

BT00250-AlphaS 0.1MHz-30MHz 250W

- Scientific and Industrial Applications



The BT-AlphaS series is a range of class AB RF power amplifiers covering the 100kHz to 30MHz frequency range.

- Rugged, solid-state design - high reliability
- Extremely high phase and amplitude stability
- Very fast pulse rise/fall times
- High linearity
- Very low interpulse noise
- Competitively priced

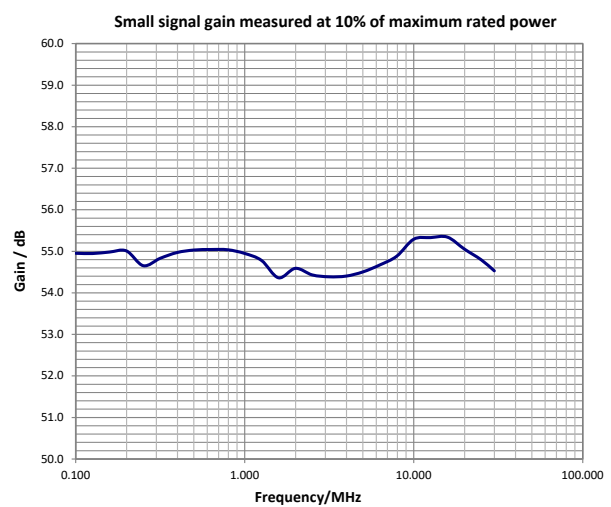
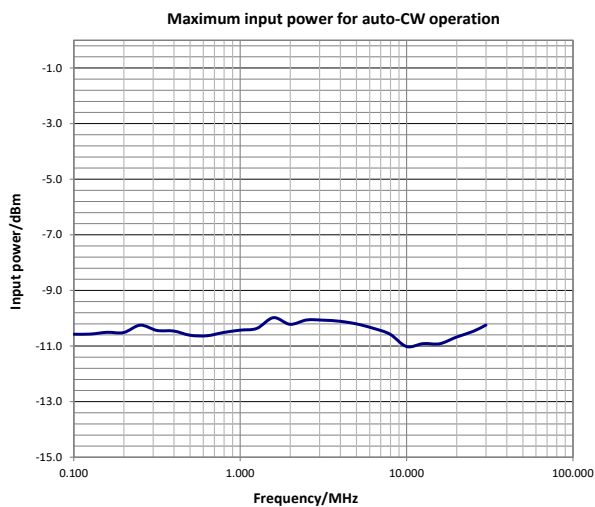
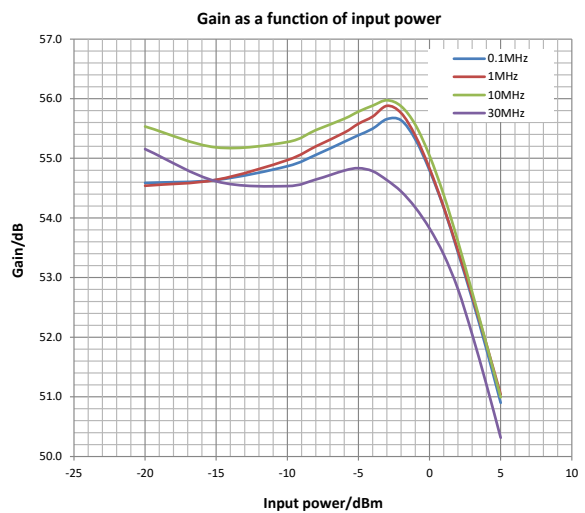
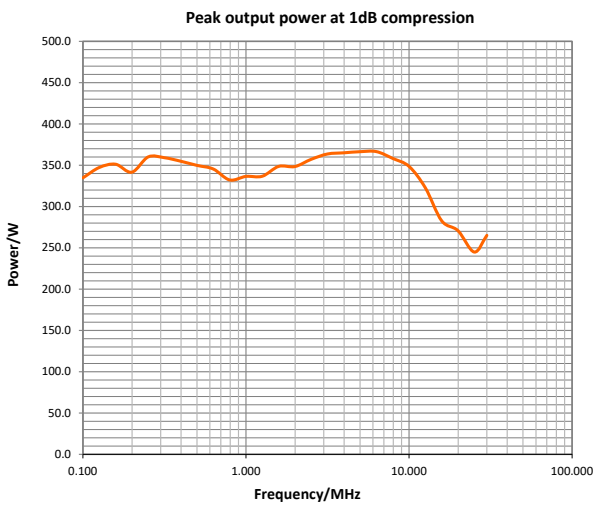
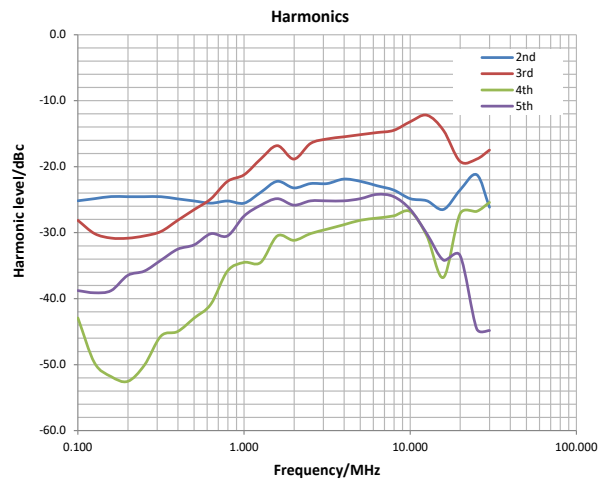
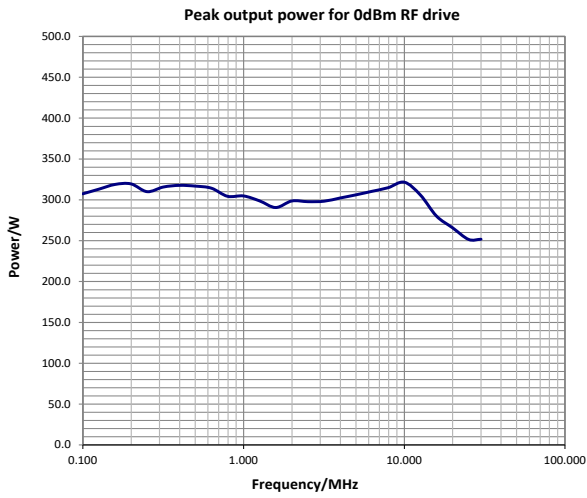
RF Specifications

