

Features

- Operating Frequency Range: 200 ~ 2500 MHz
- Operating Drain Voltage: 28V (up to 36V)
- 50 Ω Input
- Gain at 10 W avg.: ≥22dB
- Saturated Power: ≥15W
- Single Ended Device
- 6x10 mm surface mount air cavity package
- Support CW/pulsed or any other modulation signals
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Typical Applications

- Tactical communication
- Wideband spectrum management
- LMR
- Benchtop Amplifier
- EMC test

Description

SAC3158 is a 15 watts peak power and integrated power amplifier which designed for broad band applications with frequencies from 200 to 2500 MHz. The PA is 50 Ω input matched and requires minimal external components. It offers a much smaller footprint than traditional discrete component solutions.

Picture

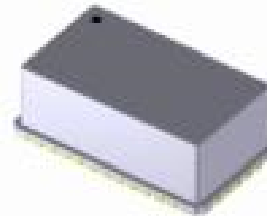


Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	150	Vdc
Gate--Source Voltage	V _{GS}	-10 to +2	Vdc
Operating Voltage	V _{DD}	+36	Vdc
Storage Temperature Range	T _{stg}	-65 to +150	°C
Case Operating Temperature	T _C	+150	°C
Operating Junction Temperature	T _J	+225	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T _C = 87° C, T _J =175° C, DC test	R _{θJC}	3.5	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (HBM) (JEDEC Standard JS-001-2012)	TBD
Charged Device Model (CDM) (JEDEC Standard JESD22-C101F)	TBD

SuperApex, LLC

1580 S. Milwaukee Ave. Suite 405, Libertyville, IL 60048, USA
Tel: 1-847-505-8319, 1-847-573-9866
E-mail: sales@superapexco.com
Website: www.superapexco.com

Table 4. Electrical Characteristics

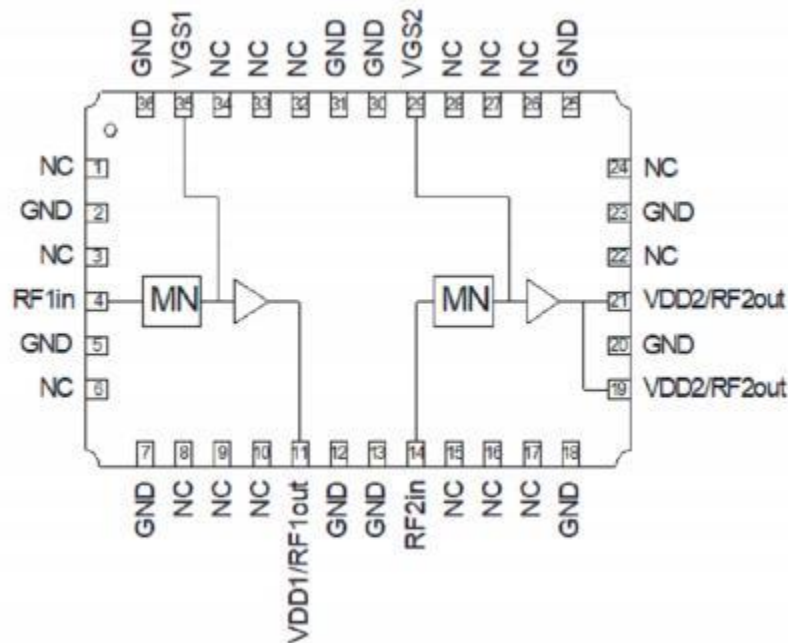
Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		100		2600	MHz
Power Gain @ Pout=10W Avg.	Driver + Final Stage		22		dB
P _{SAT}		15		20	W
Drain Efficiency @ P _{SAT}		35	55		%

Unless otherwise noted: TA = 25°C, V_{DD} = 28 V, Pulse Width=100 us, Duty cycle=10%

Load Mismatch of per Section (On Test Fixture, 50-ohm system): V_{DD} = 30 V, f = 2.6 GHz

VSWR 10:1 at P3dB pulse CW Output Power	No Device Degradation
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Pin Configuration and Description



