MM2 Series 900 MHz 5 Watt Radio

FREEWAVE

KEY FEATURES

Output: 5 Watt RF output power

Improved Low Signal Performance: RISC based signal demodulation with matched filter

Versatility: A single radio can operate as a Gateway, Endpoint, Repeater, or Endpoint/ Repeater.

Unparalleled Signal Performance:

RF front end with multistage SAW filtering has unmatched combination of overload immunity and sensitivity

Selectable Speeds: 115.2 kbps and 153.6 kbps

Secure: Proprietary Spread Spectrum Technology prevents detection and unauthorized access

Size & Performance: Smallest data radio with the highest performance available

Reliable: 100% tested for performance from -40°C to +85°C

Options: TDMA, Super Epoch TDMA, AES Encryption

OVERVIEW

The MM2-9X5W 900 MHz 5 Watt radio has been designed to provide the performance, reliability, and quality that our customers have come to know and expect. The small form factor MM2-9X5W is ideal for applications where space is a premium.

The small form factor MM2-9X5W has all of the functionality of the MM2 series of radios and larger form factor FGR and FGR2 series of radios including: TDMA, Super Epoch TDMA, and AES encryption.

All radios are designed, manufactured and tested in Boulder, CO.



TECHNICAL SPECIFICATIONS

| TRANSMITTER | R |
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DATA TRANSMISSION

