

**DESCRIPTION**

This class AB GaN module is designed for both military and commercial applications. It is capable of supporting any signal type and modulation format, including but not limited to 3-4G telecom, WLAN, OFDM, DVB, and CW/AM/FM. The latest device technologies and design methods are employed to offer high power density, efficiency, and linearity in a small, lightweight package.



**FEATURES**

- Over / Under / Reverse Voltage Protection
- Over-Temperature Protection
- Amplifier Status Output
- Temp. Monitor Output
- Manual or Automatic Tx/Rx Switching Available

Specifications subject to change without notice. Typical performance at +28VDC at 25°C in a 50Ω system

| Tx SPECIFICATIONS      |      |       |      |      |
|------------------------|------|-------|------|------|
| PARAMETER              | MIN  | TYP.  | MAX  | UNIT |
| Operating Frequency    | 5000 |       | 6000 | MHz  |
| PSat Power Output      |      | +40.0 |      | dBm  |
| Gain                   |      | 25.0  |      | dB   |
| Gain Flatness          |      | 1.0   |      | ± dB |
| Input Return Loss      | -15  |       |      | dB   |
| Operating Voltage      | +10  | +28   | +30  | VDC  |
| Current Draw           |      | 1.2   |      | A    |
| Tx / Rx Switching Time |      | 1.0   | 2.0  | uS   |

| Rx SPECIFICATIONS |     |       |     |      |
|-------------------|-----|-------|-----|------|
| PARAMETER         | MIN | TYP.  | MAX | UNIT |
| P1dB Power Output |     | +5.0  |     | dBm  |
| Gain              |     | 15.0  |     | dB   |
| Gain Flatness     |     |       | 1.0 | ± dB |
| Noise Figure      |     | 2.5   |     | dB   |
| OIP3              |     | +15.0 |     | dBm  |
| Input Return Loss | -10 |       |     | dB   |
| Current Draw      |     | 100.0 |     | mA   |

| MECHANICAL                     |  |      |
|--------------------------------|--|------|
| PARAMETER                      | VALUE  | UNIT |
| Dimensions (L x W x H)         | 2.3 x 2.3 x 0.45                                   | in   |
| RF Connectors (Input / Output) | SMP / SMP  | --   |
| DC / Control Connector         | 12 Pin Rectangular Locking                         | --   |
| Cooling                        | Baseplate Conduction - Optional Heatsink Available | --   |
| Mounting                       | 4-40 Thru Holes                                    | --   |
| Weight                         | 3  | oz.  |
| Weight With Heatsink           | 0  | oz.  |

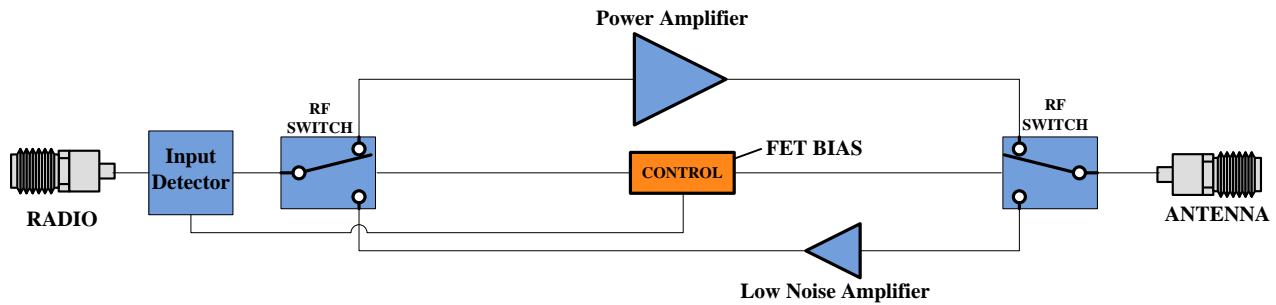
| ENVIRONMENTAL / PROTECTIONS           |                             |     |      |
|---------------------------------------|-----------------------------|-----|------|
| PARAMETER                             | MIN                         | MAX | UNIT |
| Operating Temperature (Housing Temp.) | -40                         | +85 | °C   |
| Humidity Range                        | 0-95                        |     | %    |
| Altitude                              | 0-30,000                    |     | ft.  |
| Shock / Vibration                     | MIL-STD-810 and equivalents |     | --   |
| Max RF Input                          | 17                          |     | dBm  |
| PA Baseplate Shutoff Temperature      | +85                         |     | °C   |

