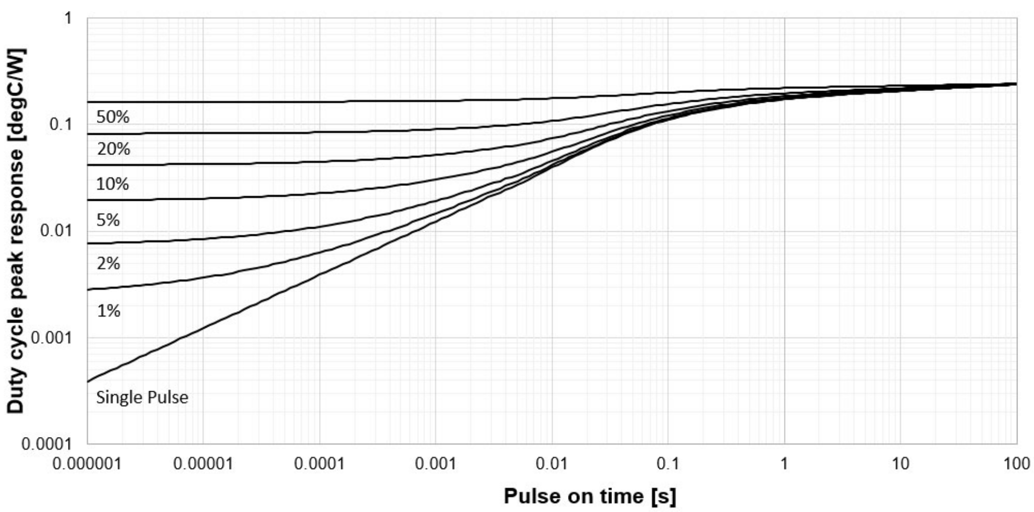


Figure 40. Transient Thermal Impedance – Inner IGBT

TRANSIENT THERMAL IMPEDANCE (CONTINUED)

