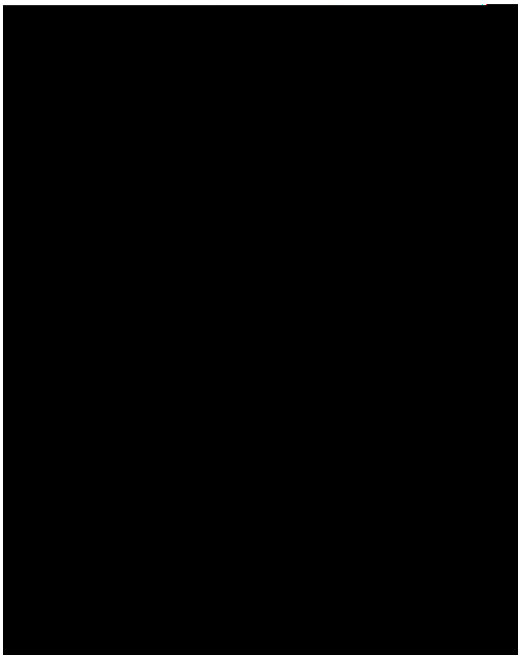


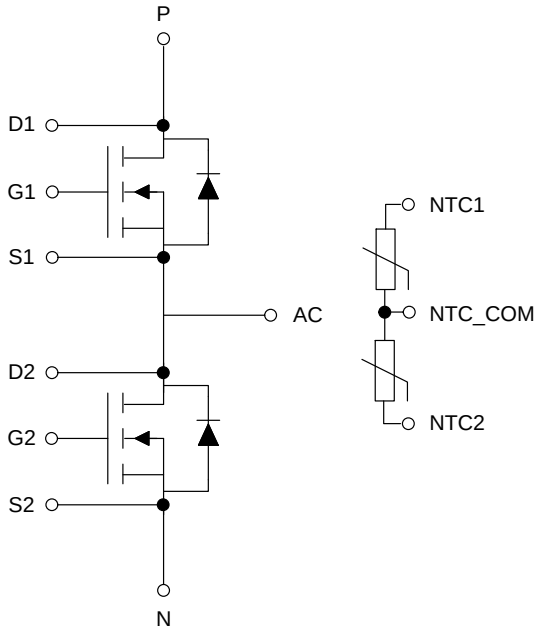


Figure 1. Pin Description

PIN FUNCTION DESCRIPTIONS

Pin No.	Pin Name	Pin Functional Description
1	N	Negative Power Terminal
2	P	Positive Power Terminal
3	D1	High Side MOSFET (Q1) Drain Sense
4	N/C	No Connection
5	S1	High Side MOSFET (Q1) Source
6	G1	High Side MOSFET (Q1) Gate
7	N/C	No Connection
8	N/C	No Connection
9	AC	Phase Output
10	NTC1	NTC 1
11	S2	Low Side MOSFET (Q2) Source
12	G2	Low Side MOSFET (Q2) Gate
13	NTC2	NTC 2
14	NTC_COM	NTC common
15	D2	Low Side MOSFET (Q2) Drain Sense

Materials

DBC Substrate: AlN isolated substrate, basic isolation, and copper on both sides
Lead frame: Pin 1,2 copper without plating. Pin 3 to 15 copper, with tin electro−plating.

Flammability Information

All materials present in the power module meet UL flammability rating class 94V−0

MODULE CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameter	Rating	Unit
T_{vj}	Operating Junction Temperature	−40 to 175	°C
T_{STG}	Storage Temperature Range	−40 to 125	°C
V_{ISO}	Isolation Voltage (AC, 50 Hz, 5 s)	4200	V
Ls_{DS}	Stray Inductance	7.1	nH
$R_{DD'+SS'}$	Module Lead Resistance, Terminal to Chip	0.3	mΩ
G	Module Weight	48	g
CTI	Comparative Tracking Index	>600	–
Creepage	Minimum: Terminal to Terminal	5.0	mm
Clearance	Minimum: (Note 1) Terminal to Terminal	3.2	mm
M	M5 DIN 439B Screws for Module Terminals, Max. Torque	2.2	Nm

1. Verified by design/characterization, not tested.

ABSOLUTE MAXIMUM RATINGS (T_{vj} = 25°C, Unless Otherwise Specified)

Symbol	Parameter	Rating	Unit
V_{DS}	Drain−Source Voltage	1200	V
V_{GS}	Gate−Source Voltage	+25/−10	V
I_{DS}	Continuous DC Current, V_{GS} = 20 V, T_{vj} = 175°C, T_F = 65°C @ 10LPM, using Ref. Heatsink (Note 2)	400	A
$I_{DS.pulsed}$	Pulsed Drain−Source Current, V_{GS} = 20 V, limited by $T_{vj.Max}$	800	A
$I_{SD.BD}$	DC Current in Body Diode, V_{GS} = −5 V, T_{vj} = 175°C, T_F = 65°C @ 10LPM, using Ref. Heatsink (Note 2)	270	A
$I_{SD.pulsed}$	Pulsed Body Diode Current, V_{GS} =−5 V, limited by $T_{vj.Max}$	800	A
Ptot	Total Power Dissipation $T_{vj.Max}$ = 175°C, T_F = 65°C, Ref. Heatsink (typ)	1000	W

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. Verified by design / not by test.

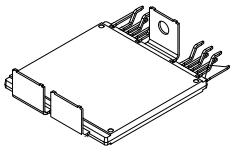
MOSFET CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Parameter		Conditions	Min	Typ	Max	Unit
$R_{DS(ON)}$	Drain−to−Source On Resistance (Terminal)	V_{GS}				

BODY DIODE CHARACTERISTICS (T_{vj} = 25°C, Unless Otherwise Specified)

Parameters		Conditions		Min	Typ	Max	Unit
V_{SD}	Diode Forward Voltage (Terminal)	V_{GS} = −5 V, I_{SD} = 400 A	T_{vj} = 25°C T_{vj} = 175°C	−	3.8 3.3	−	V
E_{rr}	Reverse Recovery Energy	I_{SD} = 400 A, V_R = 800 V, V_{GS} = −5 V, Ls = 17 nH, Rg.on = 3 Ω	di/dt = 8.4 A/ns, T_{vj} = 25°C di/dt = 9.7 A/ns, T_{vj} = 175°C	−	0.4 2.1	−	mJ
Q_{RR}	Recovered Charge	I_{SD} = 400 A, V_R = 800 V, V_{GS} = −5 V, Rg.on = 3 Ω	T_{vj} = 25°C T_{vj} = 175°C	−	2.3 8.6	−	

TYPICAL CHARACTERISTICS



AHPM15−CDI AUTOMOTIVE MODULE
CASE MODHN
ISSUE B

DATE 20 DEC 2022

AHPM15−CDI AUTOMOTIVE MODULE
CASE MODHN
ISSUE B

DATE 20 DEC 2022

GENERIC
MARKING DIAGRAM*

ZZZ = Assembly Lot Code
AT = Assembly & Test Location
Y = Year
WW = Work Week
XXXX = Specific Device Code
NNNN = Serial Number

*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.