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NVVR26A120M1WST

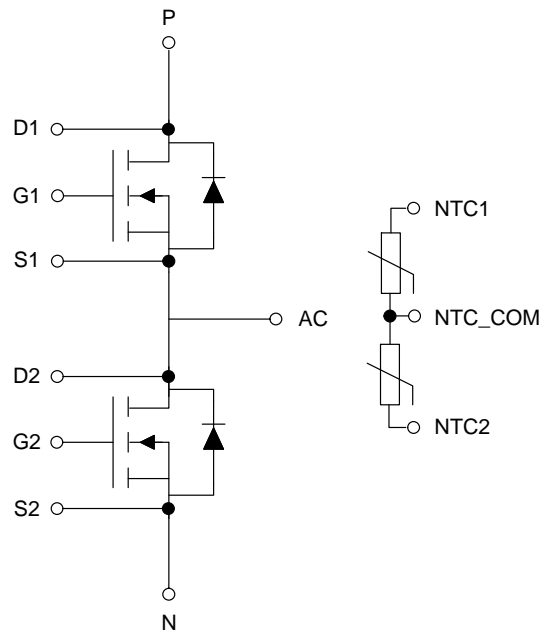
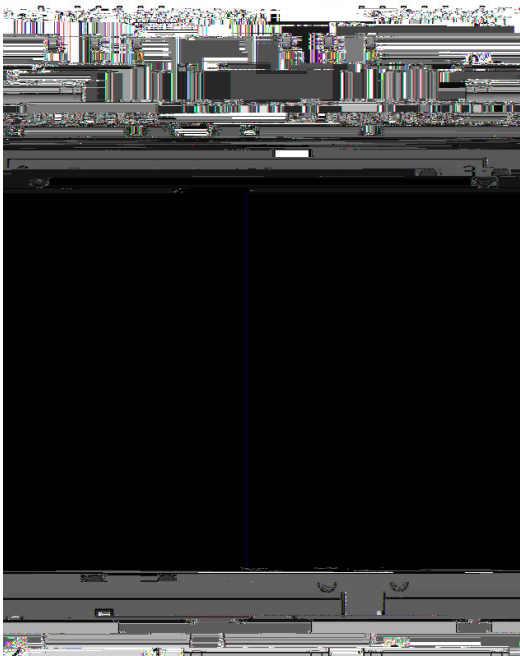


Figure 1. Pin Description

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

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MODULE CHARACTERISTICS ($T_{vj} = 25^{\circ}\text{C}$, Unless Otherwise Specified)

Symbol	Parameter	Rating	Unit
T_{vj}	Operating Junction Temperature	40 to 175	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	40 to 125	$^{\circ}\text{C}$
V_{ISO}	Isolation Voltage (AC, 50 Hz, 5 s)	4200	V
L_{SDS}	Stray Inductance	7.1	nH
R_{DD+SS}	Module Lead Resistance, Terminal to Chip	0.3	m Ω
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 ($T_{vj} = 25^{\circ}\text{C}$, 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, $V_{GS} = 20\text{ V}$, $T_{vj} = 175^{\circ}\text{C}$, $T_F = 65^{\circ}\text{C}$ @ 10LPM, using Ref. Heatsink (Note 2)	400	A
$I_{DS,pulsed}$	Pulsed Drain Source Current, $V_{GS} = 20\text{ V}$, limited by $T_{vj,Max}$	800	A
$I_{SD,BD}$	DC Current in Body Diode, $V_{GS} = 5\text{ V}$, $T_{vj} = 175^{\circ}\text{C}$, $T_F = 65^{\circ}\text{C}$ @ 40LPM, using Ref. Heatsink (Note 2)	270	A
$I_{SD,pulsed}$	Pulsed Body Diode Current, $V_{GS} = 5\text{ V}$, limited by $T_{vj,Max}$	800	A
P_{tot}	Total Power Dissipation $T_{vj,Max} = 175^{\circ}\text{C}$, $T_F = 65^{\circ}\text{C}$, 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.



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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} = 20V, I _D = 400A T _{vj} = 25°C T _{vj} = 175°C			2.6 4.6		mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D = 150 mA		2.1	3.2		V
g _{fs}	Forward Transconductance	V _{DS} = 10 V, I _D = 400 A			170		S
Q _G	Total Gate Charge	V _{GS} = 5/+20 V, V _{DS} = 800 V, I _D = 400 A			1.75		C
R _{g,int}	Internal Gate Resistance				2.1		Ω
C _{iss}	Input Capacitance	V _{DS} = 800 V, V _{GS} = 0 V, f = 100 kHz			31.7		nF
C _{oss}	Output Capacitance				2.2		nF
C _{rss}	Reverse Transfer Capacitance				0.22		nF
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0 V, V _{DS} = 1200 V T _{vj} = 25°C T _{vj} = 175°C			13.1	250	A
I _{GSS}	Gate Source Leakage Current	V _{GS} = 20/ 5 V, V _{DS} = 0 V				±700	nA
T _{d,on}	Turn On Delay, Inductive Load	I _{DS} = 400 A, V _{DS} = 800 V, V _{GS} = +20/ 5 V, R _{g,on} = 3 Ω	T _{vj} = 25°C T _{vj} = 175°C	-	125 115		ns
T _r	Rise Time, Inductive Load	I _{DS} = 400 A, V _{DS} = 800 V, V _{GS} = +20/ 5 V, R _{g,on} = 3 Ω	T _{vj} = 25°C T _{vj} = 175°C	-	59 54		ns
T _{d,off}	Turn Off Delay, Inductive Load	I _{DS} = 400 A, V _{DS} = 800 V, V _{GS} = +20/ 5 V, R _{g,off} = 1 Ω	T _{vj} = 25°C, T _{vj} = 175°C	-	220 228		ns
T _f	Fall Time, Inductive Load	I _{DS} = 400 A, V _{DS} = 800 V, V _{GS} = +20/ 5 V, R _{g,off} = 1 Ω	T _{vj} = 25°C T _{vj} = 175°C	-	51 61		ns
E _{ON}	Turn			-			

