3-Level NPC Inverter Module

NXH600N105L7F5S1HG, NXH600N105L7F5P1HG

The NXH600N105L7F5S1HG/P1HG is a power module in F5BP containing an I-type neutral point clamped three-level inverter. The integrated field stop trench IGBTs and FRDs provide lower conduction and switching losses, enabling designers to achieve high efficiency, higher power and superior reliability.

Features

- I-type Neutral Point Clamped Three-level Inverter Module
- 1050 V Field Stop 7 IGBTs
- Low Inductive Layout
- Solder Pins & Press Fit Pins
- Integrated NTC Thermistor
- This Device is Pb-Free, Halide Free and is RoHS Compliant

Typical Applications

- Energy Storage System
- Solar Inverters

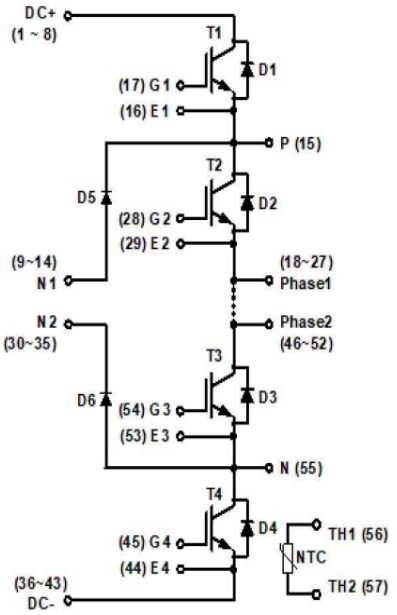
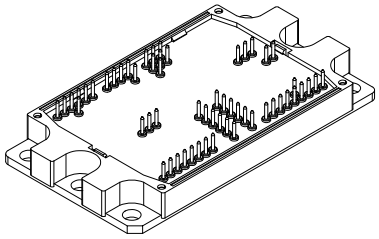
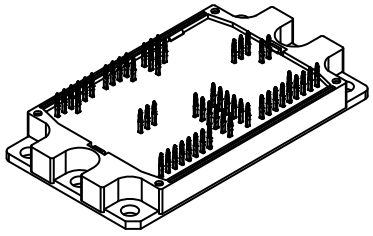


Figure 1. NXH600N105L7F5S1HG/P1HG Schematic Diagram

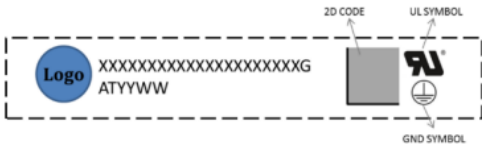


PIM57 112.00x62.00x12.00 (SOLDER PIN)
CASE 180CX



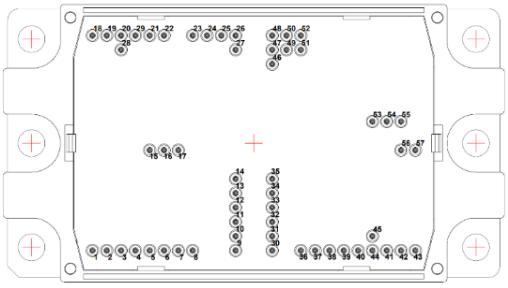
PIM57 112.00x62.00x12.00 (PRESS FIT PIN)
CASE 180JC

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 5 of this data sheet.

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MODULE CHARACTERISTICS

Operating Temperature under Switching Condition	T_{VJOP}	−40 to 150	°C
Storage Temperature Range	T_{stg}	−40 to 125	°C
Isolation Test Voltage, t = 2 s, 50 Hz (Note 1)	V_{is}	4800	V_{RMS}
Stray Inductance	L_{sCE}	15	nH
Terminal Connection Torque (M5, Screw)	M	3 to 5	Nm
Weight	G	245	g
Creepage Distance (Terminal to Heatsink)		17.46	mm
Creepage Distance (Terminal to Terminal)		6.48	mm
Clearance Distance (Terminal to Heatsink)		15.62	mm
Clearance Distance (Terminal to Terminal)		5.05	mm
Comparative Tracking Index	CTI	>600	

1. 4800 VAC_{RMS} for 2 second duration is equivalent to 4000 VAC_{RMS} for 1 minute duration.

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

Parameter	Symbol	Value	Unit
OUTER IGBT (T1, T4)			
Collector-Emitter Voltage	V_{CES}	1050	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 (T_J = 175°C)	I_C	429	A
Pulsed Peak Collector Current @ Tc = 80°C (T_J = 175°C), T_{pulse} = 1 ms	I_{Cpulse}	1287	A
Power Dissipation (T_J = 175°C, Tc = 80°C)	P_{tot}	1080	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}	1050	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 (T_J = 175°C)	I_C	429	A
Pulsed Peak Collector Current @ Tc = 80°C (T_J = 175°C), T_{pulse} = 1 ms	I_{Cpulse}	1287	A
Power Dissipation (T_J = 175°C, Tc = 80°C)	P_{tot}	1080	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}	1050	V
Continuous Forward Current @ Tc = 80°C (T_J = 175°C)	I_F	186	A
Repetitive Peak Forward Current (T_J = 175°C), T_{pulse} = 1 ms	I_{FRM}	558	A
Maximum Power Dissipation @ Tc = 80°C (T_J = 175°C)	P_{tot}	475	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
INVERSE DIODES (D1, D4)			
Peak Repetitive Reverse Voltage	V_{RRM}	1050	V
Continuous Forward Current @ Tc = 80°C (T_J = 175°C)	I_F	278	A
Repetitive Peak Forward Current (T_J = 175°C), T_{pulse} = 1 ms	I_{FRM}	834	A

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

Parameter	Symbol	Value	Unit
INVERSE DIODES (D1, D4)			
Maximum Power Dissipation @ Tc = 80°C (T_J = 175°C)	P_{tot}	766	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
INVERSE DIODES (D2, D3)			
Peak Repetitive Reverse Voltage	V_{RRM}	1050	V
Continuous Forward Current @ Tc = 80°C (T_J = 175°C)	I_F	297	A
Repetitive Peak Forward Current (T_J = 175°C), T_{pulse} = 1 ms	I_{FRM}	891	A
Maximum Power Dissipation @ Tc = 80°C (T_J = 175°C)	P_{tot}	833	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C

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.

2. Refer to ELECTRICAL CHARACTERISTICS, RECOMMENDED OPERATING RANGES and/or APPLICATION INFORMATION for Safe Operating parameters

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} = 1050 V	I_{CES}	–	–	500	μA
Collector-Emitter Saturation Voltage	V_{GE} = 15 V, I_C = 600 A, T_J = 25°C	$V_{CE(sat)}$	–	1.6	2.3	V
	V_{GE} = 15 V, I_C = 600 A, T_J = 150°C		–	2.0	–	
Gate-Emitter Threshold Voltage	V_{GE} = V_{CE}, I_C = 600 mA	$V_{GE(TH)}$	4.0	5.5	6.9	V
Gate Leakage Current	V_{GE} = 20 V, V_{CE} = 0 V	I_{GES}	–	–	1	μA
Internal Gate Resistor		R_g	–	0.58	–	Ω
Turn-off safe operating area	V_{CC} < 800 V, $R_{G, off}$ ≥ 30 Ω, T_{vj} < 150°C		–	800	–	A
Turn-on Delay Time	T_J = 25°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G, on}$ = 7 Ω, $R_{G, off}$ = 21 Ω	$t_{d(on)}$	–	224	–	ns
Rise Time		t_r	–	47	–	
Turn-off Delay Time		$t_{d(off)}$	–	1588	–	
Fall Time		t_f	–	13	–	
Turn-on Switching Loss per Pulse		E_{on}	–	9700	–	μJ
Turn off Switching Loss per Pulse		E_{off}	–	7540	–	
Turn-on Delay Time	T_J = 125°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G, on}$ = 7 Ω, $R_{G, off}$ = 21 Ω	$t_{d(on)}$	–	204	–	ns
Rise Time		t_r	–	50	–	
Turn-off Delay Time		$t_{d(off)}$	–	1693	–	
Fall Time		t_f	–	23	–	
Turn-on Switching Loss per Pulse		E_{on}	–	15430	–	μJ
Turn off Switching Loss per Pulse		E_{off}	–	10800	–	
Input Capacitance	V_{CE} = 20 V, V_{GE} = 0 V, f = 100 kHz	C_{ies}	–	48597	–	pF
Output Capacitance		C_{oes}	–	1836	–	
Reverse Transfer Capacitance		C_{res}	–	277	–	
Total Gate Charge	V_{CE} = 600 V, I_C = 57 A, V_{GE} = −15/+20 V	Q_g	–	3048	–	nC

