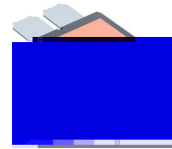




Product Description

Features

Typical Applications

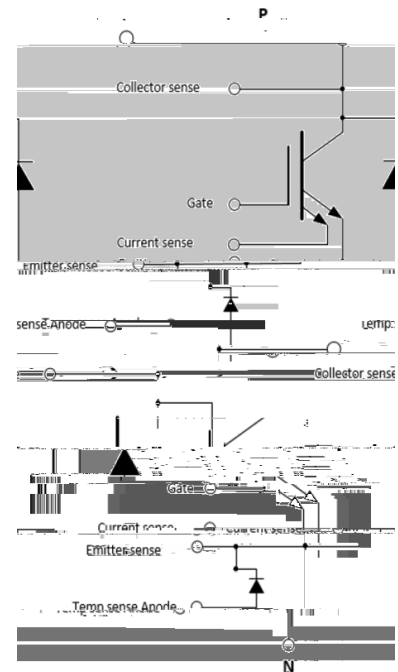


**AHPM13-CGA MODULE
CASE MODHR**

MARKING DIAGRAM



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



ORDERING INFORMATION

See detailed ordering and shipping information on page 10 of this data sheet.

VE-Trac™ Dual NVG500A75L4DSF2

PIN DESCRIPTION

Pin #	Pin	Pin Function Description	Pin Arrangement
1	N	Low Side Emitter	
2	P	High Side Collector	
3	H/S COLLECTOR SENSE	High Side Collector Sense	
4	H/S CURRENT SENSE	High Side Current Sense	
5	H/S GATE	High Side Gate	
6	H/S EMITTER SENSE	High Side Emitter Sense	
7	H/S TEMP SENSE (ANODE)	High Side Temp sense Diode Anode	
8	~	Phase Output	
9	L/S CURRENT SENSE	Low Side Current Sense	
10	L/S EMITTER SENSE	Low Side Emitter Sense	
11	L/S GATE	Low Side Gate	
12	L/S TEMP SENSE (ANODE)	Low Side Temp sense Diode Anode	
13	L/S COLLECTOR SENSE	Low Side Collector Sense	

DBC Substrate

Lead Frame

Flammability Information

MODULE CHARACTERISTICS

Symbol	Parameter	Rating	Unit
T_{vj}	Continuous Operating Junction Temperature Range	-40 to 175	C
T_{STG}	Storage Temperature range	-40 to 125	C
V_{ISO}	Isolation Voltage, AC, $f = 50$ Hz, $t = 1$ s	4200	V
CTI	Comparative Tracking Index		

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VE-Trac™ Dual NVG500A75L4DSF2

CHARACTERISTICS OF IGBT (T_{vj} = 25 C, unless otherwise specified)

