VM3E-iB

The VM3E-iB is a solid-state, Class AB broadband power amplifier module based on advanced GaN HEMT technology. The VM3E-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 VM3E-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	2		6	GHz
Saturated Output Power (Psat)	47.5	48		dBm
Power-Added Efficiency @Psat	25	30		%
Gain @Psat	49	50		dB
Gain Flatness @Psat		±5		dB
Input Return Loss	10			dB
Output Return Loss	10			dB
Input Power @Psat			5	dBm
Noise Figure			15	dB
Harmonic Emissions			-10	dBc
Non-Harmonic Spurious Emissions			-60	dBc
DC operating Supply Voltage	24	28	32	V
Current Consumption @Psat		7	9	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

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CONTROL CHARACTERISTICS AND ADVANCED FEATURES

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Optional Features Shutdown function Integrated FWD and REV Power Monitors Other serial interface standards e.g. I2C, SPI, CAN	Additional Features	DC supply reverse polarity protection		
Optional Features Other serial interface standards e.g. I2C, SPI, CAN		Control interface ESD protection		
Optional Features Other serial interface standards e.g. I2C, SPI, CAN		Shutdown function		
•		Integrated FWD and REV Power Monitors		
	Optional Features	Other serial interface standards e.g. I2C, SPI, CAN		
Integrated T/R Switch (adds 20 mm to length)		Integrated T/R Switch (adds 20 mm to length)		





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.

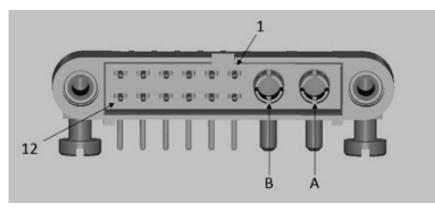




CONNECTOR PINOUT

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
		'0' = 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)



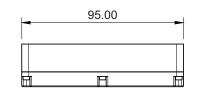
CMM Micro Connector, 2x Male HP contacts + 12x Male LF contacts
Nicomatic (https://www.nicomatic.com/family/3)
221V12F23-0200-3400CMM
≥500
222S12M16C-0200-4320 (Nicomatic)
M80-4C11205F1-02-325-00-000 (Harwin)
14143-25 (Nicomatic)

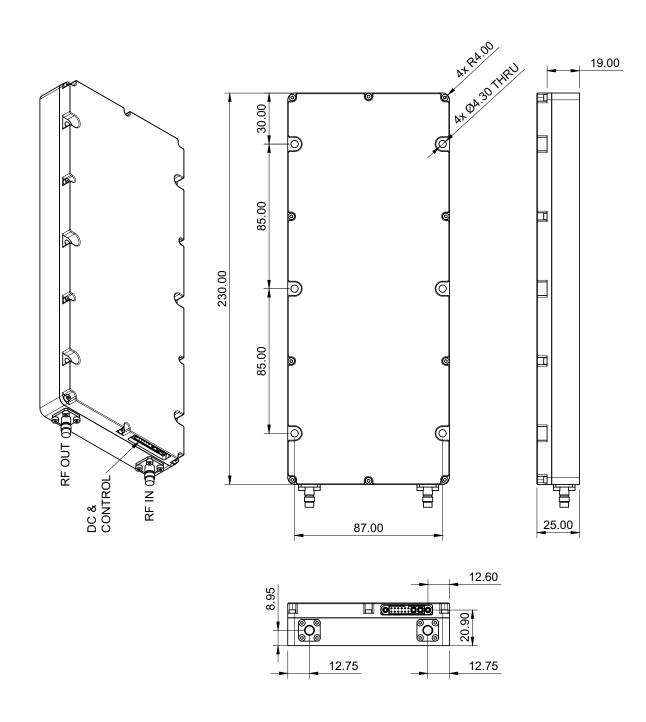
Antares Defence Systems Ltd Unit 5, Alton Road Industrial Estate, Alton Road Ross-on-Wye, Herefordshire, HR9 5NB

+44 (0)1989 760 590 sales@antaresdefencesystems.com www.antaresdefencesystems.com Date: 12/2023 Part Version: C2 Revision: G



OUTLINE DIMENSIONED DRAWING: (in millimetres)







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.

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	
VM3E-iB	-	Iridite TM NCP	