

Solid State Matched Band High Power Amplifier

6012 - MBS6C6KVT
3100 – 3500 MHz / 1300 Watts Pulse

The model MBS6C6KVI (SKU 6012) is suitable for high power S-Band pulse applications. This amplifier utilizes high power LDMOS devices that provide wide frequency response, high gain, high peak power capability, and low distortions. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, EMI/RFI filters, and all qualified components. The amplifier is constructed within one single 3RU drawer including the forced air-cooling. The system comes standard to operate from 100-240VAC single phase.



The amplifier includes a built-in control and monitoring system, with protection functions which preserve high availability. Remote management and diagnostics are via an embedded web server allowing network managed site status and control simply by connecting the unit's Ethernet port to a LAN. Using a web browser and the unit's IP address (IPV4, IPV6) allows ease of access with the benefit of multi-level security. The control system core supports hardware encryption, runs an embedded OS (Linux), has a built-in non-volatile memory for event recording, and factory setup recovery features. The extended memory option allows storage of control parameters and event logs.

- Solid-state Class AB linear pulse design
- Instantaneous broadband
- Suitable for Pulse applications
- Built-in control, monitoring & protection circuits
- 50 ohm input/output impedance
- High reliability and ruggedness
- Isolator output protection

ELECTRICAL SPECIFICATIONS @ 115V_{AC}, 25°C, 50Ω System

Parameters	Rating	Min	Typ	Max	Units
Operating Frequency	BW	3100		3500	MHz
Output Power @ Pulse conditions Duty Cycle = 5% Pulse Width = 2-64μSec	P _{PK}	1300			Watt
Pulse Power Variation	P _{PPV}			±0.5	dB
Input Power for Rated P _{PK}	P _{IN}	23	24	25	dBm
Power Gain @ 1300W Pulse	G _P	38			dB
Output power flatness	ΔG			2	dB
Input/Output Return Loss	S ₁₁ /S ₂₂			-14	dB
Noise Figure	NF		10		dB
Harmonics @ P _{OUT} = 1.3kW _{PK}	2 ND / 3 RD		-30		dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage, 1-phase (50/60Hz)	V _{AC}	100	208	240	Volt
Power Consumption @ P _{OUT} = 1.3kW _{PK} @ 5%DUTY CYCLE	P _D			900	Watt
Switching Speed	T _{ON/OFF}			1	μSec
Pulse Performance	T _{RISE (10-90)}			250	ns
	T _{FALL(90-10)}			150	ns
	P _{WIDTH}	2		64	μSec
	Duty Cycle	2		5	%
	Droop			0.8	dB
	PRF	1	2	1000	KHz

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions W x H x D	19 x 5.25 x 22	Inch
Weight	64/29	lb/kg
RF Connectors	Input & FWD Sample: Type-SMA, Female Output: Type-N, Female	
Control connector	D-sub 9-pin, Male	
Cooling	Built-in internal forced-air cooling system	

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PROTECTIONS

Input RF drive level without damage	+10 dBm	Max
VSWR Protection	At 3:1 – PA backs-off output power to a safe operating level – no system shutdown, “On Air” time is maximized	-
Thermal – Graceful Degradation	Ambient 50°C	Min
Duty Cycle Control	10%	Max

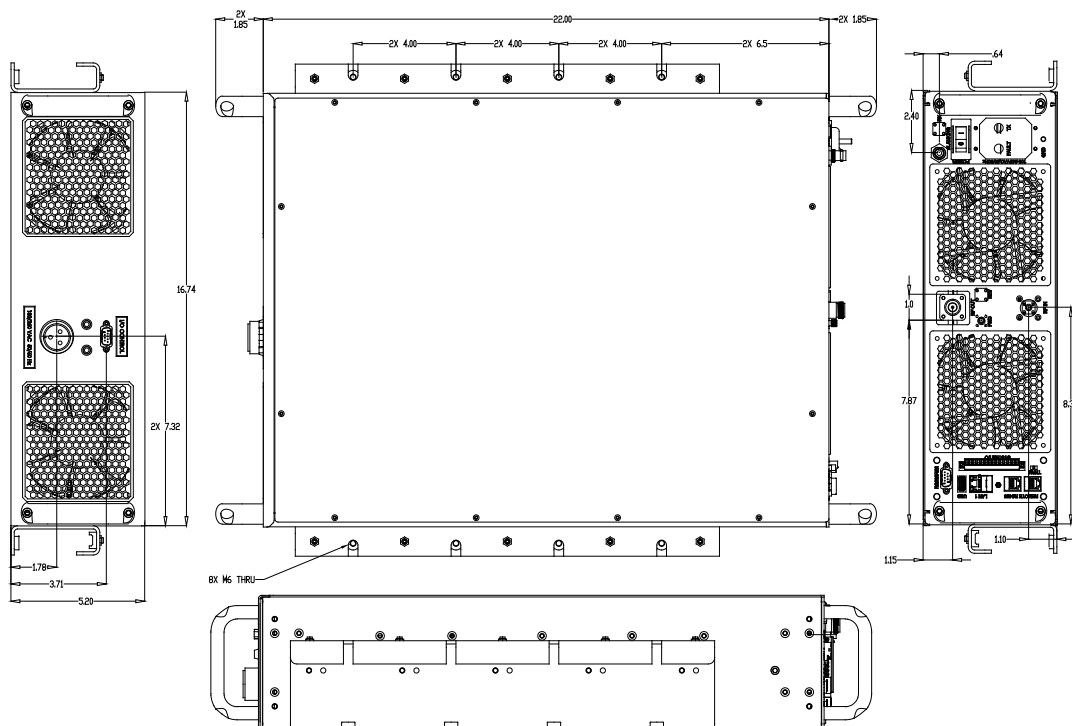
ENVIRONMENTAL SPECIFICATIONS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Ambient Temperature	T _A	-20		+55	°C
Storage Ambient Temperature	T _{STG}	-30		+70	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration – MIL-STD-810F Method 514.5	VI	2m/S ² from 20-50Hz, 0.1m/S ² for 50 – 500Hz			
Shock – MIL-STD-810F Method 516.5	SH	Operational: 25g for 6mSec, 2-3 Bumps/Sec, 400 Bumps.			