Parameters		Conditions	Min	Typ	Max	unit	
V _{CESAT}	Collector to Emitter Saturation Voltage	V _{GE} = 15 V, I _C = 400 A,	T _{vj} = 25 C	–	1.32	1.45	V
			T _{vj} = 150 C	–	1.37	–	
			T _{vj} = 175 C	–	1.39	–	
		V _{GE} = 15 V, I _C = 500 A,	T _{vj} = 25 C	–	1.39	–	
			T _{vj} = 150 C	–	1.51	–	
			T _{vj} = 175 C	–	1.55	–	
I _{CES}	Collector to Emitter Leakage Current	V _{GE} = 0, V _{CE} = 750 V	T _{vj} = 25 C	–	–	1	mA
			T _{vj} = 175 C	–	8	–	
I _{GES}	Gate – Emitter Leakage Current	V _{CE} = 0, V _{GE} = 20 V	–	–	400	nA	
V _{th}	Threshold Voltage	V _{CE} = V _{GE} , I _C = 500 mA	4.5	5.6	6.5	V	
Q _G	Total Gate Charge	V _{GE} = –8 to 15 V, V _{CE} = 400 V, I _C = 400 A	–	0.96	–	μC	
R _{Gint}	Internal Gate Resistance		–	2	–	Ω	
C _{ies}	Input Capacitance	V _{CE} = 30 V, V _{GE} = 0 V, f = 1 MHz	–	36	–	nF	
C _{oes}	Output Capacitance	V _{CE} = 30 V, V _{GE} = 0 V, f = 1 MHz	–	0.7	–	nF	
C _{res}	Reverse Transfer Capacitance	V _{CE} = 30 V, V _{GE} = 0 V, f = 1 MHz	–	0.09	–	nF	
T _{d,on}	Turn On Delay, Inductive Load	I _C = 400 A, V _{CE} = 400 V V _{GE} = +15/–8 V R _{G,on} = 3.9 Ω	T _{vj} = 25 C	–	168	–	ns
			T _{vj} = 150 C	–	192	–	
			T _{vj} = 175 C	–	197	–	
T _r	Rise Time, Inductive Load	I _C = 400 A, V _{CE} = 400 V V _{GE} = +15/–8 V R _{G,on} = 3.9 Ω	T _{vj} = 25 C	–	67	–	ns
			T _{vj} = 150 C	–	82	–	
			T _{vj} = 175 C	–	86	–	
T _{d,off}	Turn Off Delay, Inductive Load	I _C = 400 A, V _{CE} = 400 V V _{GE} = +15/–8 V R _{G,off} = 15 Ω	T _{vj} = 25 C	–	801	–	ns
			T _{vj} = 150 C	–	872	–	
			T _{vj} = 175 C	–	884	–	
T _f	Fall Time, Inductive Load	I _C = 400 A, V _{CE} = 400 V V _{GE} = +15/–8 V R _{G,off} = 15 Ω	T _{vj} = 25 C	–	112	–	ns
			T _{vj} = 150 C	–	165	–	
			T _{vj} = 175 C	–	196	–	
E _{ON}	Turn–On Switching Loss (Including Diode Reverse Recovery Loss)	I _C = 400 A, V _{CE} = 400 V V _{GE} = +15/–8 V R _{G,on} = 3.9 Ω L _s = 25 nH di/dt (T _{vj} = 25 C) = 5.04 A/ns di/dt (T _{vj} = 175 C) = 4.15 A/ns	T _{vj} = 25 C	–	10.49	–	mJ
			T _{vj} = 150 C	–	16.20	–	
			T _{vj} = 175 C	–	17.84	–	
E _{OFF}	Turn–Off Switching Loss	I _C = 400 A, V _{CE} = 400 V V _{GE} = +15/–8 V R _{G,off} = 15 Ω L _s = 25 nH dv/dt (T _{vj} = 25 C) = 3.0 V/ns dv/dt (T _{vj} = 175 C) = 2.24 V/ns	T _{vj} = 25 C	–	14.52	–	mJ
			T _{vj} = 150 C	–	23.31	–	
			T _{vj} = 175 C	–	23.88	–	
Esc	Minimum Short Circuit Energy Withstand	V _{GE} = 15 V, V _{CE} = 400 V	T _{vj} = 25 C T _{vj} = 175 C	– 3.0	3.0 –	– –	J