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
OUTER IGBT (T1, T4)						
Thermal Resistance – Chip-to-heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.139	–	°C/W
Thermal Resistance – Chip-to-case		R_{thJC}	–	0.088	–	°C/W
NEUTRAL POINT DIODE (D5, D6)						
Diode Forward Voltage	I_F = 375 A, T_J = 25°C	V_F	–	2.8	3.4	V
	I_F = 375 A, T_J = 150°C		–	2.4	–	
Reverse Recovery Time	T_J = 25°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G,\ on}$ =7 Ω	t_{rr}	–	135	–	ns
Reverse Recovery Charge		Q_{rr}	–	8.73	–	μC
Peak Reverse Recovery Current		I_{RRM}	–	175	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	3.61	–	A/ns
Reverse Recovery Energy		E_{rr}	–	2771	–	μJ
Reverse Recovery Time	T_J = 125°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G,\ on}$ = 7 Ω	t_{rr}	–	197	–	ns
Reverse Recovery Charge		Q_{rr}	–	22.7	–	μC
Peak Reverse Recovery Current		I_{RRM}	–	275	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	3.34	–	A/ns
Reverse Recovery Energy		E_{rr}	–	7897	–	μJ
Thermal Resistance – Chip-to-heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.271	–	°C/W
Thermal Resistance – Chip-to-case		R_{thJC}	–	0.200	–	°C/W
INNER IGBT (T2, T3)						
Collector-Emitter Cutoff Current	V_{GE} = 0 V, V_{CE} = 1050 V	I_{CES}	–	–	500	μA
Collector-Emitter Saturation Voltage	V_{GE} = 15 V, I_C = 600 A, T_J = 25°C	$V_{CE(sat)}$	–	1.6	2.3	V
	V_{GE} = 15 V, I_C = 600 A, T_J = 150°C		–	2.0	–	
Gate-Emitter Threshold Voltage	V_{GE} = V_{CE}, I_C = 600 mA	$V_{GE(TH)}$	4.0	5.5	6.9	V
Gate Leakage Current	V_{GE} = 20 V, V_{CE} = 0 V	I_{GES}	–	–	1	μA
Internal Gate Resistor		R_g	–	0.58	–	Ω
Turn-off Safe Operating Area	V_{CC} < 800 V, $R_{G,\ off}$ ≥ 35 Ω, T_{vj} < 150°C		–	800	–	A
Turn-on Delay Time	T_J = 25°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G,\ on}$ = 7 Ω, $R_{G,\ off}$ = 21 Ω	$t_{d(on)}$	–	240	–	ns
Rise Time		t_r	–	52	–	
Turn-off Delay Time		$t_{d(off)}$	–	1591	–	
Fall Time		t_f	–	17	–	
Turn-on Switching Loss per Pulse		E_{on}	–	10570	–	μJ
Turn-off Switching Loss per Pulse		E_{off}	–	8270	–	
Turn-on Delay Time	T_J = 125°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G,\ on}$ = 7 Ω, $R_{G,\ off}$ = 21 Ω	$t_{d(on)}$	–	219	–	ns
Rise Time		t_r	–	55	–	
Turn-off Delay Time		$t_{d(off)}$	–	1708	–	
Fall Time		t_f	–	19	–	
Turn-on Switching Loss per Pulse		E_{on}	–	15000	–	μJ
Turn-off Switching Loss per Pulse		E_{off}	–	10730	–	
Input Capacitance	V_{CE} = 20 V, V_{GE} = 0 V, f = 100 kHz	C_{ies}	–	48597	–	pF
Output Capacitance		C_{oes}	–	1836	–	
Reverse Transfer Capacitance		C_{res}	–	277	–	
Total Gate Charge	V_{CE} = 600 V, I_C = 57 A, V_{GE} = −15/+20 V	Q_g	–	3048	–	nC

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
INNER IGBT (T2, T3)						
Thermal Resistance – Chip-to-heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.139	–	°C/W
Thermal Resistance – Chip-to-case		R_{thJC}	–	0.088	–	°C/W
INVERSE DIODES (D1, D4)						
Diode Forward Voltage	I_F = 500 A, T_J = 25°C	V_F	–	2.8	3.4	V
	I_F = 500 A, T_J = 150°C		–	2.4	–	
Reverse Recovery Time	T_J = 25°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G,\,on}$ = 7 Ω	t_{rr}	–	109	–	ns
Reverse Recovery Charge		Q_{rr}	–	7.87	–	μC
Peak Reverse Recovery Current		I_{RRM}	–	155	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	3.11	–	A/ns
Reverse Recovery Energy		E_{rr}	–	2377	–	μJ
Reverse Recovery Time	T_J = 125°C V_{CE} = 600 V, I_C = 200 A V_{GE} = −9 V to +15 V, $R_{G,\,on}$ = 7 Ω	t_{rr}	–	170	–	ns
Reverse Recovery Charge		Q_{rr}	–	22	–	μC
Peak Reverse Recovery Current		I_{RRM}	–	231	–	A
Peak Rate of Fall of Recovery Current		di/dt	–	2.98	–	A/ns
Reverse Recovery Energy		E_{rr}	–	8019	–	μJ
Thermal Resistance – Chip-to-heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.178	–	°C/W
Thermal Resistance – Chip-to-case		R_{thJC}	–	0.114	–	°C/W
INVERSE DIODES (D2, D3)						
Diode Forward Voltage	I_F = 500 A, T_J = 25°C	V_F	–	2.8	3.4	V
	I_F = 500 A, T_J = 150°C		–	2.4	–	
Thermal Resistance – Chip-to-heatsink	Thermal grease, Thickness = 2 Mil ±2%, λ = 2.87 W/mK	R_{thJH}	–	0.194	–	°C/W
Thermal Resistance – Chip-to-case		R_{thJC}	–	0.124	–	°C/W
THERMISTOR CHARACTERISTICS						
Nominal Resistance	T = 25°C	R_{25}	–	5	–	kΩ
Nominal Resistance	T = 100°C	R_{100}	–	492.2	–	Ω
Deviation of R25		R/R	−1	–	1	%
Power Dissipation		P_D	–	5	–	mW
Power Dissipation Constant			–	1.3	–	mW/K
B-value	B(25/85), tolerance ±1%		–	3430	–	K

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

ORDERING INFORMATION

Device	Marking	Package	Shipping
NXH600N105L7F5S1HG	NXH600N105L7F5S1HG	F5 – PIM57 112x62x12.00 (Solder PIN) (Pb-Free / Halide Free)	8 Units / Blister Tray
NXH600N105L7F5P1HG	NXH600N105L7F5P1HG	F5 – PIM57 112x62x12.00 (Press Fit PIN) (Pb-Free / Halide Free)	8 Units / Blister Tray

TYPICAL CHARACTERISTIC – T1, T2, T3, T4 (IGBT)

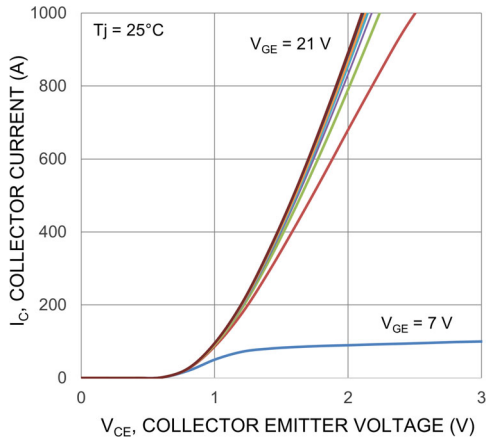


Figure 2. Typical Output Characteristics – IGBT

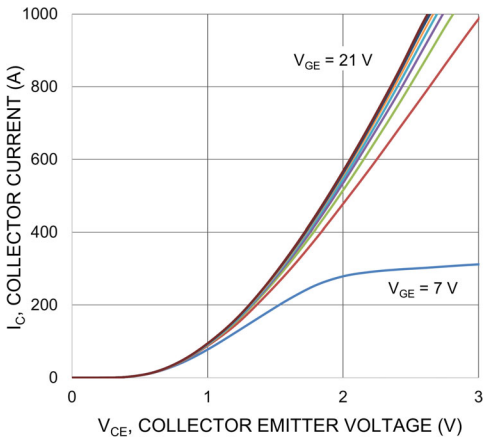


Figure 3. Typical Output Characteristics – IGBT

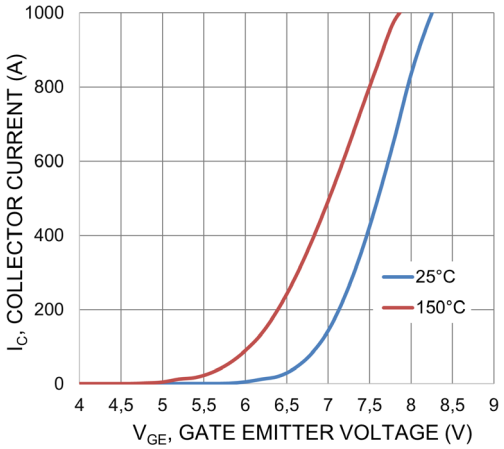


Figure 4. Transfer Characteristics – IGBT

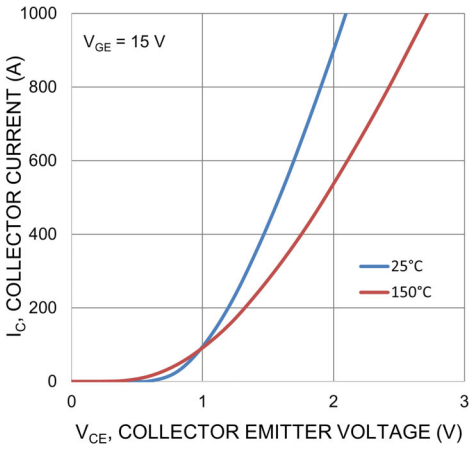


Figure 5. Saturation Voltage Characteristic – IGBT

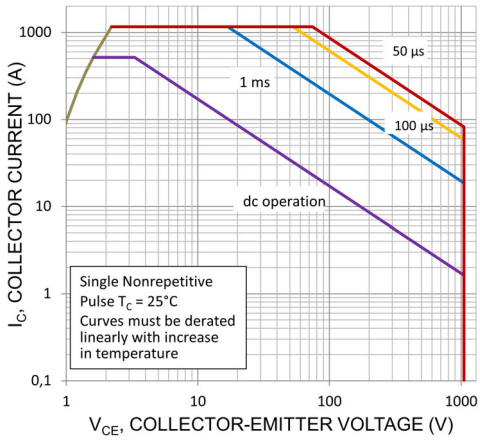


Figure 6. FBSOA

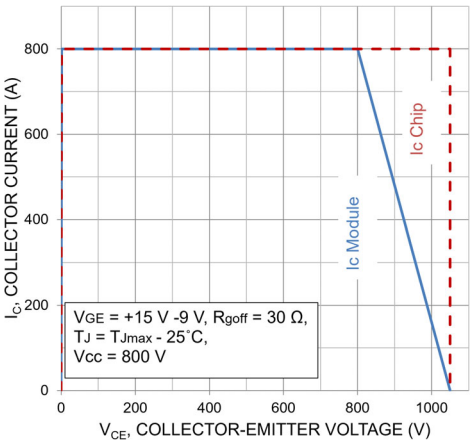


Figure 7. RBSOA (T1–T4)

