

The VM2J-iB is a solid-state, Class AB broadband power amplifier module based on advanced GaN HEMT technology. The VM2J-iB is intended for CW applications, offering exceptional performance in a small and lightweight form factor. Advanced and unique features are accessible via an FPGA-based serial interface. The module primary functions may also be controlled using the discrete I/O interface.



PRODUCT FEATURES

- Small Form Factor (230 x 95 x 25 mm): Smaller and Lighter than Competing Models
- Exceptional Bandwidth, Output Power and Efficiency
- Ultra-Fast and Effective Mute Function
- Comprehensive Built-In Test, Telemetry and Protection
- High-Resolution Power / Gain Control
- Supports Internally-Stored Calibration Look-Up Tables
- Innovative Space-Saving Connector System

TYPICAL APPLICATIONS

The VM2J-iB is ideal for:

- Electronic Warfare / Countermeasures
- Broadband Mobile Jamming Applications
- Airborne, Aircraft and UAV Equipment
- Power Amplifier Stage for Wireless Infrastructure
- Test and Measurement Equipment
- General Purpose Broadband Transmitter Amplification

ELECTRICAL CHARACTERISTICS TC = +25 °C, 32 VDC, 50 Ω System (unless otherwise noted)

PARAMETER	MIN	ТҮР	MAX	UNITS
Operating Frequency Range	400		2900	MHz
Saturated Output Power (Psat)	50	50.5		dBm
Power-Added Efficiency @Psat	30	37		%
Gain @Psat		50		dB
Gain Flatness @P 100w		±5		dB
Input Return Loss	10			dB
Output Return Loss		10		dB
Input Power @Psat		0	10	dBm
Noise Figure			15	dB
Harmonic Emissions			-10	dBc
Non-Harmonic Spurious Emissions			-60	dBc
DC Supply Voltage	24	28	32	V
Current Consumption @P 100w		9.5	11.5	А
Mute/ Enable Mode Switching Characteristics:				
tENABLE, tMUTE (50% CTRL to 10/90% RF)		500	1000	ns
Isolation in Mute Mode	80			dB
Current Consumption in Mute Mode			100	mA
Current Consumption in Shutdown			10	mA
Gain Control Characteristics:				
Adjustment Range		31.5		dB
Adjustment Resolution		0.5		dB

Antares Defence Systems Ltd Unit 5, Alton Road Industrial Estate, Alton Road Ross-on-Wye, Herefordshire, HR9 5NB +44 (0)1989 760 590 sales@antaresdefencesystems.com www.antaresdefencesystems.com Date: 12/2023 Part Version: E3 Revision: G



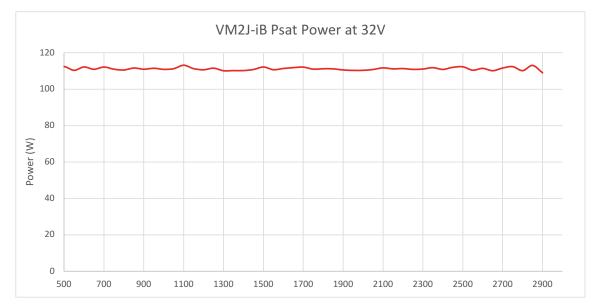


CONTROL CHARACTERISTICS AND ADVANCED FEATURES

Ultra-Fast Mute/Enable Switching Control via discrete input Additional control via serial comms interface Serial Communications Interface 2-wire serial interface required to access advanced features (High Noise Immunity) Interface: RS-485 Half Duplex High-Resolution Power/Gain Control Control via serial comms interface User Memory 16 MB (128 Mbi) serial flash memory Supports multiple calibration tables or user-specific data Control via serial comms interface Built-In Test Functions Power-no BIT (PBIT) All BIT data is accessible via the serial comms interface Temperature BIT Baseplate and Core temperatures monitored Range: -40 °C to +125 °C Accuracy: ±3 °C Voltage BIT All critical voltage and serial somes and features All critical voltage ratio Critical device currents and total input current monitored Accuracy: ±5 % Current BIT CR Checking of User Settings Alarm Output Discrete output Logical On status of individual BIT flags Behaviour may be modified or disabled via serial comms interface Elapsed On-Time Recorder 34 years of total (power-on) time accumulation -1-Bit power-up event counter Electronic Identification Data (Non-Volatile) Part Inveloid: +82 °C Additional Features Discrete aupput serial number Serial number Serial number Serial number <t< th=""><th>PARAMETER</th><th>VALUE</th></t<>	PARAMETER	VALUE	
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Optional Features Other serial interface standards e.g. I2C, SPI, CAN Integrated T/R Switch (adds 20 mm to length)		Control interface ESD protection	
Integrated T/R Switch (adds 20 mm to length)		Shutdown function	
Integrated T/R Switch (adds 20 mm to length)	Optional Features	Other serial interface standards e.g. I2C, SPI, CAN	
Both RF IN and RF OUT on same short face (adds 5mm to width)			
		Both RF IN and RF OUT on same short face (adds 5mm to width)	

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MECHANICAL CHARACTERISTICS

PARAMETER	VALUE	UNITS
Dimensions (excl. connectors)	230 x 95 x 25	mm
Mass	900	g
RF In / Out Connectors	SMA Female	-
DC In / Control Connector	Mixed Technology Male: 2 Power + 12 Signal	-
Cooling Method	External Heatsink to Baseplate (Not Supplied)	-

ENVIRONMENTAL CHARACTERISTICS

PARAMETER	MIN	ТҮР	MAX	UNITS
Case or Baseplate Temperature	-20		+80	°C
Cold Start Temperature (performance not guaranteed)	-40			°C
Relative Humidity (non-condensing)			95	%
Ingress Protection		IP51		-