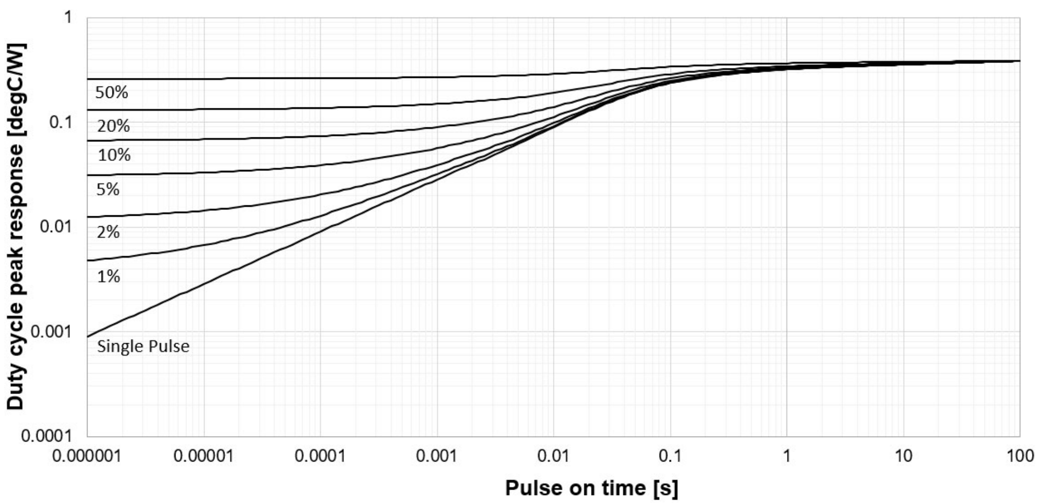


Figure 41. Transient Thermal Impedance – Inverse Diode

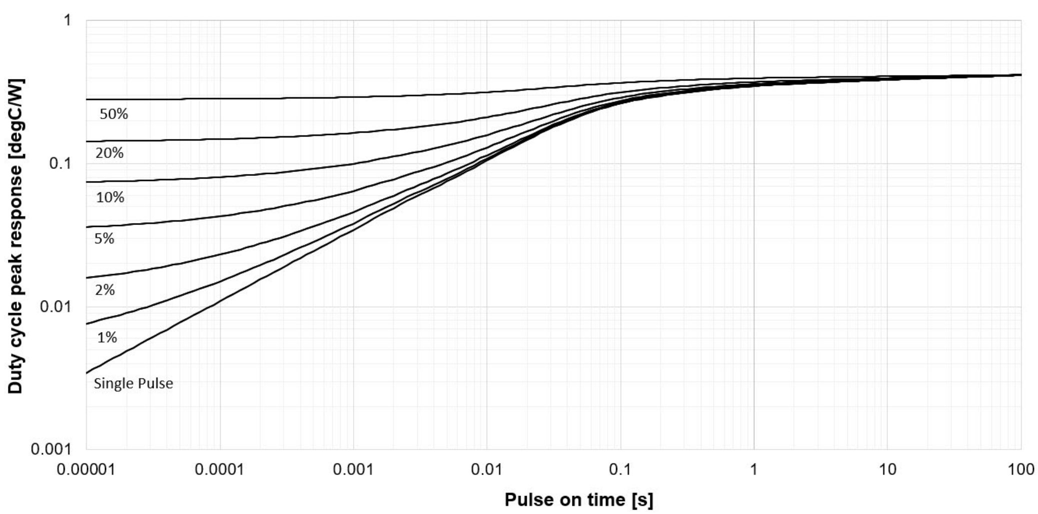


Figure 42. Transient Thermal Impedance – Neutral Point Diode

SAFE OPERATING AREA

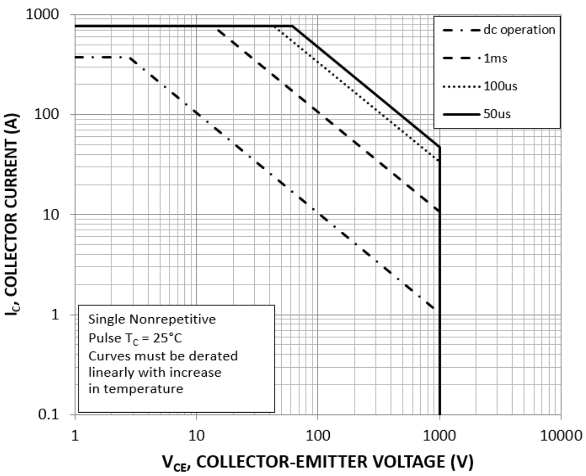


Figure 43. FBSOA – Outer IGBT

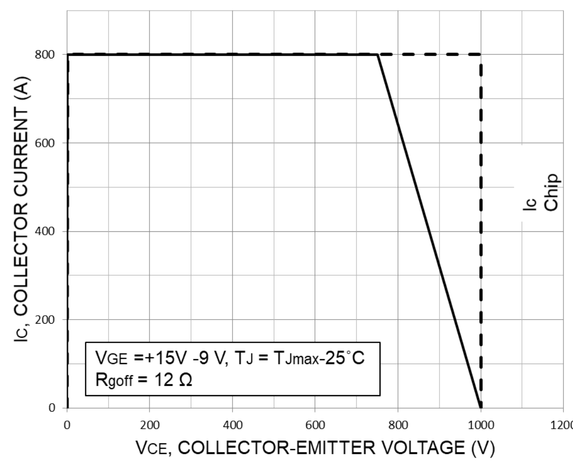


Figure 44. RBSOA – Outer IGBT

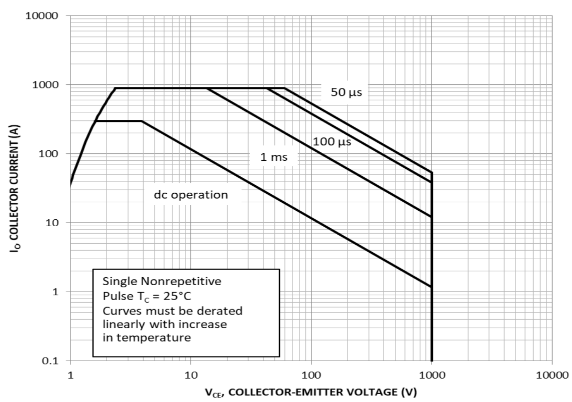


Figure 45. FBSOA – Inner IGBT

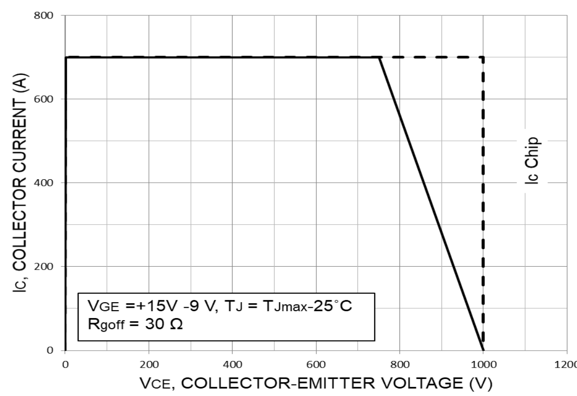


Figure 46. RBSOA – Inner IGBT

GATE CHARGE AND CAPACITANCE

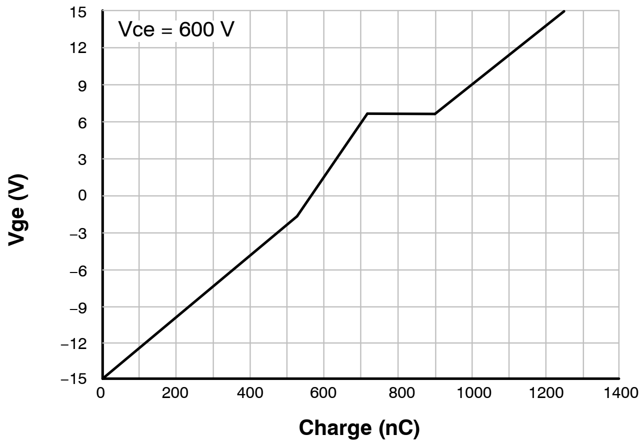