TYPICAL CHARACTERISTIC – T1, T2, T3, T4 (IGBT) (CONTINUED)

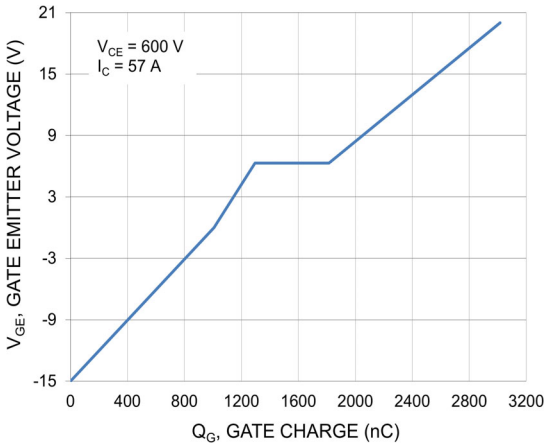


Figure 8. Gate Voltage vs. Gate Charge

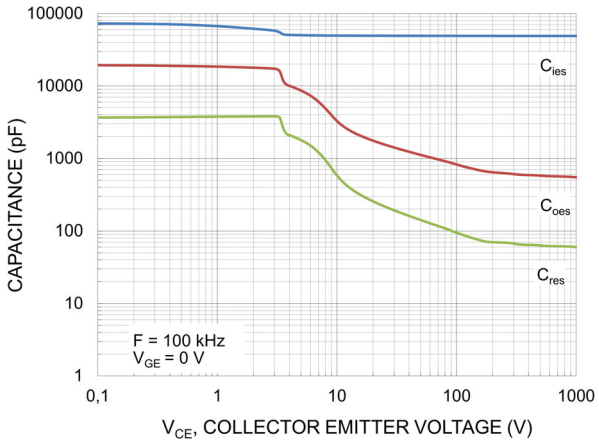


Figure 9. Capacitance vs. V_{CE}

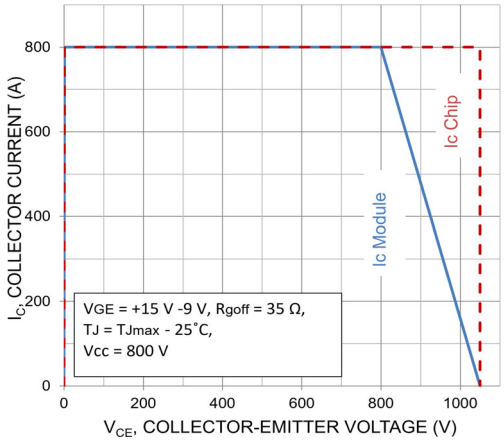


Figure 10. RBSOA (T2–T3)

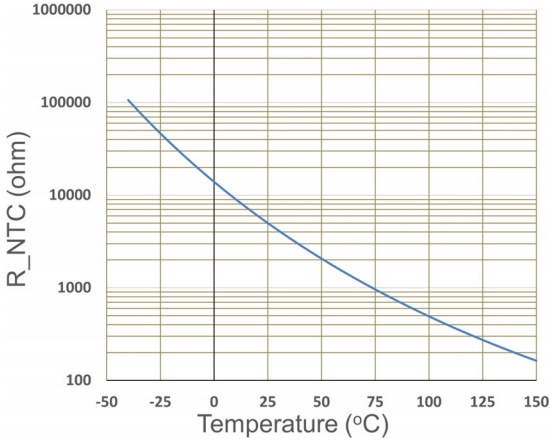


Figure 11. Temperature vs. NTC Value

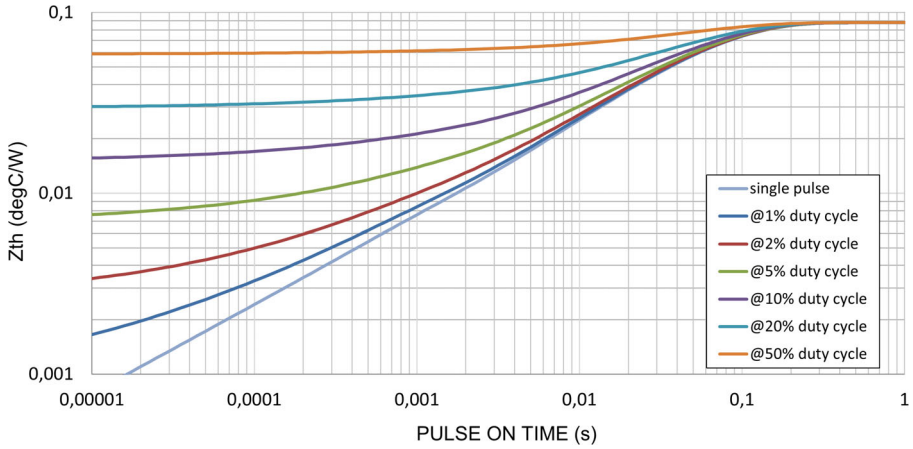


Figure 12. Transient Thermal Impedance (IGBT Zthjc)

TYPICAL CHARACTERISTIC – D1, D4 (INVERSE DIODE)

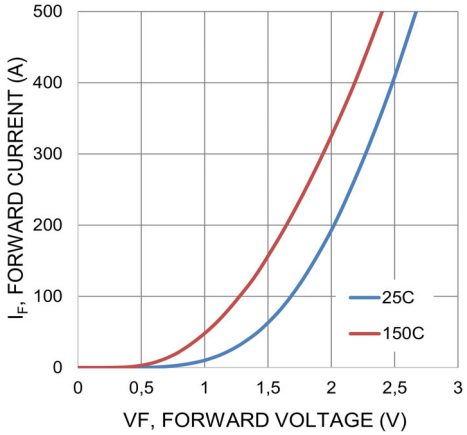


Figure 13. Inverse Diode Forward Characteristics

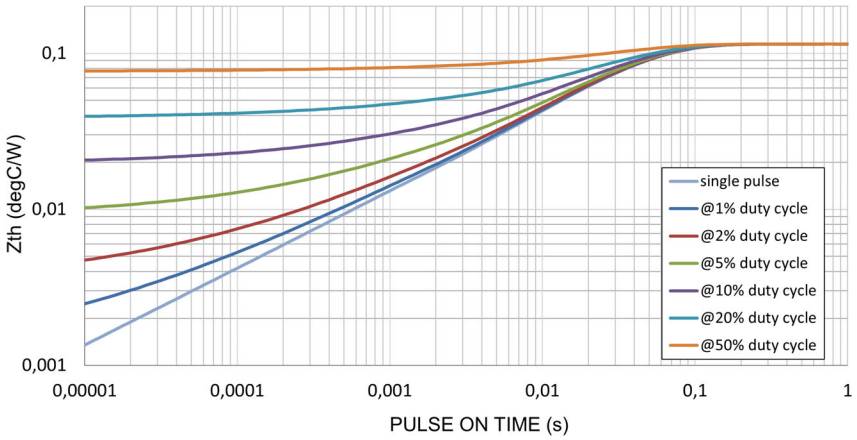


Figure 14. Transient Thermal Impedance (Inverse Diode Zthjc)

TYPICAL CHARACTERISTIC – D2, D3 (INVERSE DIODE)

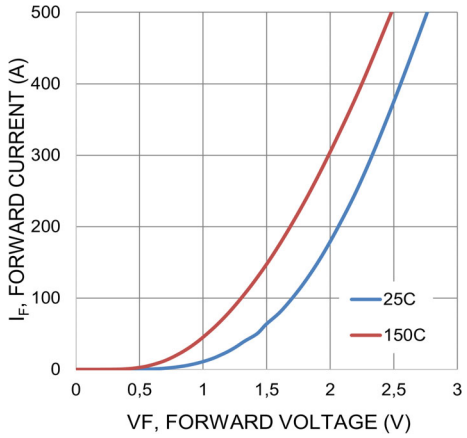


Figure 15. Inverse Diode Forward Characteristics

TYPICAL CHARACTERISTIC – D2, D3 (INVERSE DIODE) (CONTINUED)