| INPUT/OUTPUT PINS                |          |  |        |        |
|----------------------------------|----------|--|--------|--------|
| <b>AMPLIFIER CONNECTOR TYPE:</b> |          | <b>12 PIN RECTANGULAR LOCKING</b>  |        |        |
| <b>TRIAD CABLE PART NUMBER:</b>  |          | <b>CBL64</b>   |        |        |
| PIN LABEL                        | NAME     | DESCRIPTION  | TYPE   | LEVEL  |
| 1,3,5                            | GND      | Ground   | --     | --     |
| 2                                | STATUS 1 | BDA Operational State - TTL High = Tx Amp Active,<br>TTL Low = Rx Amp Active | Output | 5V TTL |
| 6                                | TEMP     | Temp Monitor: Temp in DegC = (Vout - 0.5V) * 100                             | Output | Analog |
| 7                                | STATUS 2 | BDA Status - TTL High = Normal Operation, TTL Low =<br>Error Condition       | Output | 5V TTL |
| 9                                | BYPASS   | Bypass Control: TTL High or Open: Amplifier Mode,<br>GND: Bypass             | Input  | 5V TTL |
| 11                               | Tx/Rx    | Tx/Rx Switching - TTL High = Tx Amp Enabled, TTL =<br>Rx Amp Enabled         | Input  | 5V TTL |
| 8,10,12                          | VDC      | Supply Voltage - Range Specified in Datasheet                                | Power  | --     |

| 802-11G (20 MHz BW) DATA RATE VS. OUTPUT POWER |           |               |          |
|--|-----------|---------------|----------|
| OFDM MODULATION                                | DATA RATE | POUT (W) MIN. | EVM      |
| 64QAM  | 54 Mbps   | 2             | ≤ -27 dB |
| 16QAM  | 36 Mbps   | 4             | ≤ -21 dB |
| QPSK   | 12 Mbps   | 6             | ≤ -15 dB |
| BPSK   | 9 Mbps    | 10            | ≤ -7 dB  |

See our [application note](#) that describes how this table was calculated and provides notes on in-system performance