Figure 47. Gate Voltage vs. Gate Charge – Outer IGBT

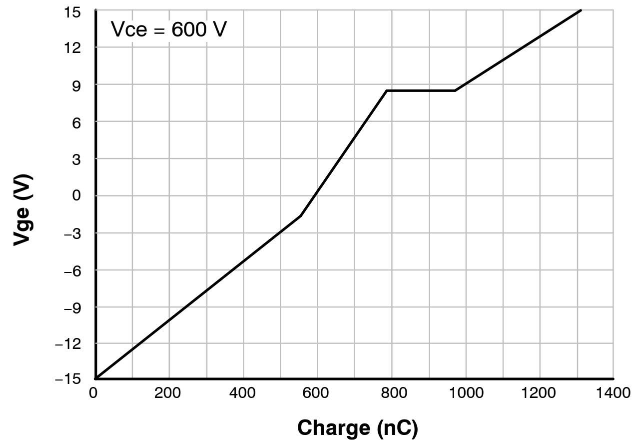


Figure 48. Gate Voltage vs. Gate Charge – Inner IGBT

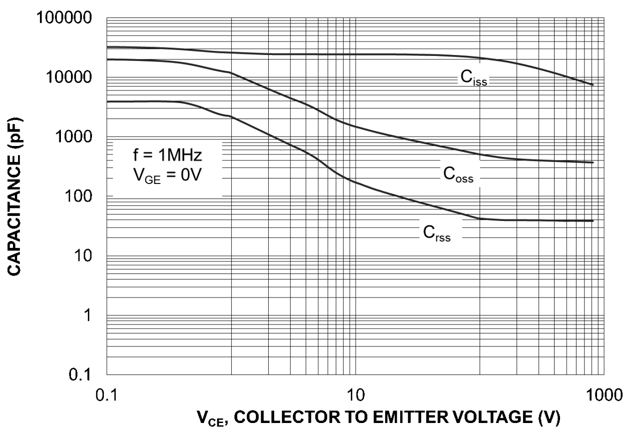


Figure 49. Capacitance Charge – Outer IGBT

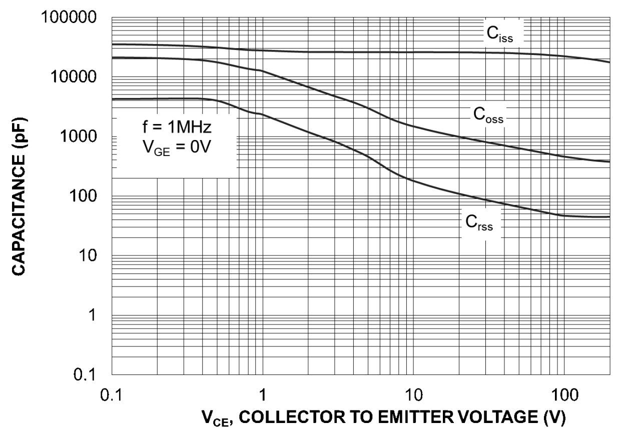


Figure 50. Capacitance Charge – Inner IGBT

TYPICAL CHARCTERISTICS – THERMISTOR

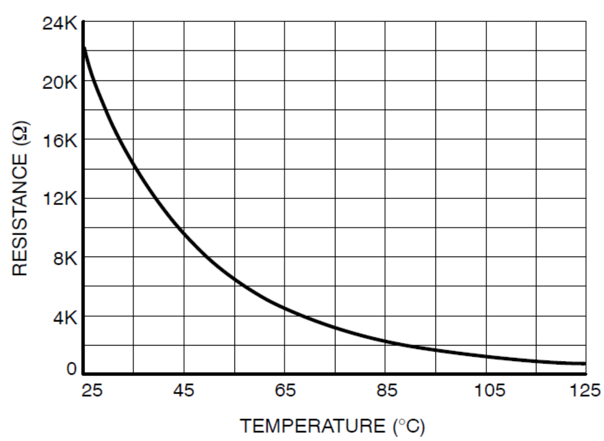
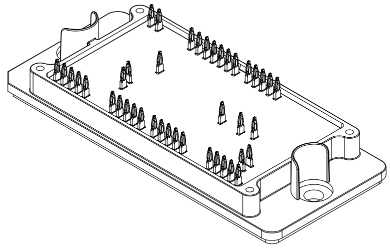


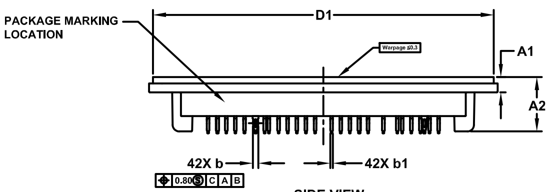
Figure 51. Thermistor Characteristics

onsemi

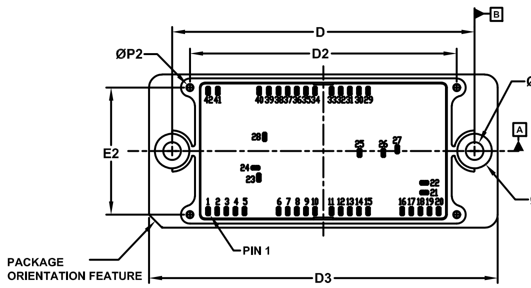