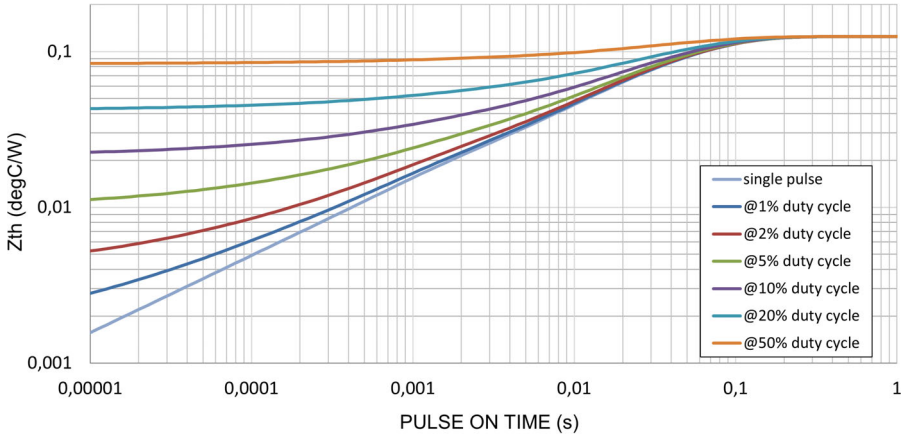


Figure 16. Transient Thermal Impedance (Inverse Diode Zthjc)

TYPICAL CHARACTERISTIC – D5, D6 (NEUTRAL POINT DIODE)

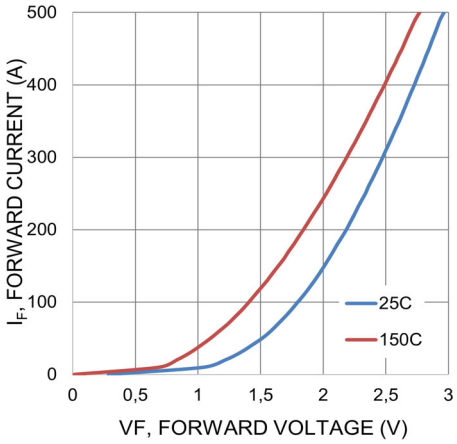


Figure 17. Neutral Diode Forward Characteristics

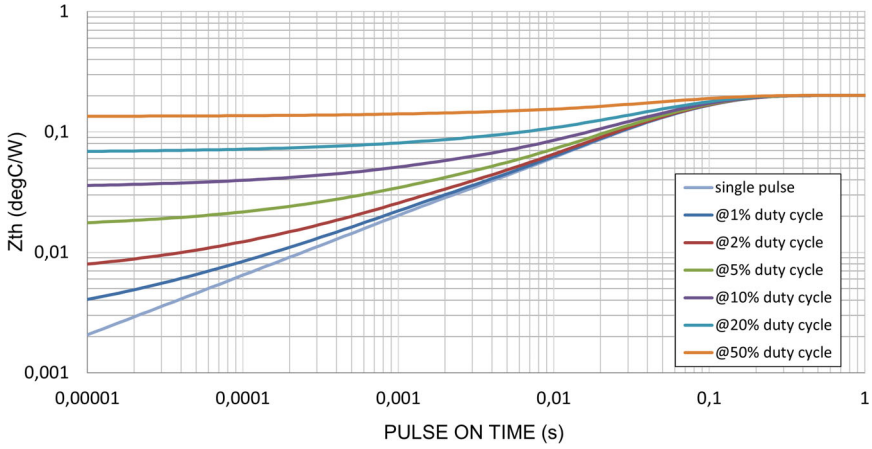


Figure 18. Transient Thermal Impedance (Neutral Point Diode Zthjc)

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

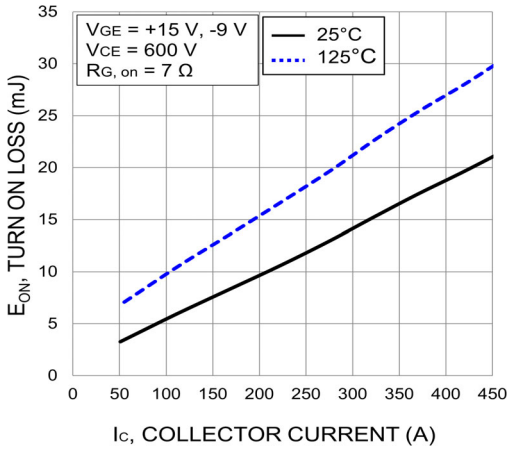


Figure 19. Typical Turn On Loss vs. I_C

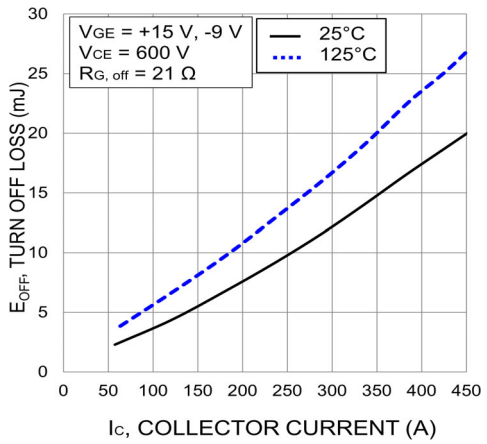


Figure 20. Typical Turn Off Loss vs. I_C

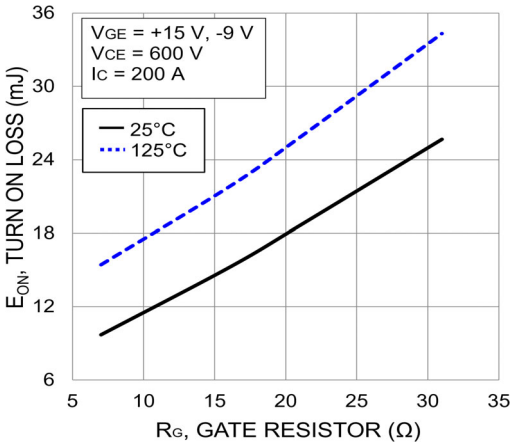


Figure 21. Typical Turn On Loss vs. R_G

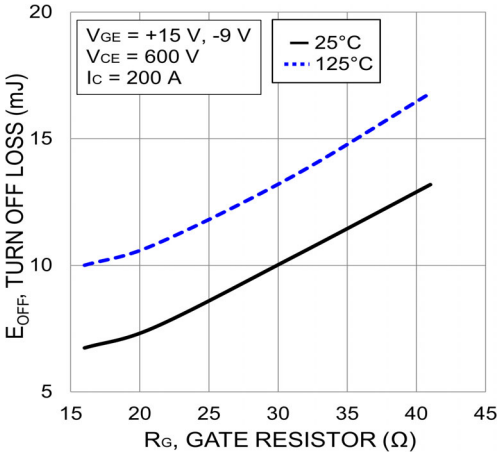


Figure 22. Typical Turn Off Loss vs. R_G

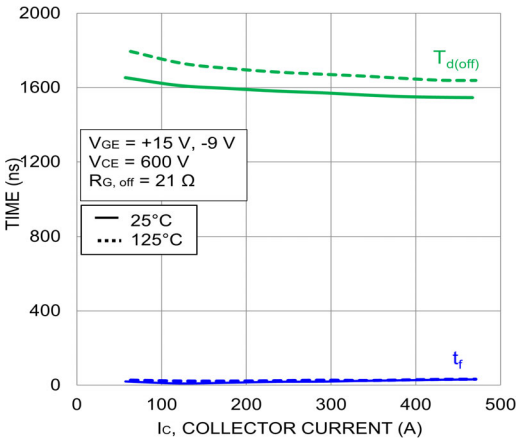


Figure 23. Typical Turn-Off Switching Time vs. I_C

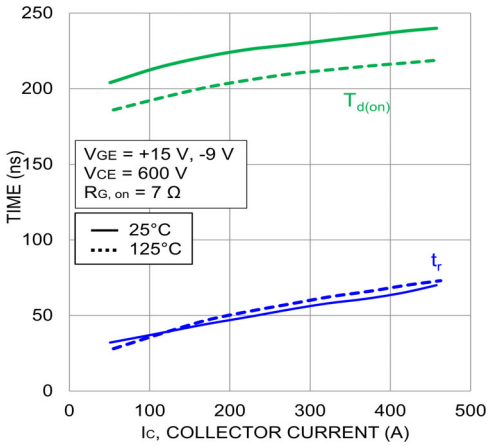


Figure 24. Typical Turn-On Switching Time vs. I_C

TYPICAL CHARACTERISTIC – T1 || D5 OR T4 || D6 (CONTINUED)