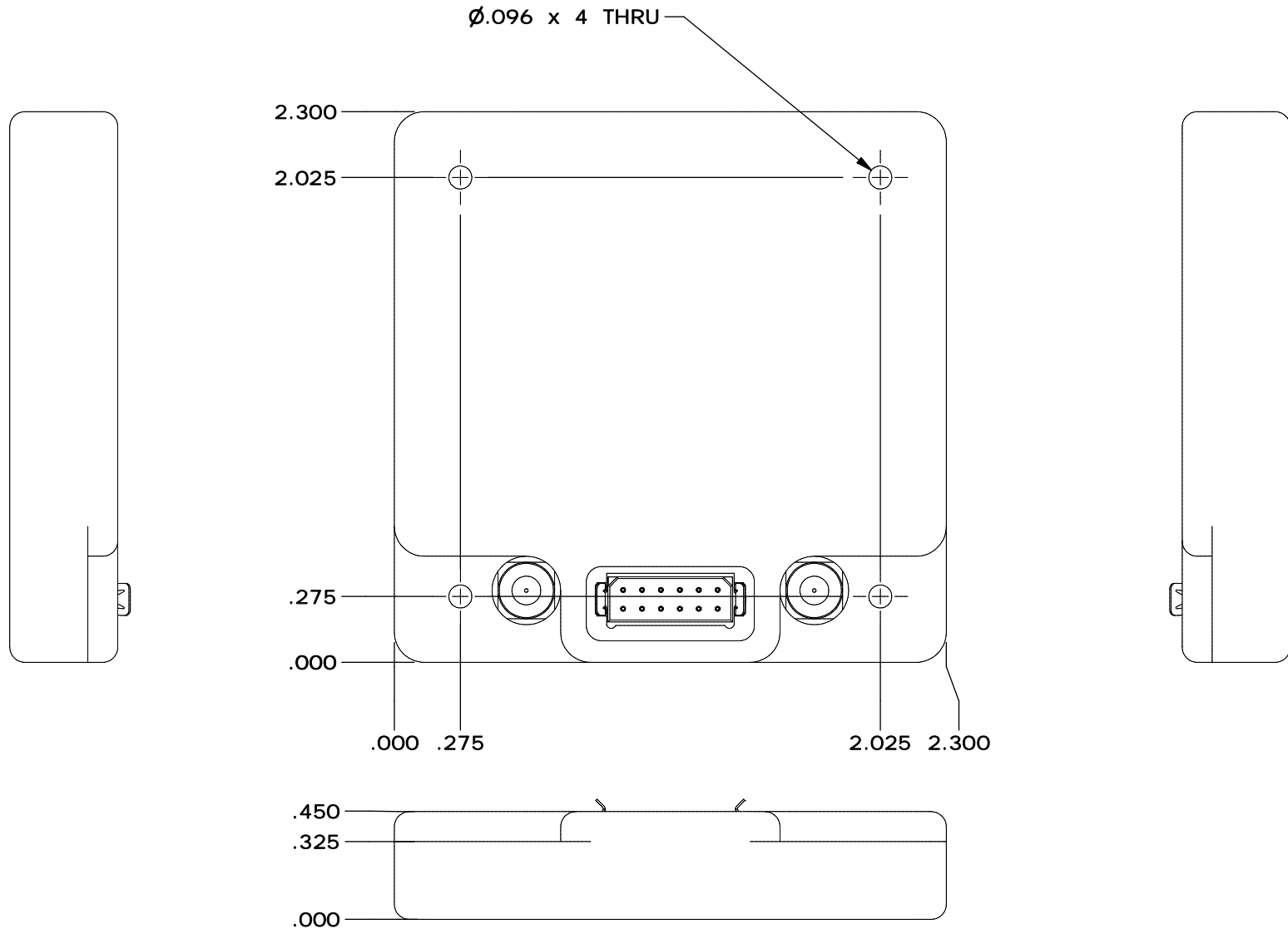
### High-Level Block Diagram



| Ordering Guide – Configuration Information |                  |                  |
|--|------------------|------------------|
| Model Number                               | Amplifier Option | Heat Sink Option |
| <b>TTRMXXXX</b>                            | <b>- XXX</b>     | <b>- XXX</b>     |

| Amplifier Options |  | Heat Sink Options |                                       |
|-------------------|--|-------------------|---------------------------------------|
| Suffix            | Description  | Suffix            | Description                           |
| D01               | Automatic Tx/Rx Switching  | (none)            | No Heat Sink Included                 |
| D02               | Manual Tx/Rx Switching   | HS                | Standard Heat Sink                    |
| DXX               | Custom Amplifier Configuration (issued by Triad upon customer request) | HSF               | Heat Sink with Integrated Cooling Fan |
|                   |  | HSX               | Custom Heat Sink Configuration        |

| REVISIONS |                 |         |          |
|-----------|-----------------|---------|----------|
| REV       | DESCRIPTION     | DATE    | APPROVED |
| O         | INITIAL RELEASE | 3/20/19 | SC       |



|              |       |           |
|--------------|-------|-----------|
| DRAWN        | scopp | 10/3/2013 |
| DESIGNED     | scopp | 4/25/2018 |
| CHECKED      |       |           |
| ENG APPROVED |       |           |
| MFG APPROVED |       |           |



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Housing Outline 195

DIMENSIONS ARE IN INCHES  
UNLESS SPECIFIED OTHERWISE  
TOLERANCES  
DECIMALS FRACTIONS ANGLES  
XX ±.01 ± 1/32 ± 2°  
XXX ±.005

|             |                 |              |
|-------------|-----------------|--------------|
| SIZE        | DWG NO.         | REV          |
| A           | OL_195          | O            |
| SCALE: NONE | CAGE CODE 67DZ3 | SHEET 1 OF 1 |