Model: TRA-4G-2G

Radio wave Power amplifier

Product Type: RF Power Amplifier Board with Integrated Heat Sink

Part No.: TRA-4G-2G08

Application:

RAN Units, Small Cells, Radio Transceivers, Wireless Access Systems

Description:

The Power Amplifier Board is a high-efficiency RF amplification module designed for telecommunication systems. It integrates RF power stages, driver amplifiers, monitoring circuits, and a thermal heat sink assembly to deliver stable output power in demanding outdoor telecom environments. The module is optimized for multi-carrier LTE and GSM waveforms, ensuring high linearity, efficiency, and reliability.

Key Features

- High-efficiency GaN or LDMOS RF power amplifier stages
- Wideband linear amplification optimized for LTE and GSM multi-standard operation
- Integrated aluminum heat sink for effective conduction cooling
- Compatible with Digital Predistortion (DPD) for improved linearity when used with supporting SDR modules
- Comprehensive protection features: over-voltage, over-current, over-temperature
- Built-in directional coupler for real-time output power and VSWR monitoring
- Robust, outdoor-grade mechanical design suitable for telecom radio unit environments
- Compact form factor enabling seamless integration into radio units and multi-band radio units
- Constructed from RoHS/REACH-compliant materials

Functional Description

The Power Amplifier board includes:

- **RF Input Stage** – Low-noise driver amplifier with gain control and optimized matching for LTE and GSM bands.
- **Main PA Stage** – High-power RF transistors configured for Doherty or linear operation, delivering high efficiency across LTE and GSM frequency ranges.
- **Output Network** – Harmonic filtering, impedance matching, and integrated directional coupler for RF performance monitoring.
- **Thermal Management System** – Thermally optimized baseplate paired with an aluminum heat sink to dissipate heat under continuous high-power operation.
- **Monitoring & Protection** – Incorporated temperature sensors, current measurement circuits, and forward/reflected power detection for safe operation and fault response.
- **Control Interface** – Analog control lines and optional digital interfaces (I^2C, CAN, SPI) for amplifier control, telemetry reporting, and integration with system management.

Electrical Specifications

Parameter	Symbol	Typical	Unit	Remarks
Frequency Range	f	B8: 880 – 915 /925 – 960	MHz	GSM/LTE
Output Power	Pout	40	W	Per channel
Gain	G	48	dB	Band 8
Gain Flatness	—	1	dB	Peak to peak
Linearity (ACLR)	—	≤46	dBc	With DPD
Input VSWR		1.5	-	—
Output VSWR		1.5	-	—
Supply Voltage	VDC	28	V	
Supply Current	IDC	4	A	At rated power

Mechanical Specifications

Parameter	Specification
Operating Temperature	**-25 to +60**
PCB Material	High-grade FR-4 or hybrid laminate
Dimensions	335 × 515 × 110 mm
Connector Type	Board-to-board / terminal block / power lug
Cooling	Conduction to chassis or integrated heat spreader
Mounting Method	Screw-mounted to enclosure