Ka Band Solid State or GaN Linear Amplifier



- Industry's most compact and lightest linear Ka Band amplifier
- Directly mounts to antenna feed arm
- Single frequency agile model covers complete frequency band from 29 GHz to 31 GHz
- Solid State or GaN technology provides highest reliability and lowest power consumption



The SAGE SatCom Ka Band amplifier provides linear power in the most compact package available in the industry. The compactness and light weight of the Solid State or GaN Ka power amplifier allows for direct mounting to the antenna feed arm resulting in a superior end solution to larger competing products that require pedestal mounting. Simplifying system planning and logistics, a single frequency agile model covers the complete frequency band from 29GHz to 31GHz. Command and Monitoring is supported through RS-485 and Ethernet interfaces.

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Key Benefits

- Compact and energy efficient
- Solid State or GaN Reliability
- Easy System Integration
- Thermally Efficient
- High Linearity
- Superior Harmonic and Spurious Suppression

Ka Band Linear Power Amplifier Specification

Frequency 27.5 - 31.0GHz Plinear 5, 12, 20 and 50Watts Input VSWR 1.5.1 Max Gain 40 dB +/-2 dB Over RF Output band: ± 2 dB. Max. Over any 125 MHz segment ±0.50 dB Max. Over any 40 MHz segment ±0.3 dB Max. Over any 40 MHz segment ±0.3 dB Max. Input variation over operational temp 2.0 dB max. Frequency 2.5 dBc relative to P-Linear 2.5 dBc relative to the combined power of two carriers at Plinear power of two equal CW carriers Spurious -60 dBc max in-band P -linear (ETSI EN 301 390 compliant out-of-band) Harmonics -60 dBc max measured at P-Linear Spectral Regrowth at Plinear -30 dBc measured at QPSK, 30% Alpha and 1.0 SR Output VSWR 1.3.1 Max Max Load VSWR (no damage) Infinite Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RI-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	RF Characteristics	
Plinear 5, 12, 20 and 50Watts Input VSWR 1.5:1 Max Gain 40 dB +/- 2 dB Gain Flatness @ Maximum Gain Over RF Output band: ± 2 dB. Max. Over any 125 MHz segment ±0.50 dB Max. Nute		27 5 - 31 0GHz
Input VSWR Gain 40 dB +/-2 dB Over RF Output band: ± 2 dB. Max. Over any 125 MHz segment ±0.50 dB Max. Over any 125 MHz segment ±0.3 dB Max. Mute Gain Variation over operational temp ±2.0 dB max. Third Order IMD at Plinear combined power of two equal CW carriers Spurious -60 dBc max in-band @ P - linear (ETSI EN 301 390 compliant out-of-band) Harmonics -60 dBc max. measured at P-Linear Spectral Regrowth at Plinear -30 dBc measured at QPSK, 30% Alpha and 1.0 SR Output VSWR 1.3:1 Max Max Load VSWR (no damage) Infinite @ Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Untput power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Output power level dependent MU-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent		
Gain 40 dB +/-2 dB Gain Flatness @ Maximum Gain Over RF Output band: ± 2 dB. Max. Over any 125 MHz segment ±0.3 dB Max. Over any 40 MHz segment ±0.3 dB Max. -60 dB relative to P-Linear Gain Variation over operational temp ±2.0 dB max. -60 dB relative to P-Linear Gain Variation over operational temp ±2.0 dB max. Third Order IMD at Plinear combined power of two equal CW carriers Spurious -60 dB cmax in-band @ P -linear (ETSI EN 301 390 compliant out-orl-band) Harmonics -60 dB c max in-band @ P -linear (ETSI EN 301 390 compliant out-orl-band) Harmonics -60 dB c max in-band @ P -linear (ETSI EN 301 390 compliant out-orl-band) Harmonics -60 dB c max in-band @ P -linear (ETSI EN 301 390 compliant out-orl-band) Harmonics -30 dB c measured at QPSK, 30% Alpha and 1.0 SR Output VSWR Infinite @ Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +60°C Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent		
Over any 125 MHz segment ±0.50 dB Max. Over any 40 MHz segment ±0.3 dB Max. Mute -60 dB relative to P-Linear ±2.0 dB max. -75 dBc relative to the combined power of two carriers at Plinear power of two equal CW carriers Spurious -60 dBc max in-band @ P -linear (ETSI EN 301 390 compliant out-of-band) Harmonics -60 dBc max in-band @ P -linear (ETSI EN 301 390 compliant out-of-band) Harmonics -60 dBc max in-band @ P -linear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear Spectral Regrowth at Plinear -70 dBc max in-band @ P -linear -70 dBc max in-band @ P -linear		
Over any 40 MHz segment ±0.3 dB Max. Mute	Gain Flatness @ Maximum Gain	Over RF Output band: ± 2 dB. Max.
Mute		Over any 125 MHz segment ±0.50 dB Max.
Gain Variation over operational temp Third Order IMD at Plinear combined power of two equal CW carriers Spurious -60 dBc max in-band @ P - linear (ETSI EN 301 390 compliant out-of-band) Harmonics -60 dBc max. measured at P-Linear Spectral Regrowth at Plinear -30 dBc measured at QPSK, 30% Alpha and 1.0 SR Output VSWR 1.3:1 Max Max Load VSWR (no damage) Infinite @ Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Output power level dependent Weight Output power level dependent		Over any 40 MHz segment ±0.3 dB Max.