| | |
|---------------------------|--|
| Type | Class AB MOSFET |
| Rated Power | 250W minimum PEP for input power of 0dBm |
| P1dB | 200W minimum Minimum output power at P1dB compression |
| Gain | 54dB minimum |
| Frequency | 0.1MHz-30MHz |
| Gain flatness | ±1.5dB maximum (measured at 1/10th rated output power) |
| Max. duty cycle | 20% Maximum GATE duty cycle |
| Max. pulse width | 100ms Maximum GATE pulse width |
| Rated power in CW mode | 25W CW operation is automatically available at output power level less than approx. 10% of full rated power |
| Pulse droop | 0.5dB maximum Measured at max. pulse width at P1dB level |
| Pulse rise and fall times | Risetime: 200ns typical Falltime: 100ns typical using a pre-gated RF input signal |
| Gate rise and fall times | Risetime: 300ns typical Falltime: 150ns typical |
| Gate delay | Rising edge: 1µs typical Falling edge: 500ns typical Rising edge measured from rising edge of GATE pulse to 90% RF output voltage. Falling edge measured from falling edge of GATE pulse to 10% RF output voltage |
| Harmonics | Odd: -20dBc typical, -10dBc max. Even: -30dBc typical, -20dBc max. Measured at 1dB below rated output power |
| Spurious | <-70dBc maximum |
| Output noise (blanked) | <10dB above thermal (100kHz bandwidth) |
| Phase change/power | <10° from -40dB to full power |
| Phase stability | <1° across 100ms pulse |
| Output sample | -50dB into 50 Ω (forward voltage sample) |
| Input/output impedance | 50 Ω nominal |
| Load VSWR | Tolerates at least 3:1 @ full rated power without shut down |
| Gain control range | 10dB minimum for 0-5V control voltage Control via parallel interface |
| RF Input | 0dBm nominal, 10dBm for no damage |
| GATE (blanking) | Logic low = Blank, logic high = unblank. CMOS and TTL compatible |