PIM42, 93.00x47.00x12.00
CASE 180BH
ISSUE A

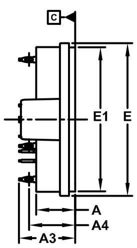
DATE 11 OCT 2023



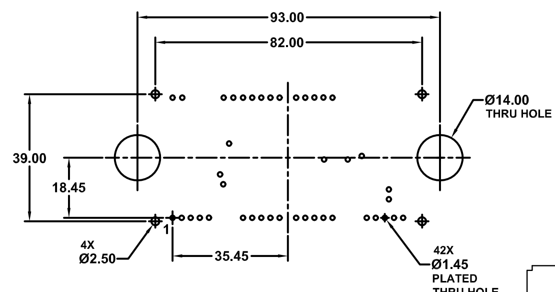
SIDE VIEW



TOP VIEW



END VIEW



RECOMMENDED MOUNTING PATTERN

NOTES:

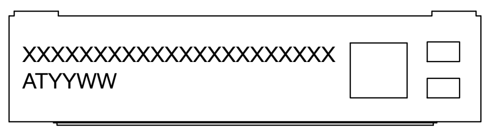
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS b AND b1 APPLY TO THE PLATED TERMINALS AND ARE MEASURED AT DIMENSION A4.
4. POSITION OF THE CENTER OF THE TERMINALS IS DETERMINED FROM DATUM B THE CENTER OF DIMENSION D, X DIRECTION, AND FROM DATUM 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.
6. PRESS FIT PIN