| Frequency Range902 to 928 MHzError Detection32 bit CRC, retransmit on errorRF Data Rate153 kbps and 115 kbps, user-selectableData Throughput115.2 kbps and 153.6 kbpsOutput Power5 WData EncryptionFHSS technologyData Link Range90 milesOptionsAES 128/192/256-bit encryption TDMA Super Epoch TDMAModulation2 level GFSKData Interface1200 bps to 230.4 kbpsOccupied Bandwidth30 kHzData Interface1200 bps to 230.4 kbpsHopping Channels50 to 112, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectablePOWER REQUIREMENTSFrequency Zones16 zones+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical Current -103 dBm @ 115.2 for BER 10.4Sensitivity-108 dBm @ 115.2 for BER 10.4 -103 dBm @ 153.6 kbps BER 10.4+12 VDC Typical Current -103 dBm @ 153.6 kbps BER 10.4IF Selectivity208 at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TODynamic Range+10 dBm 3rd order intercept point at in put connectorModel Number MM2-9X5WModel NumberMM2-9X5WBoard Level, 5W MM2-9X5W-CE- | | | | |
|--|--------------------|---|-------------------------|---------------------------------------|
| Output Power5 WData EncryptionFHSS technologyData Link Range90 milesOptionsAES 128/192/256-bit encryption TDMA Super Epoch TDMAModulation2 level GFSKData Interface1200 bps to 230.4 kbpsOccupied Bandwidth230 kHzData Interface1200 bps to 230.4 kbpsHopping Channels50 to 112, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical Current Idle: 90 mATransmit: 590 mA Receive: 160 mA Idle: 90 mARF ConnectorMMCX-108 dBm @ 115.2 for BER 10^4 -103 dBm @ 153.6 kbps BER 10^4+12 VDC Typical Current Idle: 0 mATransmit: 1410 mA Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO EDERModel Number MM2-9XSWDescriptionDynamic Range+10 dBm 3rd order intercept point at input connector+10 dBm 3rd order intercept point at input connectorModel Number MM2-9XSWDescription | Frequency Range | 902 to 928 MHz | Error Detection | 32 bit CRC, retransmit on error |
| Data Link Range90 milesOptionsAES 128/192/256-bit encryption TDMA Super Epoch TDMAModulation2 level GFSKData Interface1200 bps to 230.4 kbpsOccupied Bandwidth230 kHzData Interface1200 bps to 230.4 kbpsHopping Channels50 to 112, user-selectablePOWER REQUIREMENTSHopping Bands7, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical Current Idle: 90 mATransmit: 590 mA Receive: 160 mA Idle: 90 mARF ConnectorMMCX+12 VDC Typical Current -103 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4Transmit: 1410 mA Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO DER Model Number Imput connectorModel Number MM2-9XSWDescription | RF Data Rate | 153 kbps and 115 kbps, user-selectable | Data Throughput | 115.2 kbps and 153.6 kbps |
| Modulation2 level GFSKTDMA Super Epoch TDMAOccupied Bandwidth30 kHzData Interface100 bps to 230.4 kbpsHopping Channels50 to 112, user-selectablePOWER REQUIREMENTSHopping Bands7, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5 VDC) +12 VDC (12 to 13.5 VDC) +12 VDC (12 to 13.5 VDC)Frequency Zones16 zones+5 VDC Typical Current Idie: 90 mATransmit: 590 mA Receive: 160 mA Idle: 90 mARF ConnectorMMCX+12 VDC Typical Current -103 dBm @ 153.6 kbps BER 10.4+12 VDC Typical Current Idle: 90 mAReceive: 0 mA Receive: 0 mA Idle: 90 mAIF Selectivity-108 dBm @ 115.2 for BER 10.4 -103 dBm @ 153.6 kbps BER 10.4INFORMATION TO Experiment Model NumberPoscriptionIF Selectivity-108 dBm @ 115.2 for BER 10.4 -103 dBm @ 153.6 kbps BER 10.4INFORMATION TO Experiment Model NumberDescriptionIF Selectivity-108 dBm @ 115.2 for BER 10.4 -103 dBm @ 153.6 kbps BER 10.4IMS-99X5WDescription | Output Power | 5 W | Data Encryption | FHSS technology |
| Modulation2 level GFSKSuper Epoch TDMAOccupied Bandwidth230 kHzData Interface1200 bps to 230.4 kbpsHopping Channels50 to 112, user-selectablePOWER REQUIREMENTSHopping Bands7, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical Current It RF ConnectorTransmit: 590 mA Receive: 160 mA Idle: 90 mARECEIVER-108 dBm @ 115.2 for BER 10-4+12 VDC Typical Current -103 dBm @ 153.6 kbps BER 10-4Transmit: 1410 mA Receive: 0 mA Idle: 0 mAIF Selectivity-00 Bat fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO-ETERDynamic Range+10 dBm 3rd order intercept point at input connectorMM2-9X5WDescription | Data Link Range | 90 miles | Options | |
| Hopping Channels50 to 112, user-selectablePOWER REQUIREMENTSHopping Bands7, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical CurrentTransmit: 590 mA Receive: 160 mA Idle: 90 mARF ConnectorMMCX+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 90 mARECEIVER-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 90 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDERModel Number MM2-9X5WDescriptionDynamic Range+10 dBm 3rd order intercept point at input connector+10 dBm 3rd order intercept point at input connectorDescription MM2-9X5WDescription | Modulation | 2 level GFSK | | |
| Hopping Bands7, user-selectablePOWER REQUIREMENTSHopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical CurrentTransmit: 590 mA Receive: 160 mA idle: 90 mARF ConnectorMMCX+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA idle: 90 mARECEIVER-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4+12 VDC Typical Current idle: 0 mATransmit: 1410 mA Receive: 0 mA idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO EDERModel Number MM2-9X5WDescription Board Level, 5W | Occupied Bandwidth | 230 kHz | Data Interface | 1200 bps to 230.4 kbps |
| Hopping Bands7, user-selectableOperating Voltage Both voltages are required+5 VDC (4.9 to 5.5VDC) +12 VDC (12 to 13.5VDC)Hopping Patterns15 per band, 105 total, user-selectableOperating Voltage Both voltages are required+5 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical CurrentTransmit: 590 mA Receive: 160 mA Idle: 90 mARF ConnectorMMCX+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 90 mARECEIVER-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDERModel Number Ma2-9XSWDescription Board Level, 5W | Hopping Channels | 50 to 112, user-selectable | | |
| Hopping Patterns15 per band, 105 total, user-selectableBoth voltages are required+12 VDC (12 to 13.5VDC)Frequency Zones16 zones+5 VDC Typical CurrentTransmit: 590 mA Receive: 160 mA Idle: 90 mARF ConnectorMMCX+5 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 0 mARECEIVER-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4 -103 dBm @ 153.6 kbps BER 10-4+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDERModel Number MM2-9X5WDescription MM2-9X5W | Hopping Bands | 7, user-selectable | POWER REQUIREMENTS | |
| RF ConnectorMMCX+5 VDC Typical CurrentTransmit: 590 mA Receive: 160 mA Idle: 90 mARECEIVER-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4+12 VDC Typical CurrentTransmit: 1410 mA Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDERDynamic Range+10 dBm 3rd order intercept point at input connectorMM2-9X5WDescription Board Level, 5W | Hopping Patterns | 15 per band, 105 total, user-selectable | | , , , , , , , , , , , , , , , , , , , |
| RF ConnectorMMCXReceive: 160 mA Idle: 90 mARECEIVER Sensitivity-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4+12 VDC Typical Current Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDER Model NumberDynamic Range+10 dBm 3rd order intercept point at input connectorINFORMATION to ORDER MM2-9X5W | Frequency Zones | 16 zones | +5 VDC Typical Current | Transmit: 590 mA |
| Sensitivity-108 dBm @ 115.2 for BER 10-4 -103 dBm @ 153.6 kbps BER 10-4Receive: 0 mA Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDER Model NumberDynamic Range+10 dBm 3rd order intercept point at input connectorMM2-9X5WBoard Level, 5W | RF Connector | ММСХ | | Receive: 160 mA |
| Sensitivity-108 dBm @ 115.2 for BER 10 ⁻⁴ Idle: 0 mAIF Selectivity20 dB at fc +/- 230 kHz 40 dB at fc +/- 460 kHzINFORMATION TO ORDERDynamic Range+10 dBm 3rd order intercept point at input connectorMM2-9X5WBoard Level, 5W | RECEIVER | | +12 VDC Typical Current | |
| 40 dB at fc +/- 460 kHz INFORMATION TO ORDER Dynamic Range +10 dBm 3rd order intercept point at input connector Model Number Description MM2-9X5W Board Level, 5W | Sensitivity | - | - | |
| Dynamic Range +10 dBm 3rd order intercept point at input connector MM2-9X5W Board Level, 5W | IF Selectivity | • | INFORMATION TO ORDER | |
| input connector MM2-9X5W Board Level, 5W | Dynamic Range | · · · | Model Number | Description |
| MM2-9X5W-CC Conformal Coated MM2-9X5W | | | MM2-9X5W | Board Level, 5W |
| | | | MM2-9X5W-CC | Conformal Coated MM2-9X5W |

GENERAL INFORMATION

| Operating Temperature | -40°C to +85°C |
|-----------------------|---------------------------|
| Humidity | 0 to 95%, non-condensing |
| Dimensions | 2.3 L x 2 W x 0.79 H (in) |
| Weight | 34 g |



CONTACT US

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