# BT01000-Gamma
# 5MHz-400MHz
# 1kW

- Scientific and Industrial Applications

The BT-Gamma series is a range of class AB RF power amplifiers covering the 5MHz to 400MHz 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

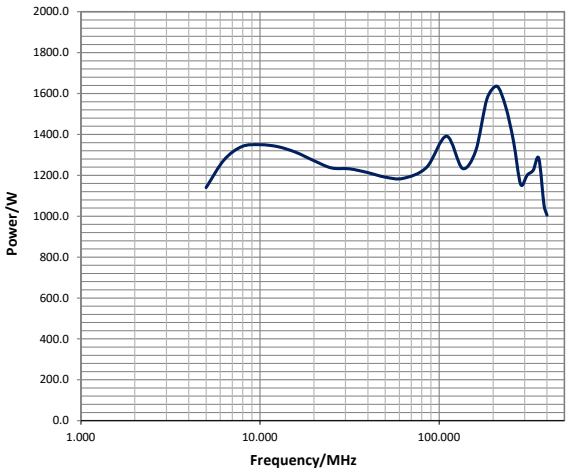
| | |
|---|---|
| Type | Class AB MOSFET |
| Rated Power | 1000W minimum<br>PEP for input power of 0dBm |
| P1dB | 800W minimum<br>Minimum output power at P1dB compression |
| Gain | 60dB minimum |
| Frequency | 5MHz-400MHz |
| Gain flatness | ±2dB maximum (measured at 1/10th rated output power) |
| Max. duty cycle | 20%<br>Maximum GATE duty cycle |
| Max. pulse width | 300ms<br>Maximum GATE pulse width |
| Rated power in CW mode | 100W<br>CW operation is automatically available at output power level less than approx. 10% of full rated power |
| Pulse droop | 0.5dB maximum<br>Measured at max. pulse width at P1dB level |
| Pulse rise and fall times | Risetime: 200ns typical<br>Falltime: 100ns typical<br>using a pre-gated RF input signal |
| Gate rise and fall times | Risetime: 300ns typical<br>Falltime: 150ns typical |
| Gate delay | Rising edge: 1µs typical<br>Falling edge: 500ns typical<br>Rising edge measured from rising edge of GATE pulse to 90% RF output voltage.<br>Falling edge measured from falling edge of GATE pulse to 10% RF output voltage |
| Harmonics | Odd: -16dBc typical, -10dBc maximum<br>Even:-30dBc typical, -20dBc maximum<br>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 | -60dB 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<br>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

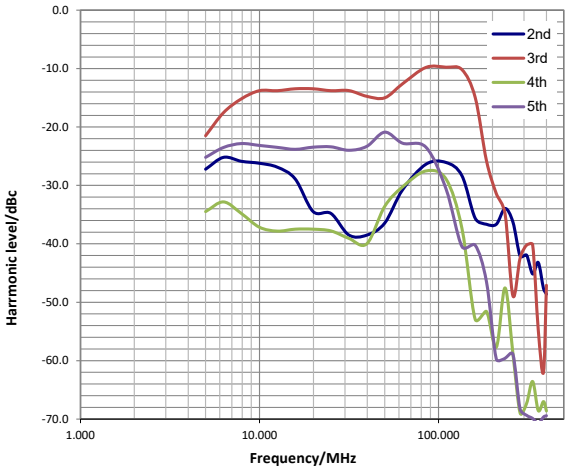
| | |
|---|---|
| Mains supply voltage | Voltage: 180-240V phase-to-phase Delta or<br>180-240V phase-to-phase Star (customer to specify)<br>Current: 16A rms per phase Delta<br>10A rms per phase Star<br>50-60Hz<br>Mains supply must include an earth |