VE-Trac™ Dual NVG500A75L4DSF2



VE-Trac™ Dual NVG500A75L4DSF2

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TYPICAL CHARACTERISTICS

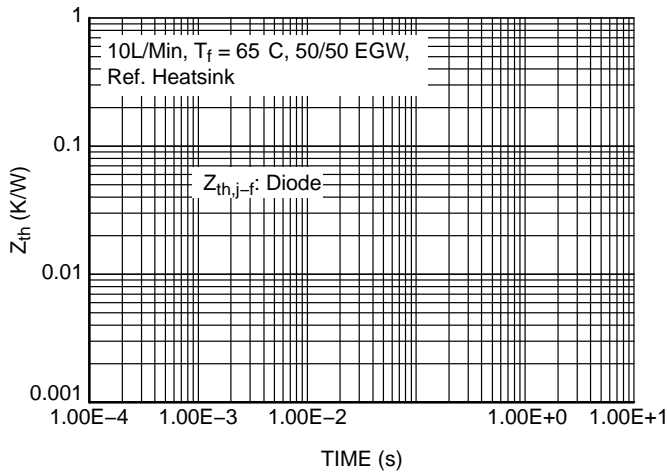


Figure 19. Diode Transient Thermal Impedance

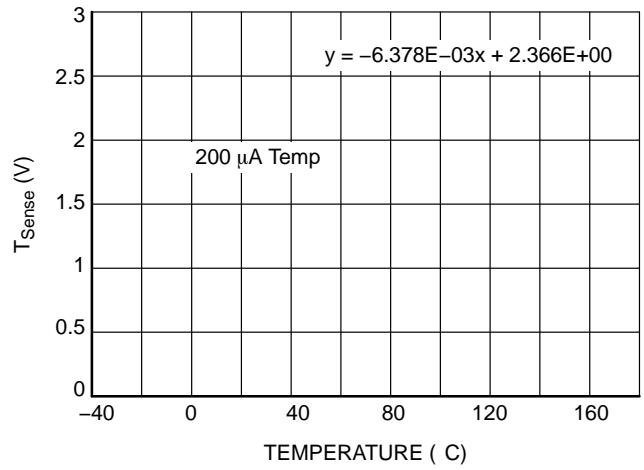


Figure 20. Temperature Sensor Characteristic

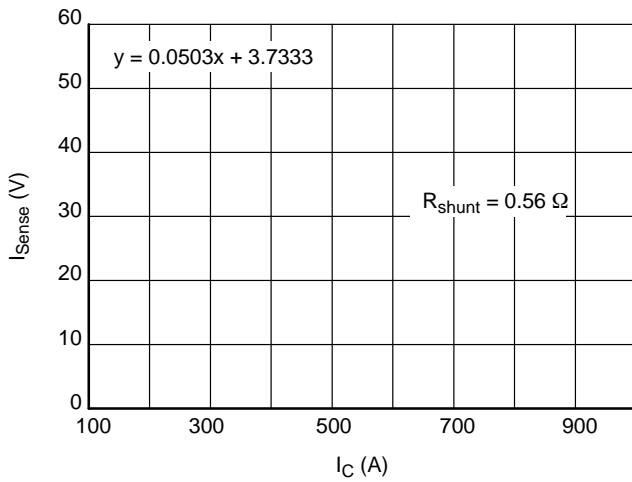


Figure 21. Current Sensor Characteristic

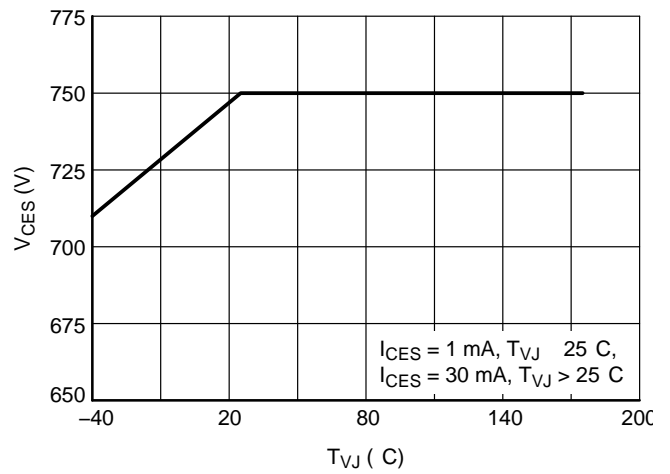


Figure 22. Maximum Allowed VCE

VE-Trac™ Dual NVG500A75L4DSF2

ORDERING INFORMATION

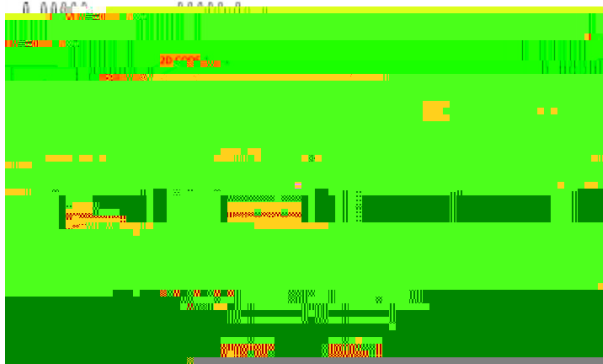
Part Number	Package	Shipping
NVG500A75L4DSF2	AHPM13-CGA Module Case MODHR (Pb-Free)	36 Units / 2x Blister Tray

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AHPM13 CGA MODULE
CASE MODHR
ISSUE B

DATE 19 MAY 2023

**GENERIC
MARKING DIAGRAM***



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