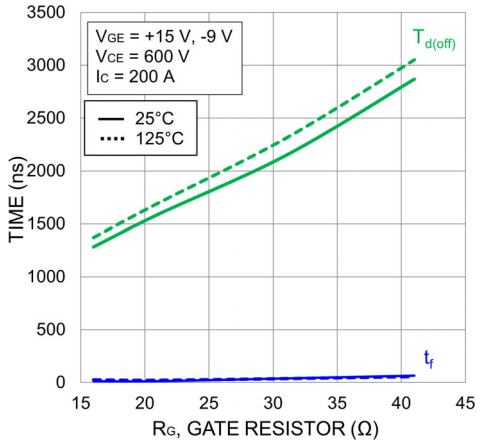


Figure 25. Typical Turn-Off Switching Time vs. R_G

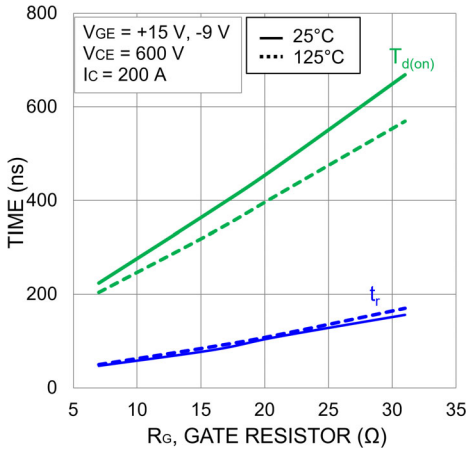


Figure 26. Typical Turn-On Switching Time vs. R_G

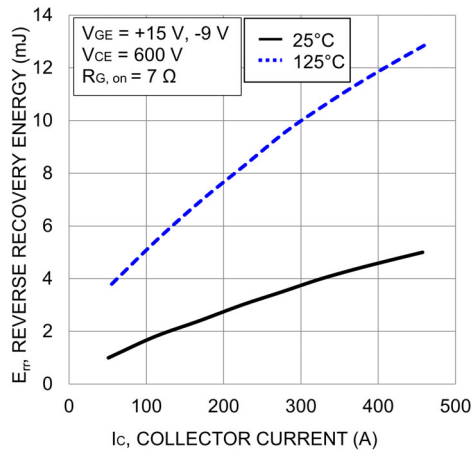


Figure 27. Typical Reverse Recovery Energy Loss vs. I_C

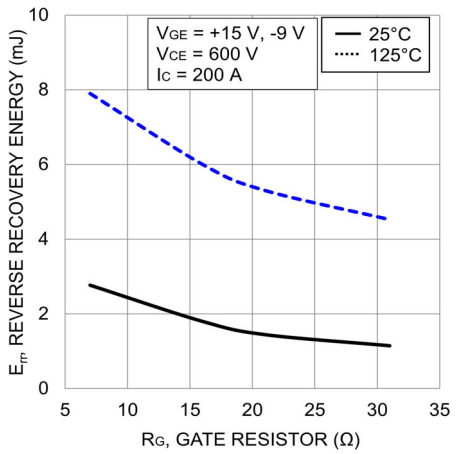


Figure 28. Typical Reverse Recovery Energy Loss vs. R_G

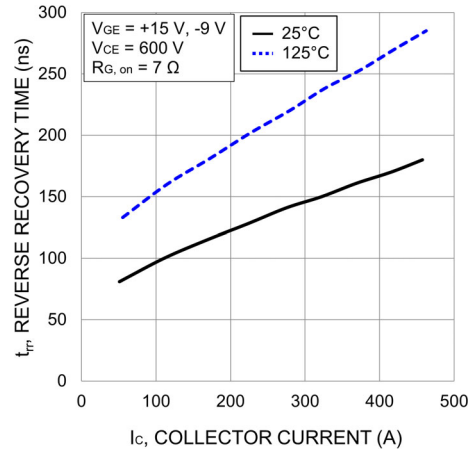


Figure 29. Typical Reverse Recovery Time vs. I_C

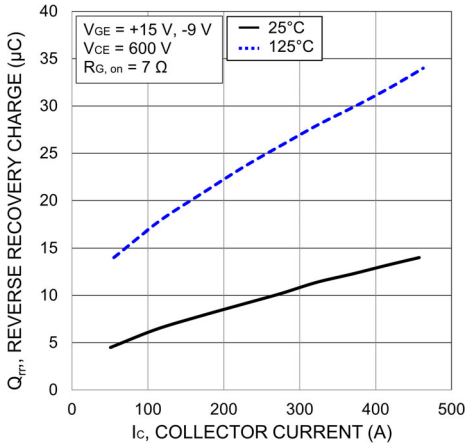


Figure 30. Typical Reverse Recovery Charge vs. I_C

TYPICAL CHARACTERISTIC – T1 || D5 OR T4 || D6 (CONTINUED)