Electrical Specifications

| | |
|----------------------|---|
| Mains supply voltage | 110-240V, 50-60Hz, single phase |
| Rated Power | 1kVA maximum |
| Mains inlet | 1 x IEC inlet (mains power cord supplied) |

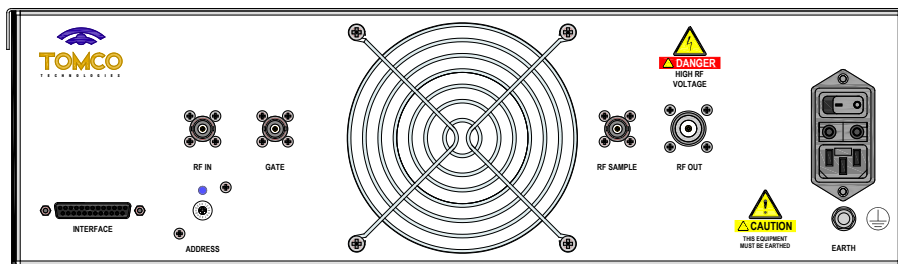
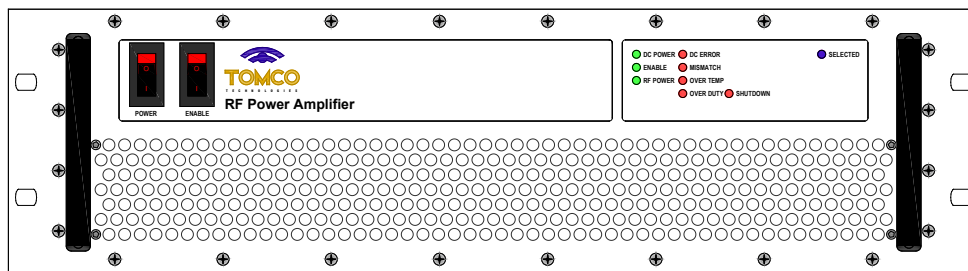
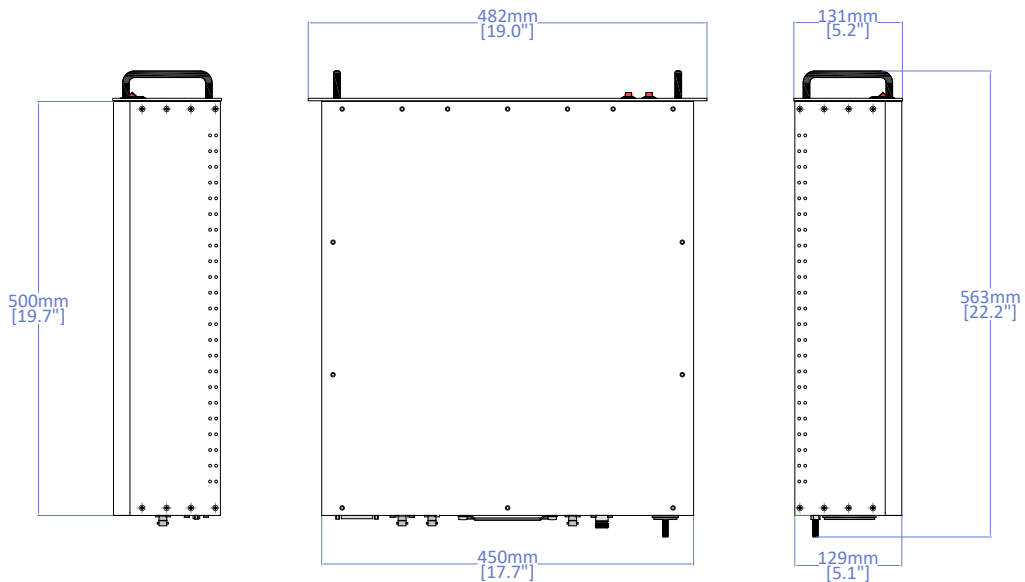
Typical Performance Plots