Third Order IMD at Plinear combined power of two equal CW carriers Spurious -60 dBc max in-band @ P - linear (ETSI EN 301 390 compliant out-of-band) Harmonics -60 dBc max. measured at P-Linear -60 dBc max. measured at P-Linear -30 dBc measured at QPSK, 30% Alpha and 1.0 SR Output VSWR 1.3:1 Max Max Load VSWR (no damage) Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/0 RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Output power level dependent Output power level dependent	Mute	-60 dB relative to P-Linear
power of two equal CW carriers Spurious -60 dBc max in-band @ P — linear (ETSI EN 301 390 compliant outof-band) Harmonics -60 dBc max. measured at P-Linear Spectral Regrowth at Plinear -30 dBc measured at QPSK, 30% Alpha and 1.0 SR Output VSWR 1.3:1 Max Max Load VSWR (no damage) Infinite @ Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Output power level dependent	Gain Variation over operational temp	±2.0 dB max.
Of-band Harmonics		-25 dBc relative to the combined power of two carriers at Plinear
Spectral Regrowth at Plinear -30 dBc measured at QPSK, 30% Alpha and 1.0 SR Output VSWR 1.3:1 Max Max Load VSWR (no damage) Infinite @ Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Spurious	· ·
Output VSWR 1.3:1 Max Max Load VSWR (no damage) Infinite @ Plinear -3dB Power Requirement: Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Harmonics	-60 dBc max. measured at P-Linear
Max Load VSWR (no damage) Power Requirement: Input voltage	Spectral Regrowth at Plinear	-30 dBc measured at QPSK, 30% Alpha and 1.0 SR
Power Requirement: Input voltage	Output VSWR	1.3:1 Max
Input voltage +48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz Power consumption (typical) Output power level dependent Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Max Load VSWR (no damage)	Infinite @ Plinear -3dB
Power consumption (typical) Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent Weight	Power Requirement:	
Interface: RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight	Input voltage	+48VDC (prime), +28VDC, 90 - 264VAC @50/60Hz
RF Input/Output WR 28 or 2.9mm Monitor & Control I/O RS-485 or Ethernet (SNMP/HTTP) Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight	Power consumption (typical)	Output power level dependent
Monitor & Control I/O Ethernet Connector Weatherproof RJ-45 Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to + 85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight	Interface:	
Ethernet Connector Serial Monitor & Control Connector Mil-Circ- Bayonet Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight	RF Input/Output	WR 28 or 2.9mm
Serial Monitor & Control Connector Power Connector Mil-Circ- Bayonet Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to + 85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight	Monitor & Control I/O	RS-485 or Ethernet (SNMP/HTTP)
Power Connector Environmental: Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to + 85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight	Ethernet Connector	Weatherproof RJ-45
Environmental: Operating Temperature Range	Serial Monitor & Control Connector	Mil-Circ- Bayonet
Operating Temperature Range -40°C to +60°C Storage Temperature Range -40°C to + 85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Power Connector	Mil-Circ- Bayonet
Storage Temperature Range -40°C to +85°C Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Environmental:	
Humidity 100% Condensing Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Operating Temperature Range	-40°C to +60°C
Altitude 10K ft. Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Storage Temperature Range	-40°C to + 85°C
Vibration MIL-STD-810G Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Humidity	100% Condensing
Shock MIL-STD-810G EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Altitude	10K ft.
EMC Comply with CE EMC directives Physical: Size Output power level dependent Weight Output power level dependent	Vibration	MIL-STD-810G
Physical: Size Output power level dependent Weight Output power level dependent	Shock	MIL-STD-810G
Size Output power level dependent Weight Output power level dependent	EMC	Comply with CE EMC directives
Weight Output power level dependent	Physical:	
	Size	Output power level dependent
	Weight	Output power level dependent
Fans Field Replaceable	Fans	Field Replaceable

Ka Band Solid State or GaN Linear Amplifier



SAGE SatCom's

Ka Band amplifiers

offer the highest energy
density and best power

efficiency

SAGE SatCom is a unique supplier of integrated RF, microwave and millimeter wave solutions for the commercial and military satellite communications market. The SAGE SatCom team has vast experience in design and integration of RF products including wideband frequency up/down converters, wideband low and high solid state power amplifiers, transceivers, LNBs, wideband driver modules, line driver modules, low power BUCs for TWTA drive, and various waveguide power combining technologies.

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