## Typical Performance Plots

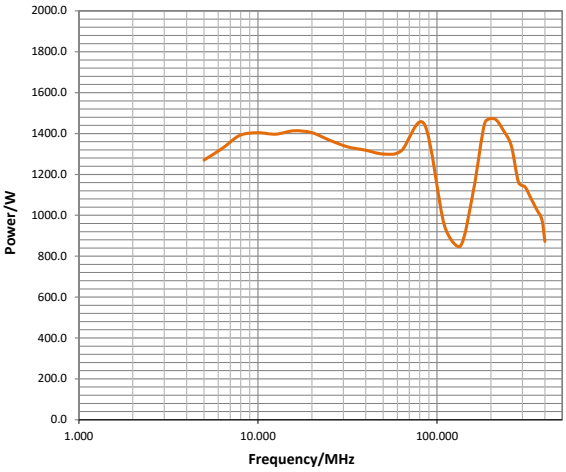
Peak output power for 0dBm RF drive



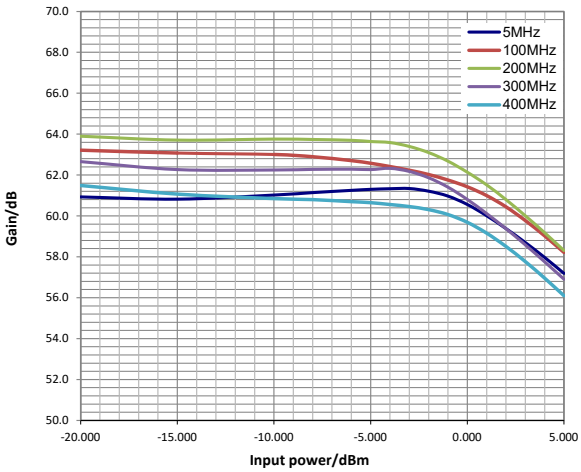

Harmonics



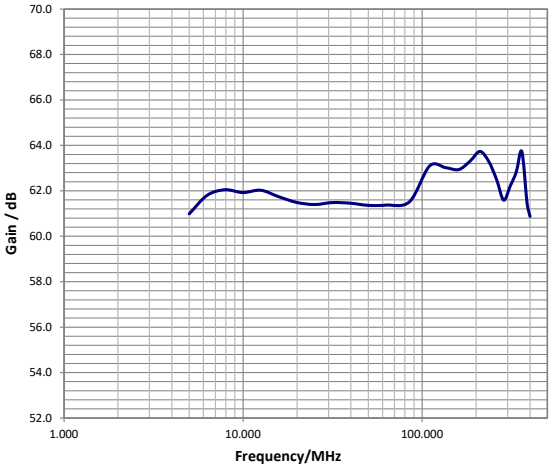

Peak output power at 1dB compression



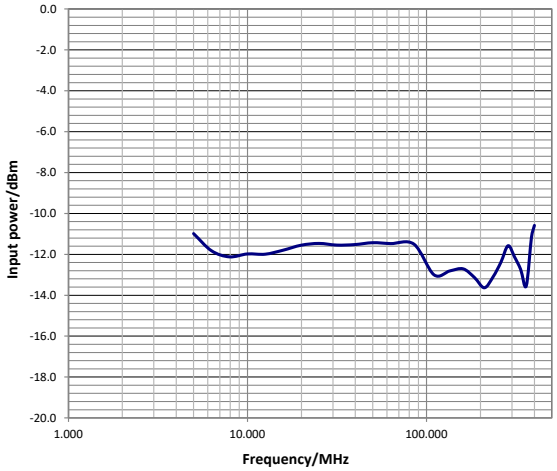

Gain as a function of input power




Small signal gain measured at 10% of maximum rated power




Maximum input power for auto-CW operation

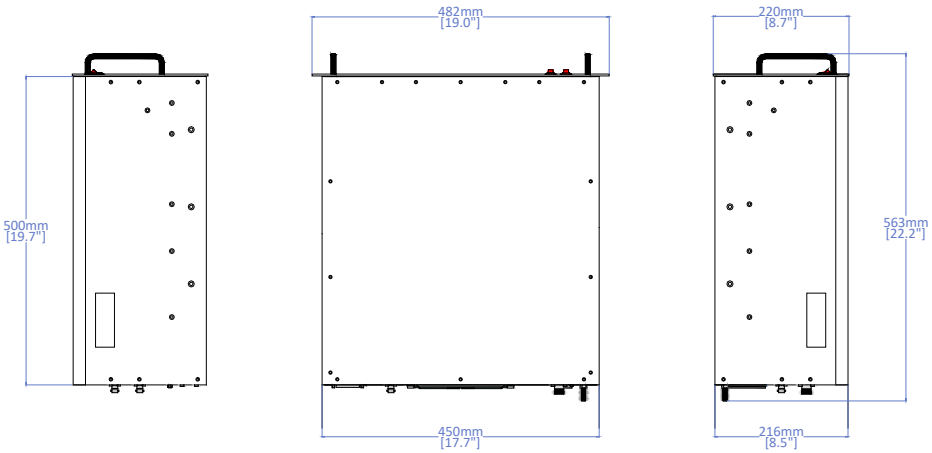


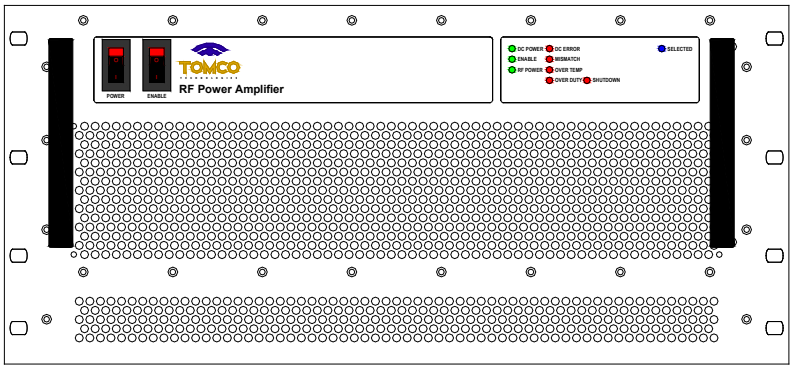
# RF Amplifier Data Sheet

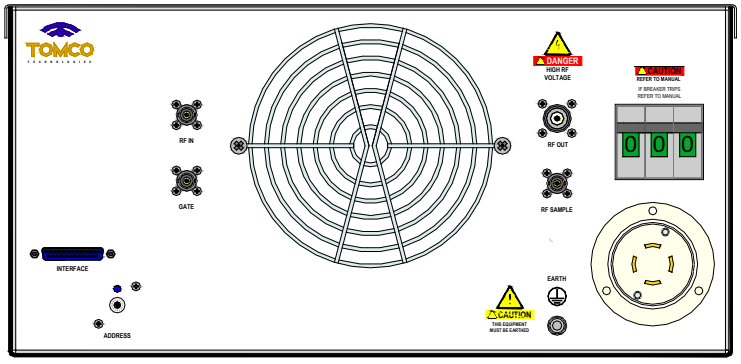
TOMCO

## Mechanical Specifications

| | |
|---|---|
| Connectors | RF IN: BNC female<br>GATE: BNC female<br>RF SAMPLE: BNC female<br>RF OUT: N type female<br>INTERFACE: DB25 female<br><br>Other connectors types available on request |
| Dimensions | Chassis size: 450mmW (17.7”W) x 500mmD (19.7”D) x 216mmH (8.5”H)<br>Total size: 482mmW (19”W) x 563mm (22.2”D) x 220mm (8.7”H)<br>Rack compatibility: 19” 5RU |
| Weight | approx. 24kg (53lbs) |
| Enclosure classification | IP20 |



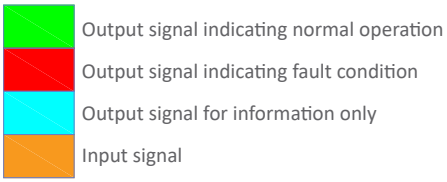



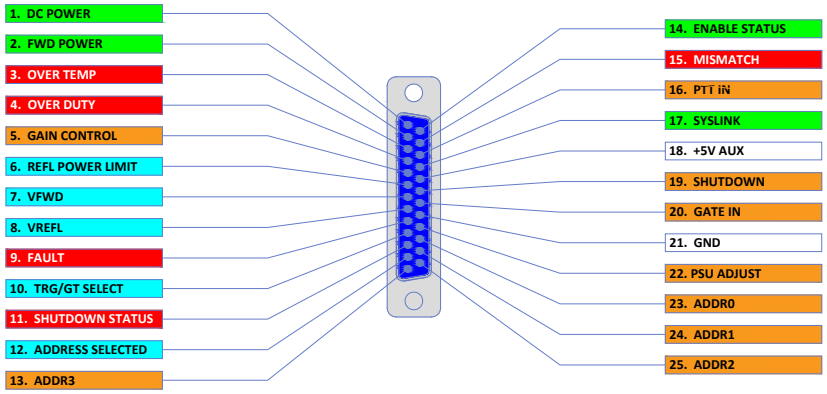
### Protection

| | |
|---|---|
| Load VSWR | Tolerates up to VSWR 3:1 at full rated power without shutdown<br>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<br>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)<br>Enable (enables RF) |
| Front panel LEDs | • DC POWER • ENABLE • RF POWER<br>• DC ERROR • MISMATCH • OVER TEMP • OVER DUTY<br>• SELECTED • SHUTDOWN |
| Parallel interface | 25-pin D-connector (pinout available at www.tomcorf.com/pdf/interface.pdf)* |




*Some functions may be unavailable on select amplifier models

### Environmental

| | |
|---|---|
| General | Intended for use only in controlled, indoor environment. Non-consumer product for industrial and scientific use |
| Cooling | Forced air, front to rear |
| Operating temperature | +5$^0$C to +40$^0$C |
| Storage temperature | -20$^0$C to +60$^0$C |
| Humidity | 80% for temperature up to 31$^0$C, decreasing linearly to 50% relative humidity at 40$^0$C |
| Operating altitude | Up to 2000m |
| Pollution degree | 2 |
| Transient voltage compatibilty | Category II, in line with IEC 60364-4-44:2007 |
| Electromagnetic compatibility | In line with IEC61326-1:2012<br>ISM equipment, Group 1, Class A<br>For use only in shielded areas. ENC55011 (CISPR 11) limits exceeded by up to 50dB |
| Safety | In line with IEC61010-1:2010 |
| Electromagnetic field strength | In line with ICNIRP Guidelines: 1998, occupational limits |



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| DS006682C | LS | 12/01/2021 | p.1:H |
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