



C-band Pulsed GaN "Slimline" High Power Amplifier (HPA)

Product Reference: DM-C1K0-01

Electrical performance specified at 50V, 20°C and into terminating VSWR <1.3:1 unless otherwise stated

Spec ref.	Description	Units	limits	Value	Comment
1.00	Electrical Performance				
1.01	Lowest Frequency	GHz		5.2	
1.02	Highest Frequency	GHz		5.9	
1.03	Peak pulsed output power (Psat)	W	min	1000	At output of N-type connector into VSWR <1.3:1
1.04	Output power variation (Psat)	dB	max	±1	Deviation from median power across the band
1.05	RF input power	dBm	max	0±1	
1.06	Saturated Power Gain	dB	nom	60	Depends on level of compression and input power
1.07	Pulse droop (on 100µs pulse)	dB	max	0.6	Typically <0.4
1.08	Output phase control resolution	deg	nom	5.625	Internal 6-bit phase shifter
1.09	HPA turn on time (from standby)	ns	nom	200	Measured between 10% and 90% points. Can be customised to be faster
1.10	RF Gating Pulse width (min)	µs	min	1	Shorter time is feasible but not specified
1.11	Pulse rise/fall time	ns	nom	50	
1.12	Duty cycle	%	max	15	Not to be exceeded with any pulse width, or damage may occur
1.13	PRI	µs	min	13.3	At minimum pulse width only. Constrained by duty cycle
1.14	Power Supply	Vdc	min	50	
1.15	Power supply variation	V	max	+1%	
1.16	Mean DC current	A	max	13.5	At maximum (15%) duty
1.17	Power added efficiency @15% duty	%	min	25	At maximum (15%) duty, typically better than 30%
1.18	Termination return loss	dB	min	17.7	To achieve specified performance
1.19	Worst case load VSWR		max	3:1	Not to be exceeded, else damage may occur at high power output
1.20	Internal reservoir capacitance	µF	min	1000	Can be adjusted to suit requirements
2.00	Environmental & Physical				
2.01	Input RF connection			SMA-F	
2.02	Output RF connection			N-Female	
2.03	Operating temperature	°C		-40 to +85	Heatsink required. Max temperature at interface must not exceed 85°C
2.04	Operating humidity level				Non-condensing atmosphere
2.05	Weight	kg	nom	1.5	
2.06	Ingress Protection rating	IP		55	
2.07	Dimensions (exc connectors & fixings)	mm		197x150x30	Diamond Microwave drawing ref: 02-00209x01 (See p2) is indicative
3.00	Operating Modes				
3.01	Standby (RF power output disabled)				HPA is enabled/disabled with "RF_Enable" signal (TTL or 3.3V LVCMOS). Signal high = HPA enabled
3.02	Pulsed (RF power ON)				Amplifier will amplify any CW or nested RF signal present at RF Input, during "RF_Gate" control pulse (TTL or 3.3V LVCMOS)
4.00	I/O Comms				
4.01	Alarm (Output)				Alarm signal (3.3V LVCMOS-Low) for any alarm state. Connect "Alarm" (externally) to "RF_Enable" to auto-disable HPA
4.02	Phase control				Control of internal 6-bit phase shifter via I2C for phase matching.
4.03	I2C (at 3.3V)				I2C bus: (SDA/SCL/Gnd) monitoring of drain voltage and GaN drain currents in output stage and internal temperature. Look-up table provides addresses and cal factors.

End User undertaking is required for export licence application



C-band Pulsed GaN "Slimline" High Power Amplifier Provisional interface

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NOTES

DO NOT SCALE

IF IN DOUBT ASK

REV	CHANGE	NOTE	See Sheet
			CHANGE DESCRIPTION
			02-00209-01 - CHANGE RECORD

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DRAWN	JT	DATE	25/07/2017
CDD	SOLIDWORKS	SCALE	1:1
METRIC UNITS - DIMENSIONS IN MM UNLESS SPECIFIED		UNIT OF MEASURE	MM
TOLERANCES UNLESS OTHERWISE SPECIFIED		PROJECTION	1ST ANGLE
LINEAR & ANGULAR TOLERANCES		REMOVE ALL BURRS AND EDGES UNLESS SPECIFIED	
GEOMETRIC TOLERANCES		ISO 1975	
SURFACE FINISH TO BE UNLESS SPECIFIED			
MATERIAL SEE BILL OF MATERIALS			
FINISH			

NOTE: THIS DRAWING MAY INCLUDE DETAIL THAT IS SUBJECT TO UK EXPORT CONTROLS. A LICENSE MAY BE REQUIRED PRIOR TO EXPORT.

PIN-OUT TABLE

POWER/CONTROL CONNECTOR	SIGNAL
A1	50V
A2	GND
1	NC
2	NC
3	NC
4	NC
5	SCL
SIGNAL GROUND	
6	NC
7	NC
8	NC
9	NC
10	NC
11	NC
12	NC
13	GND
14	RF_ENABLE
15	RF_GATE
	ALARM

PART NAME: Top Level Assembly

PART NUMBER: 02-00209x01

SHEET: 8 OF 8

SIZE: A1

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