RF Amplifier Data Sheet

Mechanical Specifications

| | |
|--------------------------|--|
| Connectors | RF IN: BNC female GATE: BNC female RF SAMPLE: BNC female RF OUT: N type female INTERFACE: DB25 female Other connectors types available on request |
| Dimensions | Chassis size: 450mmW (17.7"W) x 500mmD (19.7"D) x 129mmH (5.1"H) Total size: 482mmW (19"W) x 563mm (22.2"D) x 131mm (5.2"H) Rack compatibility: 19" 3RU |
| Weight | approx. 13kg (28lbs) |
| Enclosure classification | IP20 |







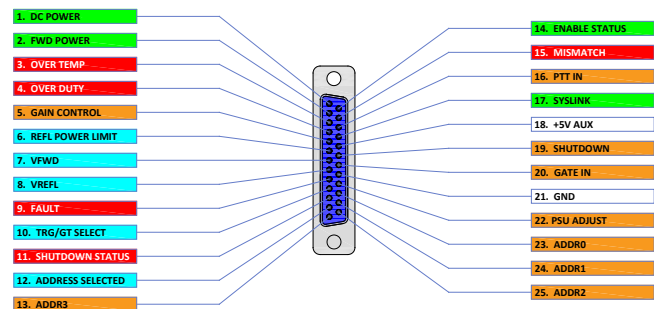
Protection

| | |
|------------------|---|
| Load VSWR | Tolerates up to VSWR 3:1 at full rated power without shutdown Self-resetting shutdown protection activates if VSWR limits are exceeded |
| Over temperature | Self-resetting shutdown protection activates if thermal limits are exceeded |
| Duty cycle | Duty cycle limit is determined from the GATE signal duty cycle. Self-resetting shutdown protection activates if duty cycle limit is exceeded If output power is less than approx. 10% of maximum rated power, duty cycle protection is disabled and auto-CW operation is available |
| Pulse width | Pulse width limit is determined from the GATE signal pulse width. Self-resetting shutdown protection activates if pulse width limit is exceeded |

Monitoring and Control

| | |
|----------------------|--|
| Front panel switches | Power (turns on DC power) Enable (enables RF) |
| Front panel LEDs | <ul style="list-style-type: none"> • DC POWER • ENABLE • RF POWER • DC ERROR • MISMATCH • OVER TEMP • OVER DUTY • SELECTED • SHUTDOWN |
| Parallel interface | 25-pin D-connector (pinout available at www.tomcorf.com/pdf/interface.pdf)* |

| | |
|--|---|
|  | Output signal indicating normal operation |
|  | Output signal indicating fault condition |
|  | Output signal for information only |
|  | Input signal |



Environmental

*Some functions may be unavailable on select amplifier models

| | |
|---------------------------------|--|
| General | Intended for use only in controlled, indoor environment. Non-consumer product for industrial and scientific use. This product is not authorised for stand-alone on-air use. Additional systems, hardware and considerations are required to meet local spectral management regulations. Compliance of the final complete system is the responsibility of the end user. |
| Cooling | Forced air, front to rear |
| Operating temperature | +5°C to +40°C |
| Storage temperature | -20°C to +60°C |
| Humidity | 80% for temperature up to 31°C, decreasing linearly to 50% relative humidity at 40°C |
| Operating altitude | Up to 2000m |
| Pollution degree | 2 |
| Transient voltage compatibility | Category II, in line with IEC 60364-4-44:2007 |
| Electromagnetic compatibility | In line with IEC61326-1:2012 ISM equipment, Group 1, Class A For use only in shielded areas. ENC55011 (CISPR 11) limits exceeded by up to 40dB For use with isolated mains source. IEC61000-3-3:2013 (flicker) limits may be exceeded during high power pulsed operation |
| Safety | In line with IEC61010-1:2010 |
| Electromagnetic field strength | In line with ICNIRP Guidelines: 1998, occupational limits |

Change record

| Document/Issue number | Originator | Date | Change |
|-----------------------|------------|------------|----------|
| DS006667A | JR | 17/07/2018 | Original |
| DS006667B | LS | 28/04/2020 | p.4:E |
| DS006667C | DW | 10/09/2020 | p.1:RFS |
| DS006667D | LS | 12/01/2020 | p.1:H |
| DS006667E | TD | 22/11/2022 | p.4.E |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |