BTM00250-AlphaS
100kHz-30MHz
250W Pulsed/50W CW

- Scientific and Industrial Applications

The BTM-AlphaS series is a range of class AB RF power amplifier modules 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

Can be supplied as amplifier module only or with optional heatsink and cooling fans

RF Specifications

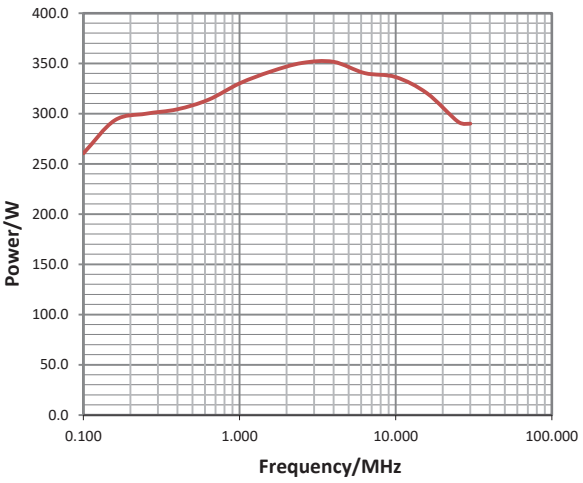
Rated Power	250W minimum in pulsed mode 50W minimum in CW mode PEP for input power of 0dBm
P1dB	200W minimum in pulsed mode 40W minimum in CW mode Minimum output power at P1dB compression
Gain	54dB minimum in pulsed mode 47dB minimum in CW mode
Type	Class AB MOSFET
Frequency	100kHz-30MHz
Gain flatness	±2dB maximum (measured at 1/10th rated output power)
Max. duty cycle in pulsed operation	20% Maximum GATE duty cycle in pulsed mode
Max. pulse width in pulsed operation	100ms Maximum GATE pulse width in pulsed mode
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
Input/output impedance	50 Ω nominal
Load VSWR	Tolerates at least 3:1 @ full rated power without damage External mismatch protection is recommended No internal mismatch protection included
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

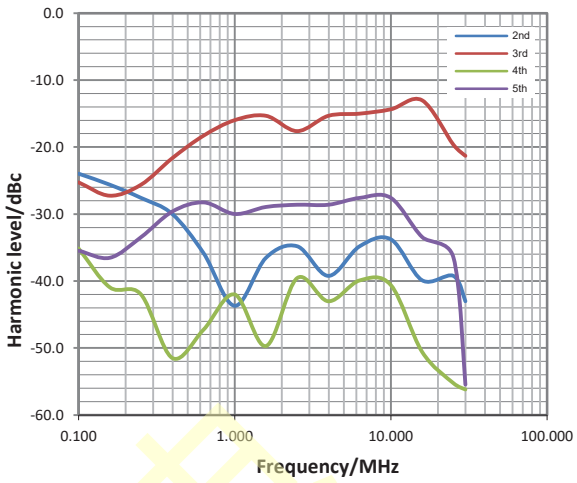
DC supply voltage	Pulsed mode: +50V at approx. 3A CW mode: +28V at approx. 6A
DC connection	Solder pin

Typical Performance Plots

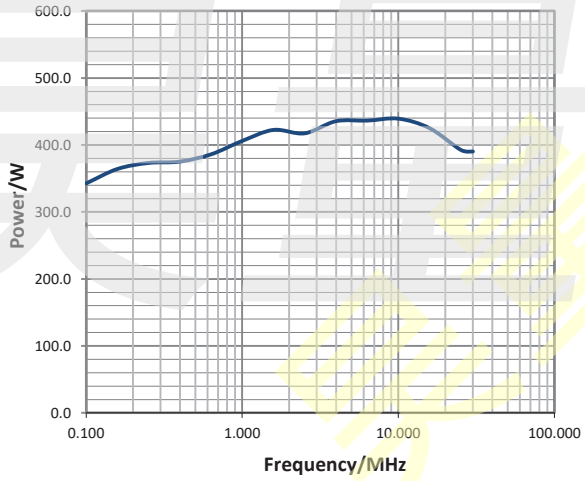
Peak input power for 0dBm RF drive



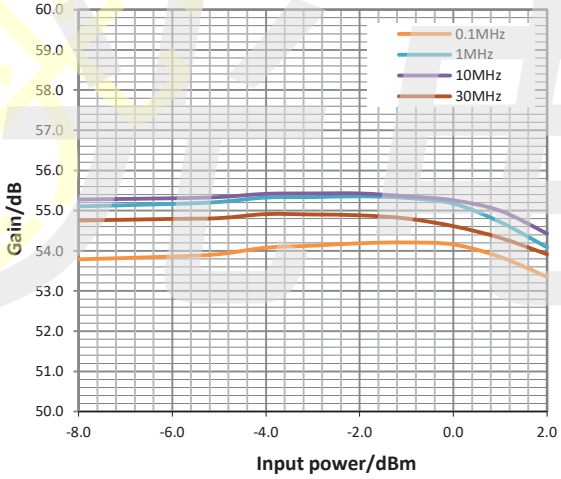
Harmonics



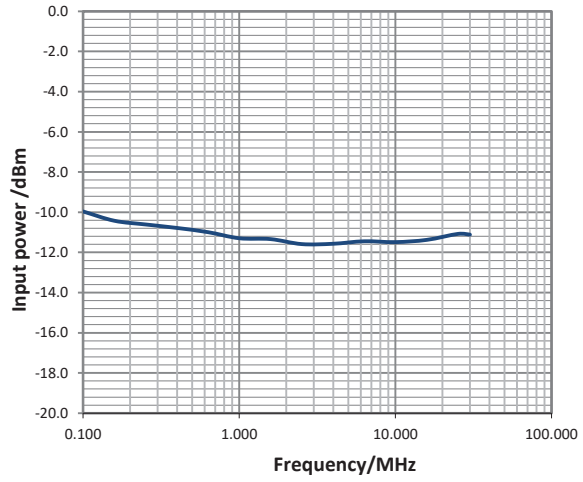
Peak output power at 1dB compression



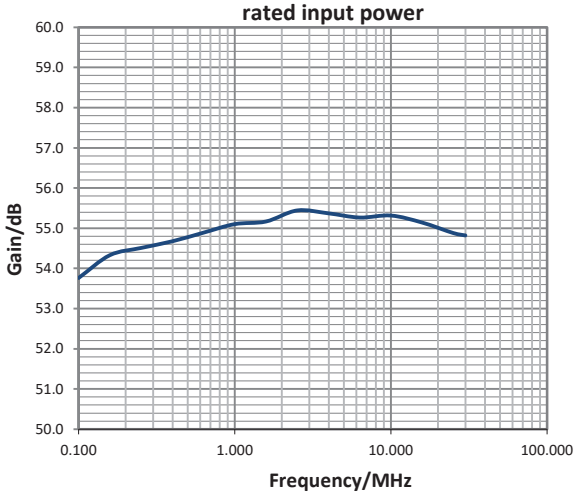
Gain as a function of input power



RF input for 50W CW out at +28V DC

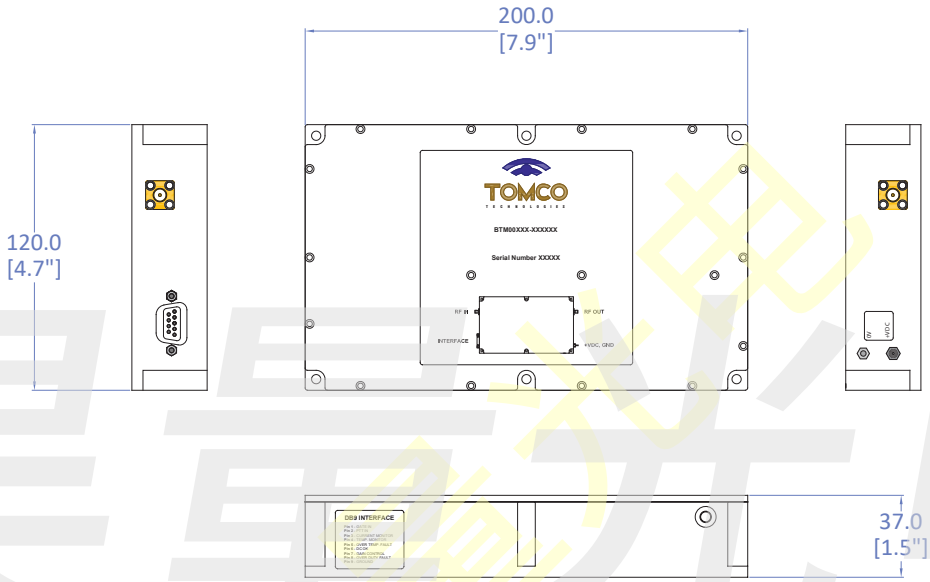


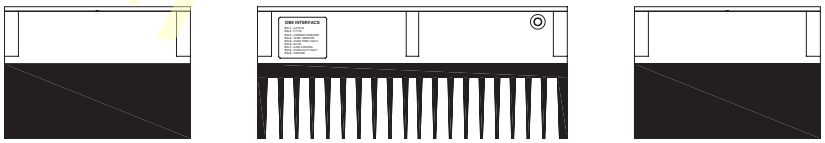
Small signal gain measured at 10% of maximum rated input power



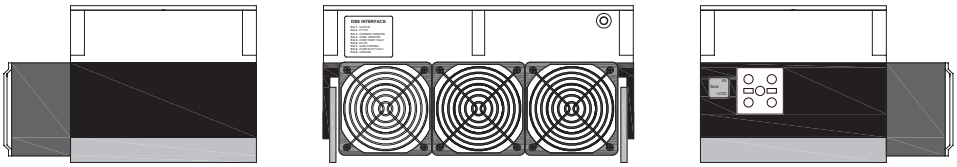
Mechanical Specifications

Connectors	RF IN: SMA RF OUT: SMA INTERFACE: DB9 female
Dimensions	Module only: 200mm (7.9”) x 120mm (4.7”) x 37mm (1.5”) Module with heatsink: 200mm (7.9”) x 120mm (4.7”) x 85mm (3.3”) Module with heatsink and fan assembly: 200mm (7.9”) x 168mm (6.6”) x 85mm (3.3”)
Weight	approx. 1.3kg (2.8lbs), module only
Enclosure classification	IP20





With optional heatsink



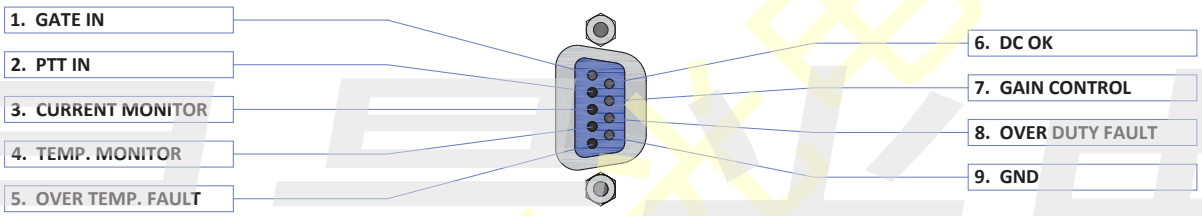
With optional heatsink and fan assembly

Protection

Over temperature	Self-resetting shutdown protection activates if thermal limits are exceeded
Reverse polarity	Reverse-current protection circuitry
Input/output transients	High voltage transient protection circuitry

Monitoring and Control

Parallel Interface	9-pin D-connector female



Environmental

General	Intended for use only in controlled, indoor environment. Non-consumer product for industrial and scientific use
Cooling	Requires heatsink and/or external fan (optional extras)
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
Electromagnetic compatibility	In line with IEC61326-1:2012 ISM sub-assembly, Group 1, Class A
Safety	In line with IEC61010-1:2010
Electromagnetic field strength	In line with ICNIRP Guidelines: 1998, occupational limits