ABSOLUTE MAXIMUM RATINGS (Not simultaneous)

RF Input Power	+10 dBm
RF Output Mismatch	VSWR ∞ :1 at all phase angles (for 1 minute)
Case or Baseplate Temperature (Operating)	-20 °C to +85 °C
Case or Baseplate Temperature (Non-Operating)	-40 °C to +100 °C
DC Supply Voltage (DC IN+ to GND)	24 V to 32 V
Control Interface (I/O to GND)	-0.5 V to 5.5 V
Mute / Enable Mode Switching Frequency	50 kHz
ESD Sensitivity	HBM Class 1A

Exceeding maximum ratings may cause permanent damage. Operation between operating range maximum and absolute maximum for extended periods may reduce device reliability. Absolute maximum ratings are stress figures only and functional operation under these conditions is not implied.

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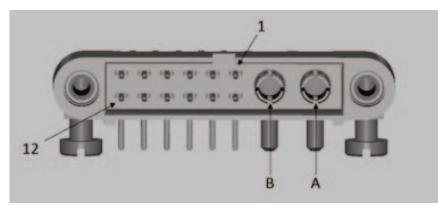




CONNECTOR PINOUT

Pin	Signal	Description	Electrical Characteristics	Direction
А	DC_IN-	VDC return	0 V	-
В	DC_IN+	VDC supply voltage	24-32 V	-
			@14 A max.	
			≤100 mV pk-pk ripple in 20 MHz BW	
1	COMMS_RS485HD_P	RS485 non-inverting receiver input	Refer to ADM3486E datasheet. Multidrop bus	In/Out
		and non-inverting driver output	not supported. Keeper resistors required	
2	COMMS_RS485HD_N	RS485 inverting receiver input	Refer to ADM3486E datasheet. Multidrop bus	In/Out
		and inverting driver output	not supported. Keeper resistors required	
3	PA_GOOD	PA Good bit:	3V3 CMOS	Out
		'0' = Fault		
		'1' = No Fault		
4	GND	Signal return	0 V	-
5	CAN_TERM	Open end of 120 $\boldsymbol{\Omega}$ resistor; other end internally	125 mW rated	-
		connected to COMMS_CAN_P		
6	PA_SHDN	PA Shutdown bit:	3V3 CMOS	In
		ʻ0' = No Shutdown	(5 V tolerant)	
		'1' = Shutdown		
7	GND	Signal return	0 V	-
8	TX_EN	Transmit Enable bit:	3V3 CMOS	In
		'0' = Mute	(5 V tolerant)	
		'1' = Transmit		
9	COMMS_CAN_P	CAN non-inverting receiver input	Refer to SN65HVD230D datasheet	In/Out
10	COMMS_CAN_P	and non-inverting driver output		In/Out
11	COMMS_CAN_N	CAN inverting receiver input	Refer to SN65HVD230D datasheet	In/Out
12	COMMS_CAN_N	and inverting driver output		In/Out

PIN DESIGNATIONS: (Overrides any other definition)

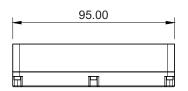


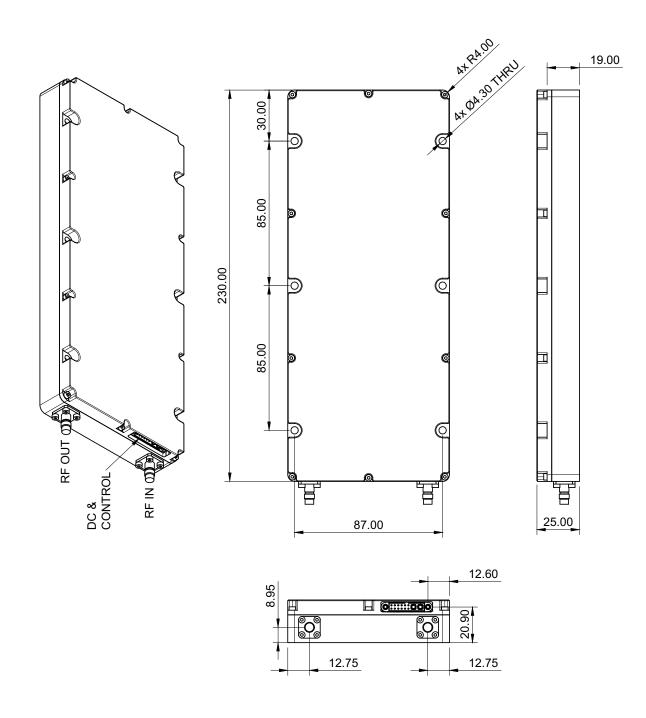
CMM Micro Connector, 2x Male HP contacts + 12x Male LF contacts	
Nicomatic (https://www.nicomatic.com/family/3)	
221V12F23-0200-3400CMM	
≥500	
222S12M16C-0200-4320 (Nicomatic)	
M80-4C11205F1-02-325-00-000 (Harwin)	
14143-25 (Nicomatic)	

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OUTLINE DIMENSIONED DRAWING: (in millimetres)





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ESD PRECAUTIONS

Although this product contains circuitry to protect it from damage due to ESD, when handling this product observe the same precautions as with any other ESD-sensitive device.



RoHS COMPLIANCE

RoHS compliant parts and processes are used in the manufacture of this product.



QUALITY

This product is designed and manufactured in the United Kingdom in accordance with the ISO 9001:2008 Quality Management System.

ORDERING INFORMATION

MODEL NAME	PART NUMBER	FINISH
VM2J-iB	-	Iridite TM NCP