	MILLIMETERS		
DIM	MIN.	NOM.	MAX.
A	11.70	12.00	12.30
A1	4.40	4.70	5.00
A2	16.40	16.70	17.00
A3	16.90	17.30	17.70
A4	13.97	14.18	14.39
b	1.61	1.66	1.71
b1	0.75	0.80	0.85
D	92.90	93.00	93.10
D1	104.45	104.75	105.05
D2	81.80	82.00	82.20
D3	106.90	107.20	107.50
E	46.20	47.00	47.80
E1	44.10	44.40	44.70
E2	38.80	39.00	39.10
P	5.40	5.50	5.60
P1	10.60	10.70	10.80
P2	1.80	2.00	2.20

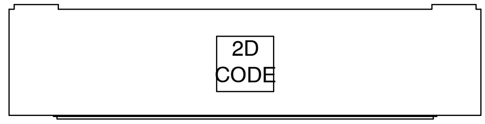
NOTE 4

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

GENERIC MARKING DIAGRAM*



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.

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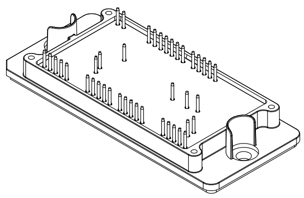
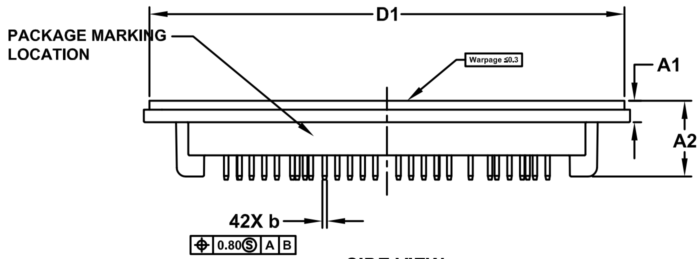


PIM42, 93.00x47.00x12.00
CASE 180BS
ISSUE A

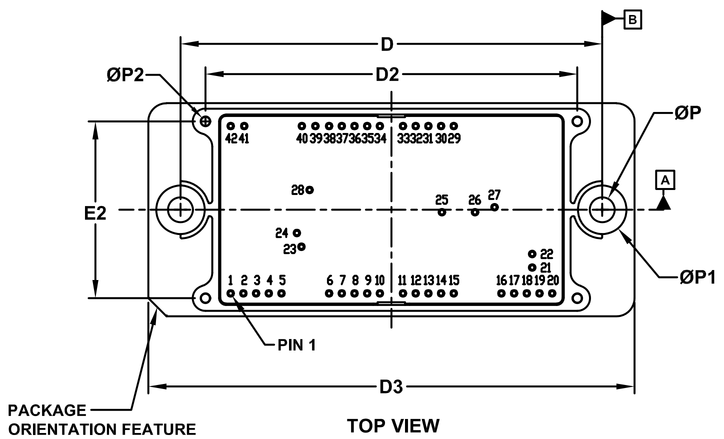
DATE 12 OCT 2023



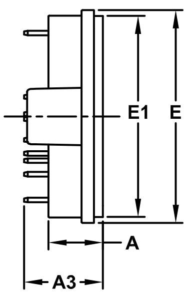
SIDE VIEW

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 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.
6. SOLDER PIN



TOP VIEW



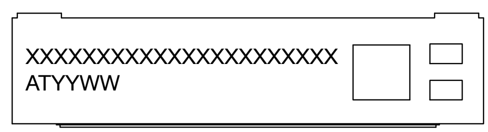
END VIEW

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	11.70	12.00	12.30
A1	4.40	4.70	5.00
A2	16.40	16.70	17.00
A3	16.80	17.20	17.60
b	0.95	1.00	1.05
D	92.90	93.00	93.10
D1	104.45	104.75	105.05
D2	81.80	82.00	82.20
D3	106.90	107.20	107.50
E	46.20	47.00	47.80
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*



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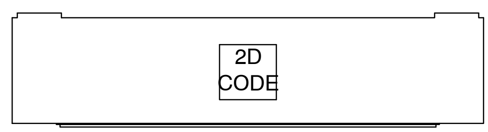

BACKSIDE MARKING

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.

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