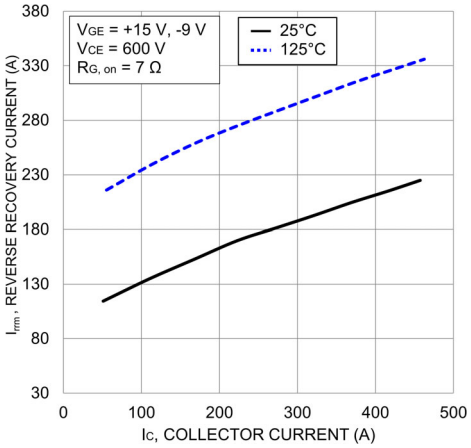


Figure 31. Typical Reverse Recovery Current vs. I_C

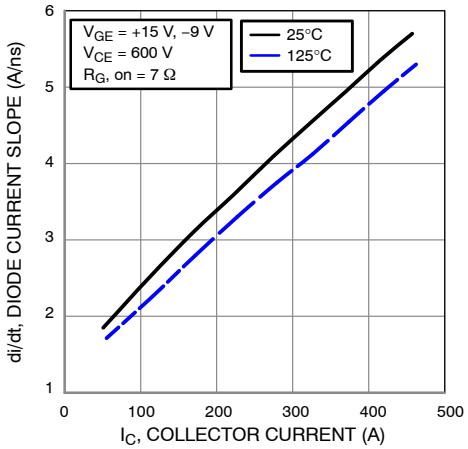


Figure 32. Typical di/dt vs. I_C

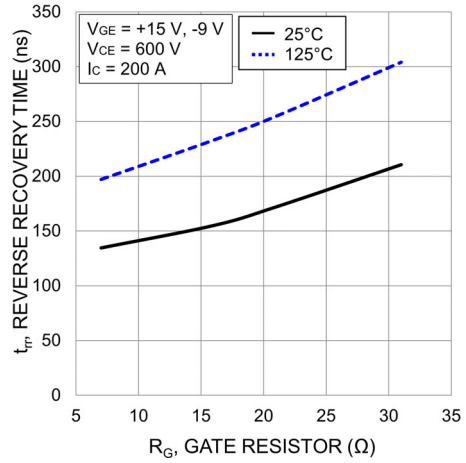


Figure 33. Typical Reverse Recovery Time vs. R_G

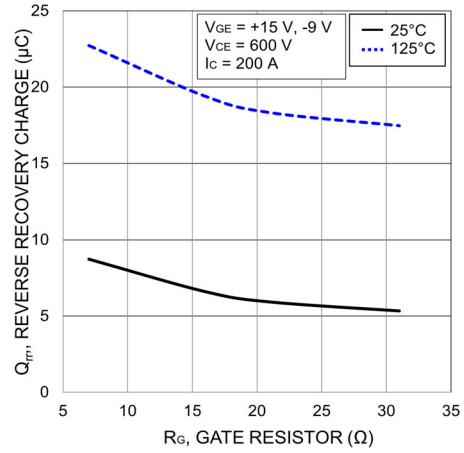


Figure 34. Typical Reverse Recovery Charge vs. R_G

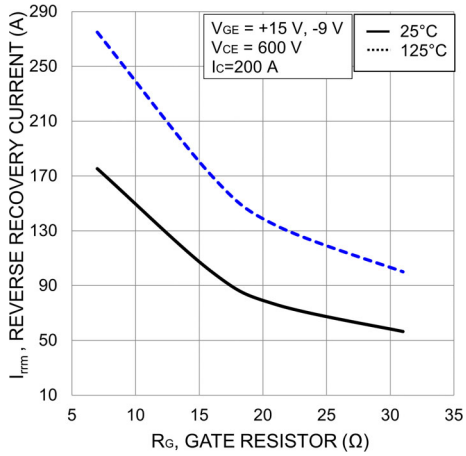


Figure 35. Typical Reverse Recovery Peak Current vs. R_G

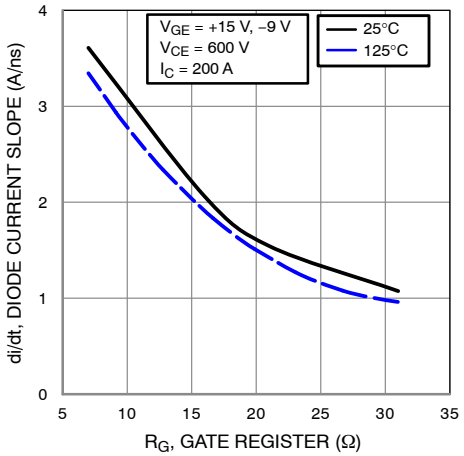


Figure 36. Typical di/dt vs. R_G

TYPICAL CHARACTERISTIC – T2 || D3,D4 OR T3 || D1,D2

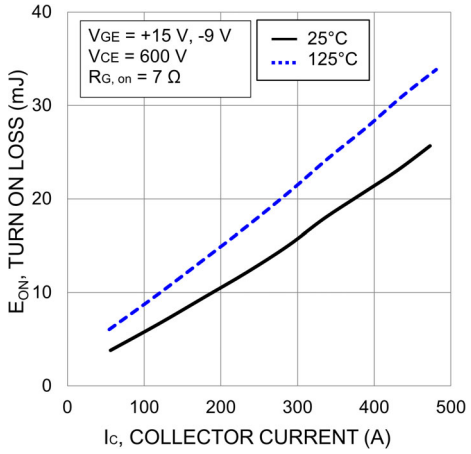


Figure 37. Typical Turn On Loss vs. I_C

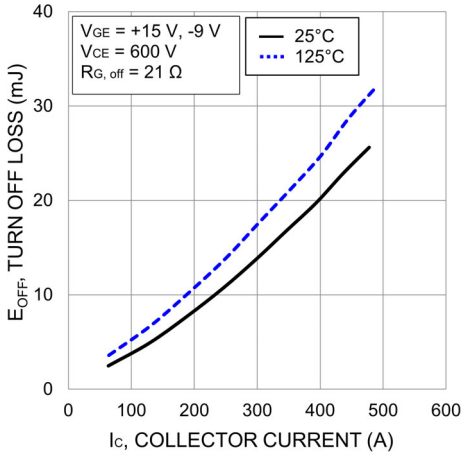


Figure 38. Typical Turn Off Loss vs. I_C

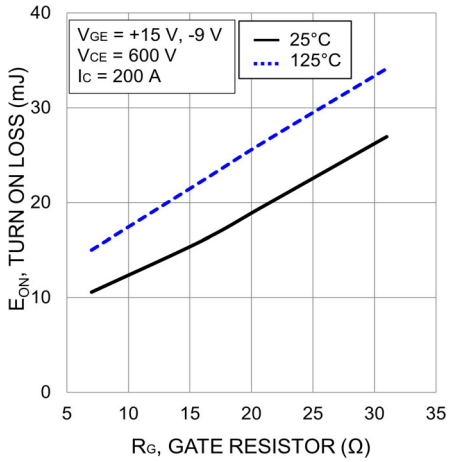


Figure 39. Typical Turn On Loss vs. R_G

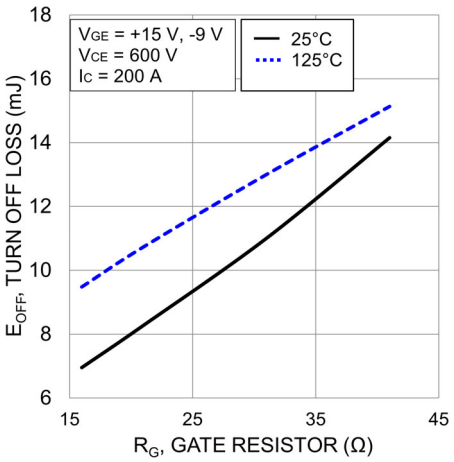


Figure 40. Typical Turn Off Loss vs. R_G

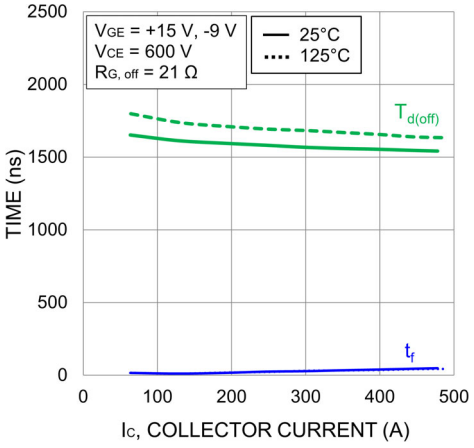


Figure 41. Typical Turn-Off Switching Time vs. I_C

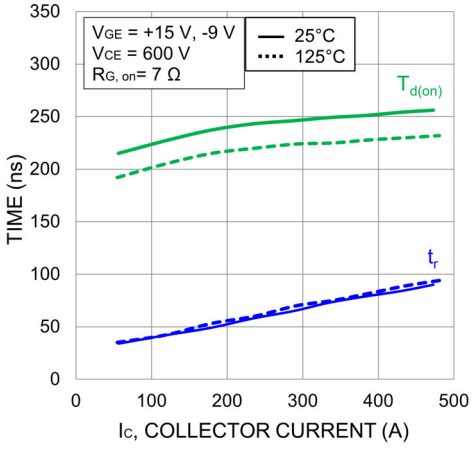


Figure 42. Typical Turn-On Switching Time vs. I_C

TYPICAL CHARACTERISTIC – T2 || D3,D4 OR T3 || D1,D2 (CONTINUED)

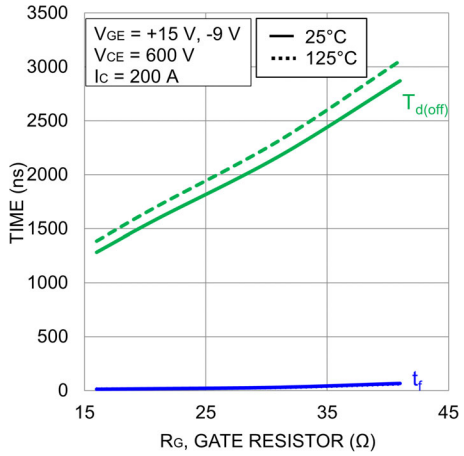


Figure 43. Typical Turn-Off Switching Time vs. R_G

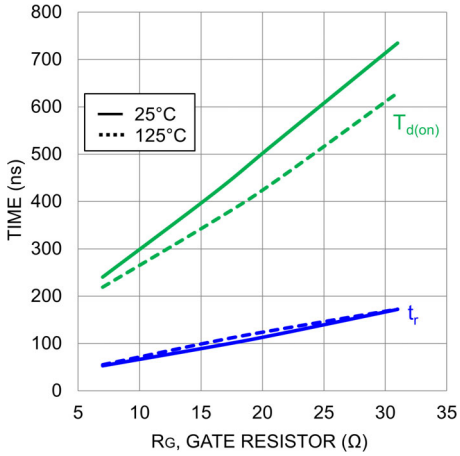


Figure 44. Typical Turn-On Switching Time vs. R_G

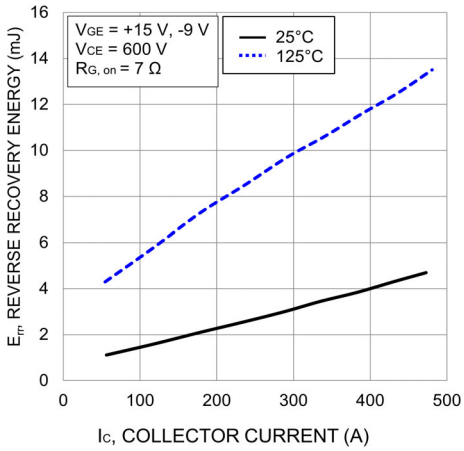


Figure 45. Typical Reverse Recovery Energy Loss vs. I_C

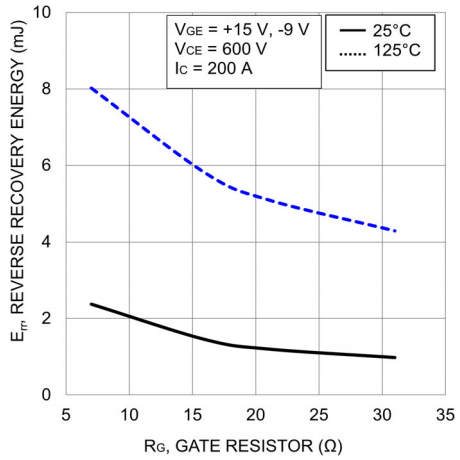


Figure 46. Typical Reverse Recovery Energy Loss vs. R_G

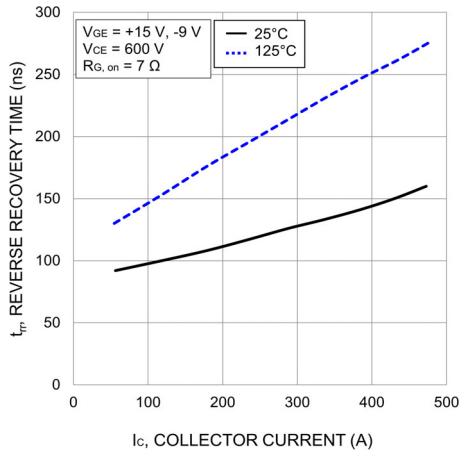


Figure 47. Typical Reverse Recovery Time vs. I_C

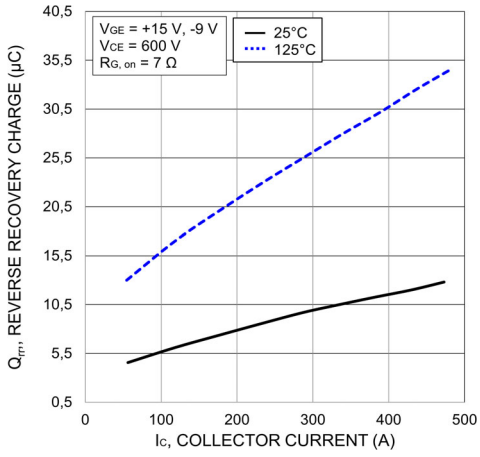


Figure 48. Typical Reverse Recovery Charge vs. I_C

TYPICAL CHARACTERISTIC – T2 || D3,D4 OR T3 || D1,D2 (CONTINUED)