I/O CONNECTOR

Pin #	Description	Specification
1	External Shutdown	Amplifier Enable: TTL Logic Low (0V) (Internally Pulled-high)
2	GND	Ground
3-7	Spare	N/A
8	Temperature Alarm	TTL Logic Low = Alarm ON, (LED FAULT “ON”) (Internally Pulled-high)
9	GND	Ground

OUTLINE DRAWING



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Data Measured at Room Ambient temperature, 5% duty cycle at specified pulse width, 115V_{AC}, 60Hz.

PARAMETERS	FREQUENCY									UNITS	PULSE WIDTH
	3100	3150	3200	3250	3300	3350	3400	3450	3500		
Power_Out	2.46	2.52	2.31	2.28	2.06	2.28	2.24	2.09	1.86	kW _{PK}	2
AC Current	2.44	2.46	2.44	2.30	2.26	2.34	2.32	2.27	2.28	Amp._avg.	
RF_V_Mon.	4.52	4.48	4.45	4.39	4.36	4.34	4.32	4.26	4.19	V _{DC}	
Power_Out	2.47	2.49	2.33	2.28	2.08	2.29	2.26	2.09	1.89	kW _{PK}	10
AC Current	2.35	2.37	2.36	2.22	2.19	2.28	2.25	2.20	2.21	Amp._avg.	
RF_V_Mon.	4.39	4.36	4.33	4.28	4.25	4.23	4.22	4.16	4.11	V _{DC}	
Power_Out	2.47	2.49	2.31	2.29	2.08	2.29	2.26	2.09	1.90	kW _{PK}	20
AC Current	2.35	2.38	2.35	2.22	2.18	2.27	2.25	2.20	2.21	Amp._avg.	
RF_V_Mon.	4.38	4.35	4.31	4.26	4.23	4.22	4.21	4.15	4.10	V _{DC}	
Power_Out	2.46	2.48	2.31	2.27	2.07	2.27	2.26	2.09	1.89	kW _{PK}	30
AC Current	2.35	2.37	2.35	2.22	2.18	2.27	2.25	2.21	2.21	Amp._avg.	
RF_V_Mon.	4.37	4.33	4.30	4.25	4.22	4.21	4.20	4.14	4.09	V _{DC}	
Power_Out	2.45	2.48	2.29	2.27	2.04	2.26	2.25	2.08	1.84	kW _{PK}	40
AC Current	2.36	2.38	2.35	2.22	2.19	2.27	2.25	2.20	2.26	Amp._avg.	
RF_V_Mon.	4.36	4.33	4.29	4.24	4.21	4.20	4.18	4.13	4.07	V _{DC}	
Power_Out	2.40	2.48	2.26	2.26	2.03	2.26	2.25	2.08	1.86	kW _{PK}	50
AC Current	2.41	2.43	2.41	2.28	2.24	2.33	2.31	2.26	2.27	Amp._avg.	
RF_V_Mon.	4.35	4.32	4.28	4.24	4.21	4.20	4.18	4.12	4.07	V _{DC}	
Power_Out	2.40	2.47	2.24	2.27	2.01	2.26	2.23	2.08	1.83	kW _{PK}	64
AC Current	2.42	2.44	2.42	2.29	2.25	2.33	2.31	2.26	2.28	Amp._avg.	
RF_V_Mon.	4.34	4.31	4.27	4.23	4.20	4.19	4.17	4.12	4.06	V _{DC}	

Input Power Level

PARAMETERS	FREQUENCY									UNITS	P/F	
	3100	3150	3200	3250	3300	3350	3400	3450	3500			MHz
Power_IN	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	dBm	P
Power_IN	251	251	251	251	251	251	251	251	251	251	mW	P

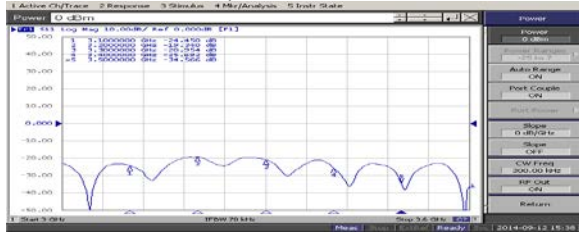
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TYPICAL PERFORMANCE PLOTS

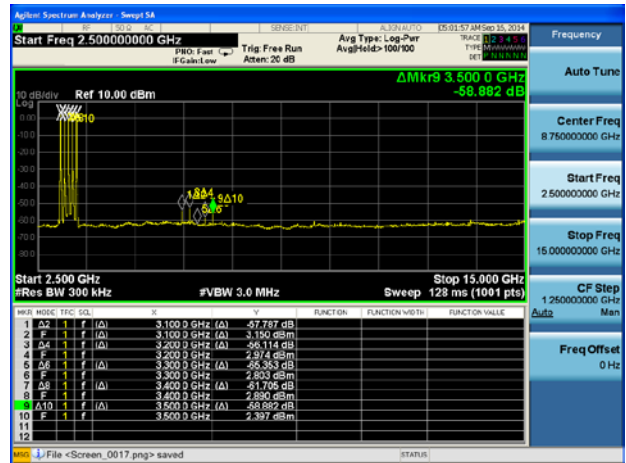
Input Return Loss



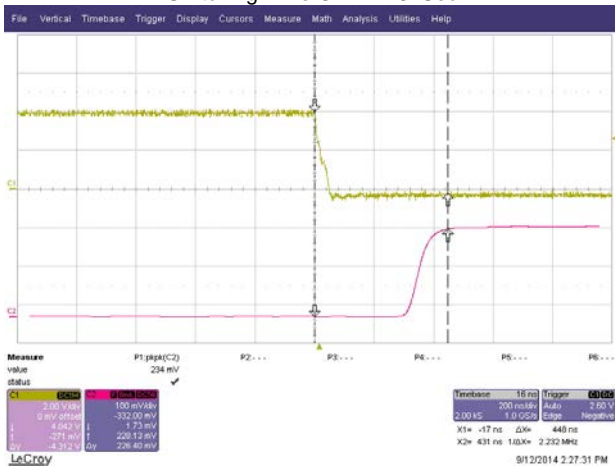
Output Return Loss



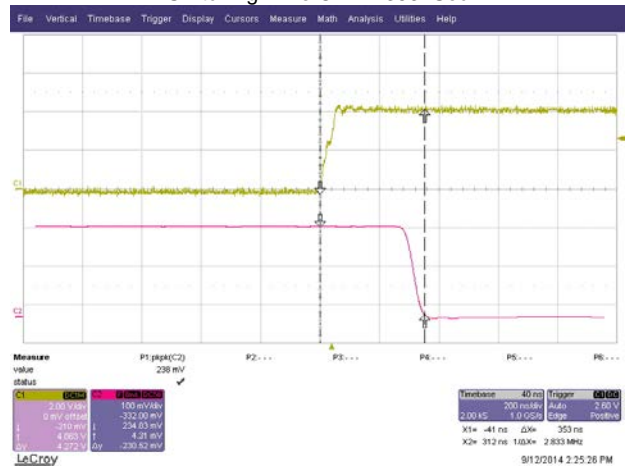
Harmonics Products at P_{OUT} = 1.3Kw



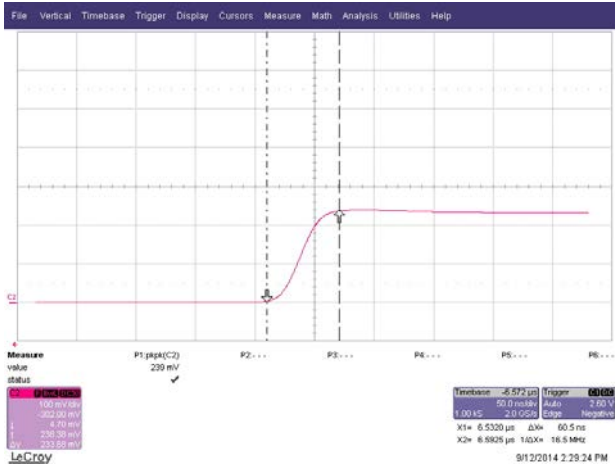
Switching Time ON = 448nSec



Switching Time OFF = 353nSec



RF Rise Time = 60nSec



RF Fall Time = 76nSec