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BODY DIODE CHARACTERISTICS ($T_{vj} = 25^{\circ}\text{C}$, Unless Otherwise Specified)

Parameters		Conditions		Min	Typ	Max	Unit
V_{SD}	Diode Forward Voltage (Terminal)	$V_{GS} = 5\text{ V}$, $I_{SD} = 400\text{ A}$ $T_{vj} = 25^{\circ}\text{C}$ $T_{vj} = 175^{\circ}\text{C}$			3.8 3.3		V -
E_{rr}	Reverse Recovery Energy	$I_{SD} = 400\text{ A}$, $V_R = 800\text{ V}$, $V_{GS} = 5\text{ V}$, $L_s = 17\text{ nH}$, $R_{g.on} = 3\ \Omega$	$di/dt = 8.4\text{ A/ns}$, $T_{vj} = 25^{\circ}\text{C}$ $di/dt = 9.7\text{ A/ns}$, $T_{vj} = 175^{\circ}\text{C}$		0.4 2.1		mJ -
Q_{RR}	Recovered Charge	$I_{SD} = 400\text{ A}$, $V_R = 800\text{ V}$, $V_{GS} = 5\text{ V}$, $R_{g.on} = 3\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ - $T_{vj} = 175^{\circ}\text{C}$		2.3 8.6		C -
I_{RR}	Peak Reverse Recovery Current	$I_{SD} = 400\text{ A}$, $V_R = 800\text{ V}$, $V_{GS} = 5\text{ V}$, $R_{g.on} = 3\ \Omega$	$T_{vj} = 25^{\circ}\text{C}$ - $T_{vj} = 175^{\circ}\text{C}$		527 650		A -

NTC SENSOR CHARACTERISTICS ($T_{vj} = 25^{\circ}\text{C}$, Unless Otherwise Specified)

Parameters		Conditions		Min	Typ	Max	Unit
R25	Rated Resistance	$T_c = 25^{\circ}\text{C}$			10		$k\Omega$ -
$\Delta R/R$	Deviation of R100	$T_c = 100^{\circ}\text{C}$, $R_{100} = 877\ \Omega$		3		+3	%-
P25	Power Dissipation	$T_c = 25^{\circ}\text{C}$				125	mW-
B25/85	B Value	-	$R = R_{25} \exp [B_{25/85} (1/T - 1/298)]$	1%	3640	+1%	K

THERMAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$R_{th,J C}$	FET Junction to Case			0.025	0.028	$^{\circ}\text{C/W}$
$R_{th,J F}$	FET Junction to Fluid	R_{th} , Junction to Fluid, 10 L/min, 65°C , 50/50 EGW, Ref. Heatsink		0.11		$^{\circ}\text{C/W}$



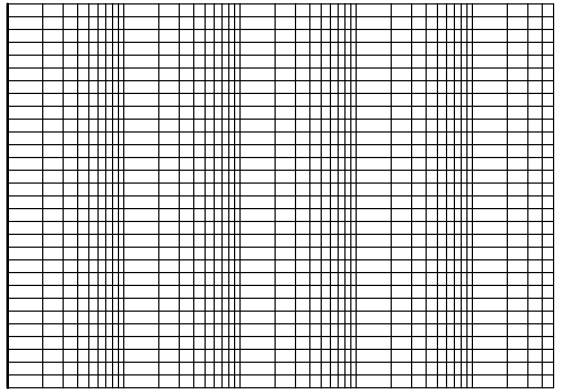
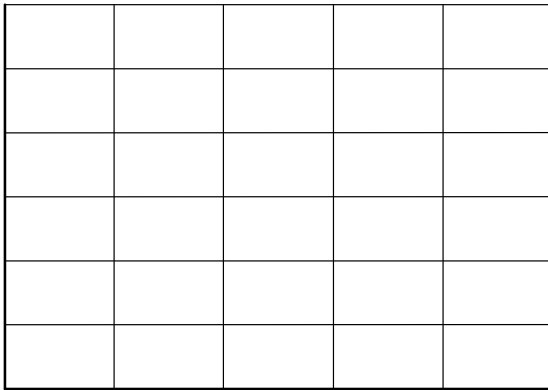
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TYPICAL CHARACTERISTICS

Figure 14. Switching Energies vs. External



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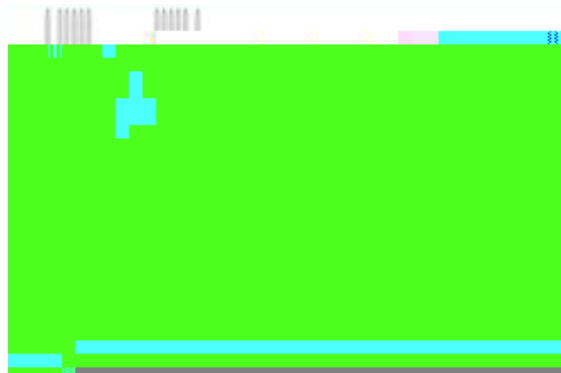
AHPM15 CDA MODULE
CASE MODHG
ISSUE B

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AHPM15 CDA MODULE
CASE MODHG
ISSUE A

DATE 22 SEP 2021



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

*This information is generic. Please refer to device data sheet for actual part marking.
Pb-Free indicator

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