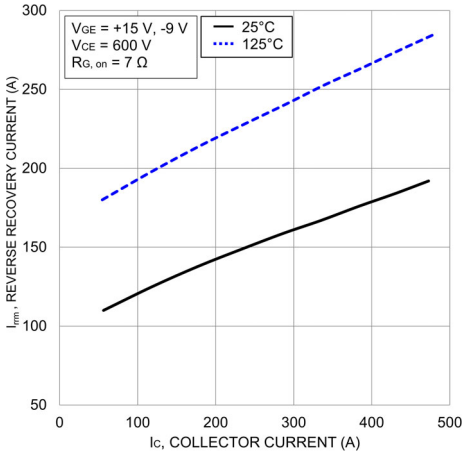


Figure 49. Typical Reverse Recovery Current vs. I_C

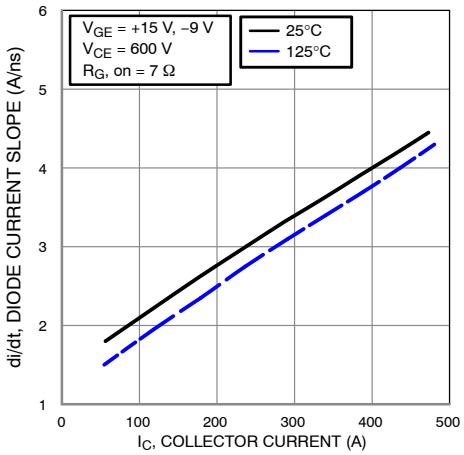


Figure 50. Typical di/dt vs. I_C

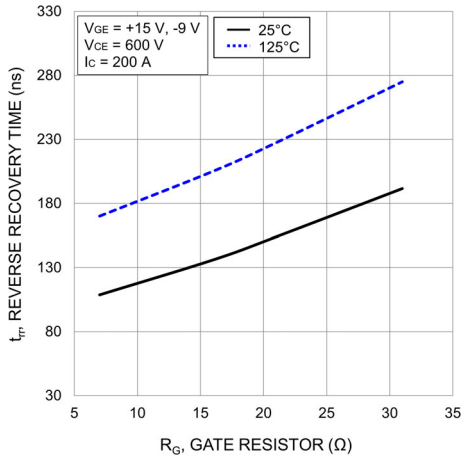


Figure 51. Typical Reverse Recovery Time vs. R_G

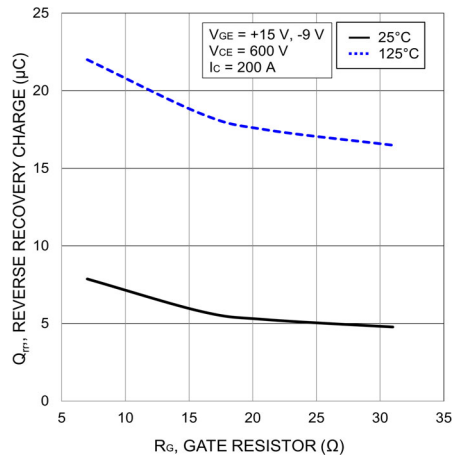


Figure 52. Typical Reverse Recovery Charge vs. R_G

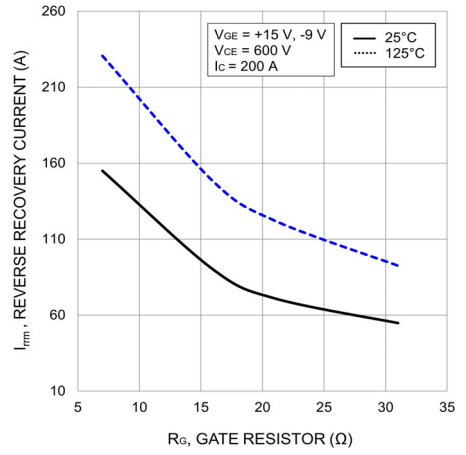


Figure 53. Typical Reverse Recovery Peak Current vs. R_G

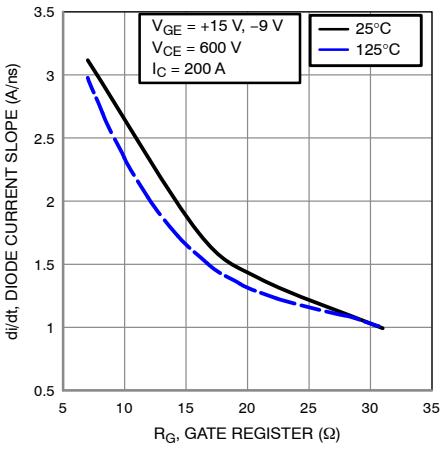
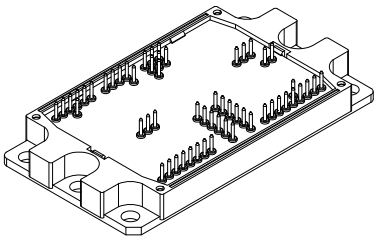


Figure 54. Typical di/dt vs. R_G

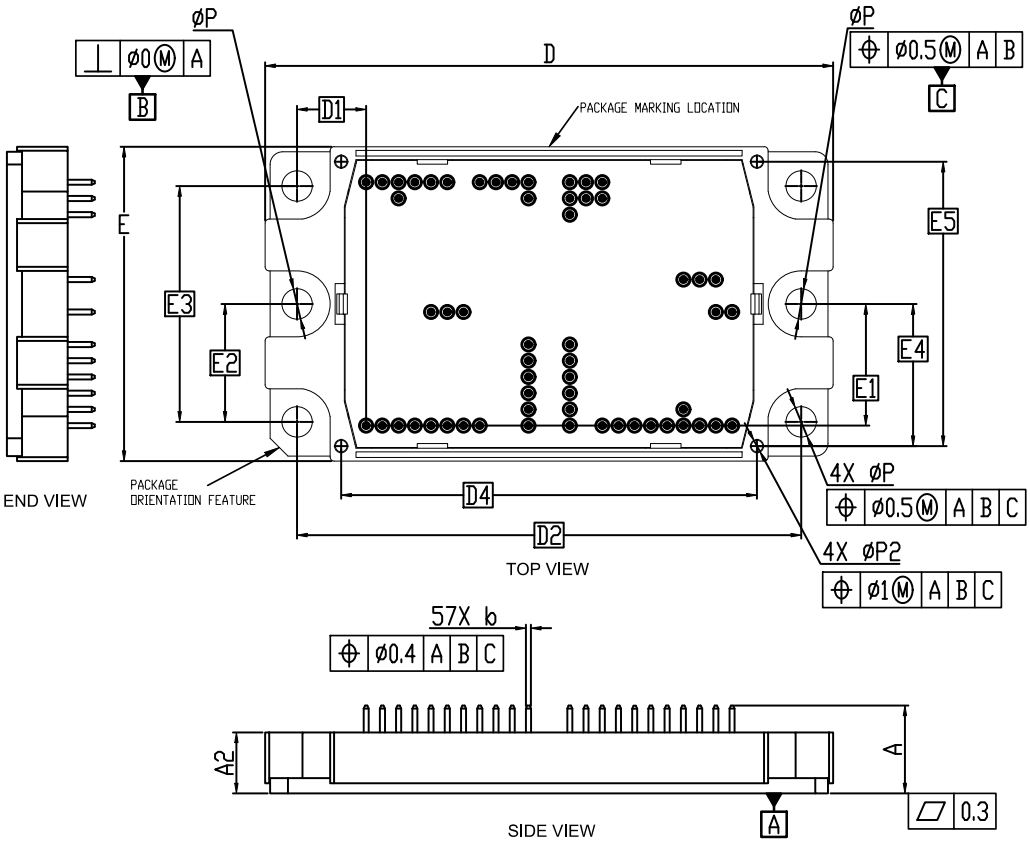


PIM57 112.00x62.00x12.00
CASE 180CX
ISSUE O

DATE 30 JUL 2024

NOTES:

1. Dimensioning and tolerancing conform to ASME Y14.5
2. All dimensions are in millimeters.
3. Pin-grid is 3.2mm.
4. Package marking is located on the side opposite the package orientation feature.
5. The pins are gold-plated solder pin.



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	17.00	17.40	17.80
A2	11.70	12.00	12.30
b	0.95	1.00	1.05
D	111.60	112.00	112.40
D1		13.62 BSC	
D2		99.40 BSC	
D4		82.00 BSC	
E	61.60	62.00	62.40
E1		24.00 BSC	
E2		23.25 BSC	
E3		46.50 BSC	
E4		28.05 BSC	
E5		56.10 BSC	
P	5.90	6.00	6.10
P2	2.20	2.30	2.40

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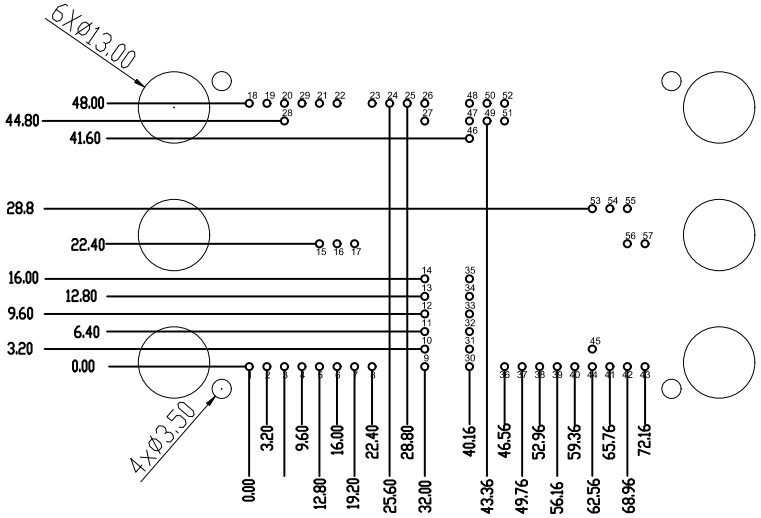
CASE 180CX
ISSUE O

DATE 30 JUL 2024



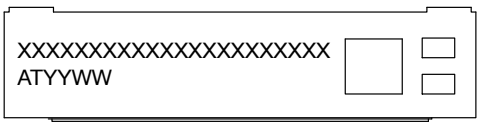
RECOMMENDED
MOUNTING PATTERN

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

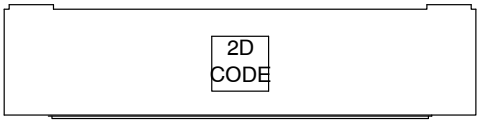
NOTE 2:

Pin table								
Pin	X	Y	Pin	X	Y	Pin	X	Y
1	0	0	23	22.4	48	45	62.56	3.2
2	3.2	0	24	25.6	48	46	40.16	41.6
3	6.4	0	25	28.8	48	47	40.16	44.8
4	9.6	0	26	32	48	48	40.16	48
5	12.8	0	27	32	44.8	49	43.36	44.8
6	16	0	28	6.4	44.8	50	43.36	48
7	19.2	0	29	9.6	48	51	46.56	44.8
8	22.4	0	30	40.16	0	52	46.56	48
9	32	0	31	40.16	3.2	53	62.56	28.8
10	32	3.2	32	40.16	6.4	54	65.76	28.8
11	32	6.4	33	40.16	9.6	55	68.96	28.8
12	32	9.6	34	40.16	12.8	56	68.96	22.4
13	32	12.8	35	40.16	16	57	72.16	22.4
14	32	16	36	46.56	0			
15	12.8	22.4	37	49.76	0			
16	16	22.4	38	52.96	0			
17	19.2	22.4	39	56.16	0			
18	0	48	40	59.36	0			
19	3.2	48	41	65.76	0			
20	6.4	48	42	68.96	0			
21	12.8	48	43	72.16	0			
22	16	48	44	62.56	0			

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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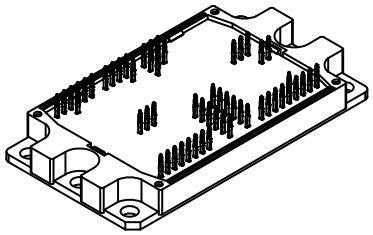


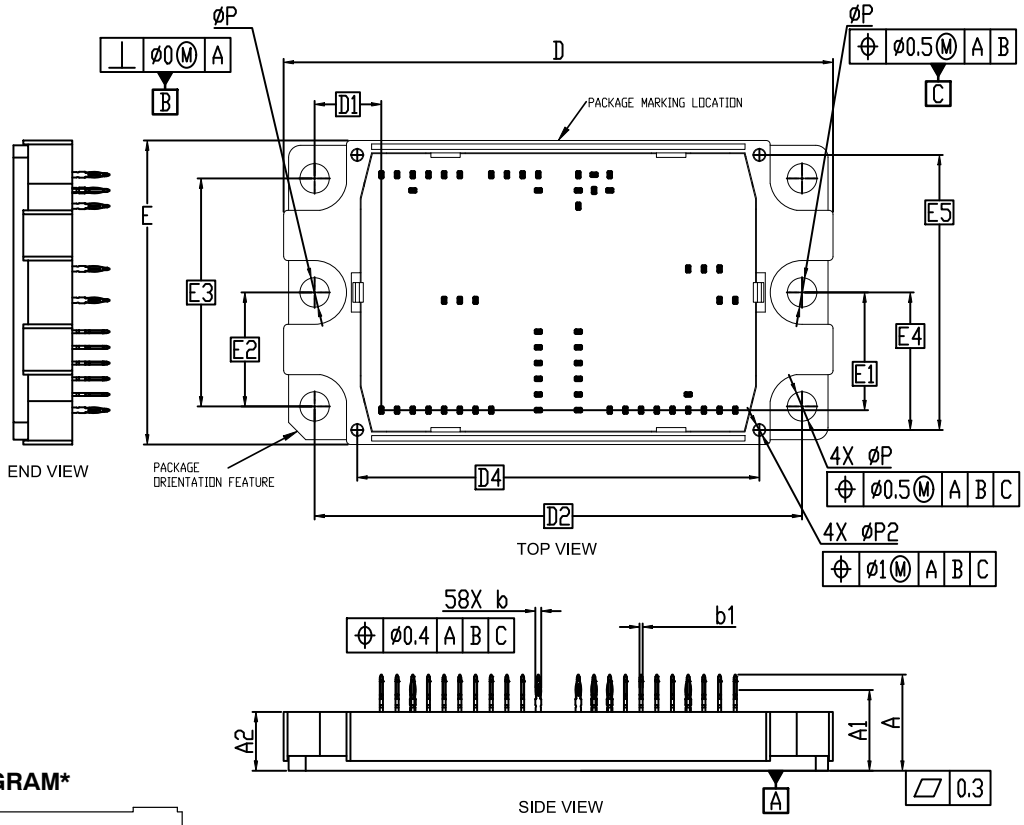
PIM57 112.00x62.00x12.00
CASE 180JC
ISSUE O

DATE 20 SEP 2024

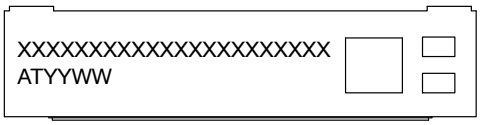
NOTES:

1. Dimensioning and tolerancing conform to ASME Y14.5
2. All dimensions are in millimeters.
3. Dimensions b and b1 apply to the plated terminals and are measured at dimension A1
4. Pin-grid is 3.2mm.
5. Package marking is located on the side opposite the package orientation feature.
6. The pins are Sn plated press fit pin.

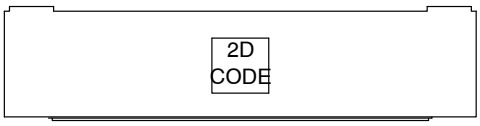
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	19.20	19.60	20.00
A1	16.25	16.45	16.65
A2	11.70	12.00	12.30
b	1.15	1.20	1.25
b1	0.59	0.64	0.69
D	111.60	112.00	112.40
D1	13.62 BSC		
D2	99.40 BSC		
D4	82.00 BSC		
E	61.60	62.00	62.40
E1	24.00 BSC		
E2	23.25 BSC		
E3	46.50 BSC		
E4	28.05 BSC		
E5	56.10 BSC		
P	5.90	6.00	6.10
P2	2.20	2.30	2.40



GENERIC MARKING DIAGRAM*



FRONTSIDE MARKING



BACKSIDE MARKING

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

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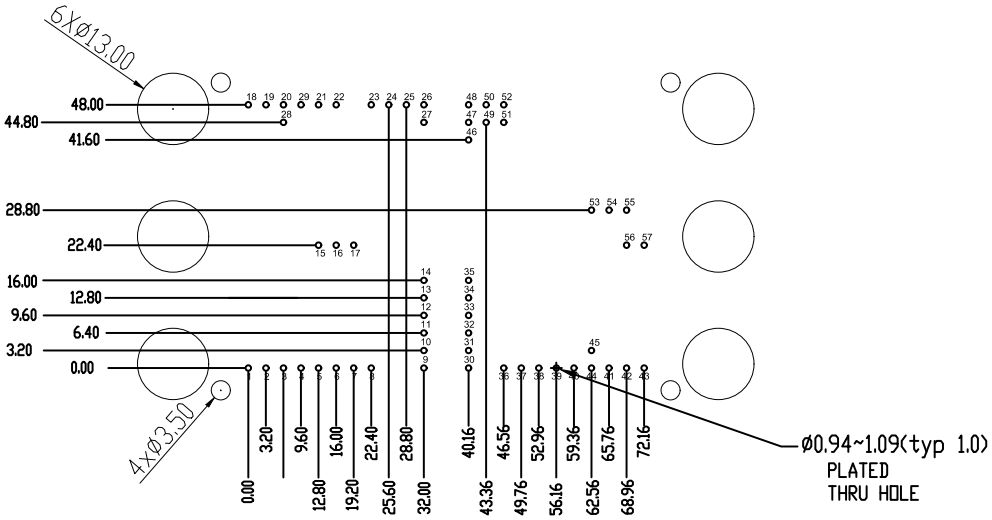

RECOMMENDED
MOUNTING PATTERN

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

NOTE 2:

Pin table

Pin	X	Y	Pin	X	Y	Pin	X	Y
1	0	0	23	22.4	48	45	62.56	3.2
2	3.2	0	24	25.6	48	46	40.16	41.6
3	6.4	0	25	28.8	48	47	40.16	44.8
4	9.6	0	26	32	48	48	40.16	48
5	12.8	0	27	32	44.8	49	43.36	44.8
6	16	0	28	6.4	44.8	50	43.36	48
7	19.2	0	29	9.6	48	51	46.56	44.8
8	22.4	0	30	40.16	0	52	46.56	48
9	32	0	31	40.16	3.2	53	62.56	28.8
10	32	3.2	32	40.16	6.4	54	65.76	28.8
11	32	6.4	33	40.16	9.6	55	68.96	28.8
12	32	9.6	34	40.16	12.8	56	68.96	22.4
13	32	12.8	35	40.16	16	57	72.16	22.4
14	32	16	36	46.56	0			
15	12.8	22.4	37	49.76	0			
16	16	22.4	38	52.96	0			
17	19.2	22.4	39	56.16	0			
18	0	48	40	59.36	0			
19	3.2	48	41	65.76	0			
20	6.4	48	42	68.96	0			
21	12.8	48	43	72.16	0			
22	16	48	44	62.56	0			

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