Reference Circuit of Test Fixture Assembly Diagram

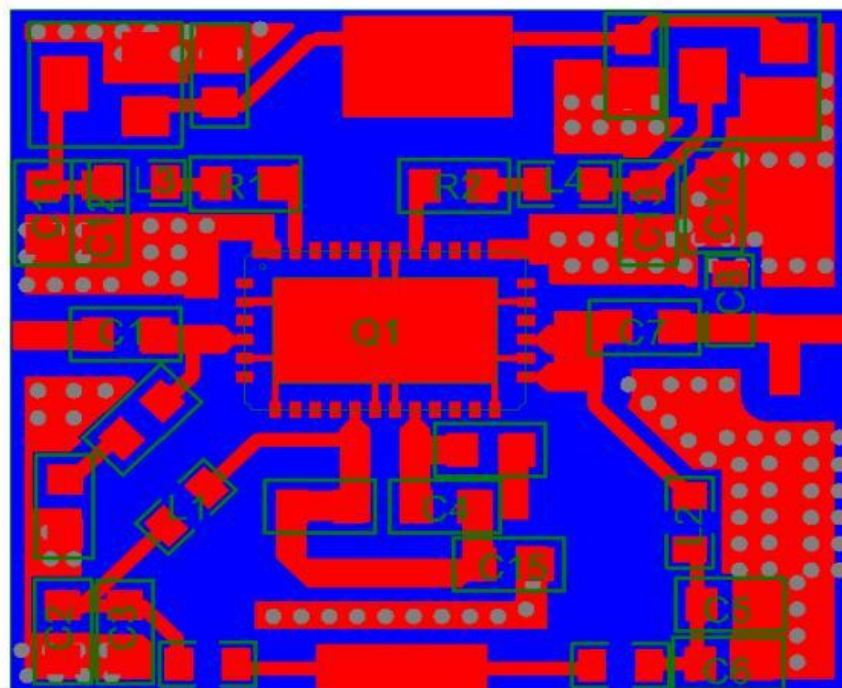


Figure 1. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Component	Description	Suggested Manufacturer
C1	30pF	DLC75D
C2, C5, C12, C13	100pF	DLC75D
C3, C6, C11, C14	10uF	
C4, C7	100pF	ATC600S
C8, C15	1.5pF	DLC75D
R1, R2	Chip Resistor,20ohm	0603
L1	330nH	0603
L2	100nH	
L3, L4	4.3nH	0805
PCB	RO4350B 20mils	Rogers

TYPICAL CHARACTERISTICS

Figure 2 . Psat and Efficiency vs. Frequency

Test Condition: Pulse CW , Pulse width=100us , Duty Cycle=10%

Driver: VDS=30V, Vgs=-2.65V Idq=40mA Final: VDS=30V Vgs=-2.75V Idq=100mA

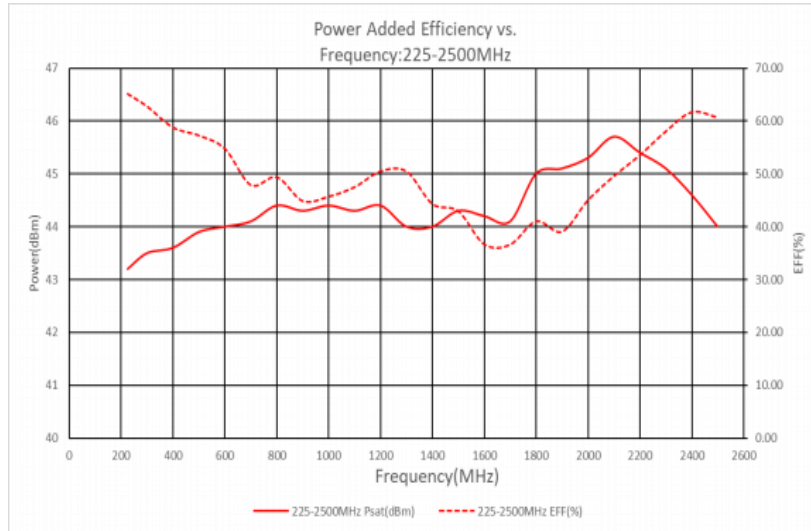
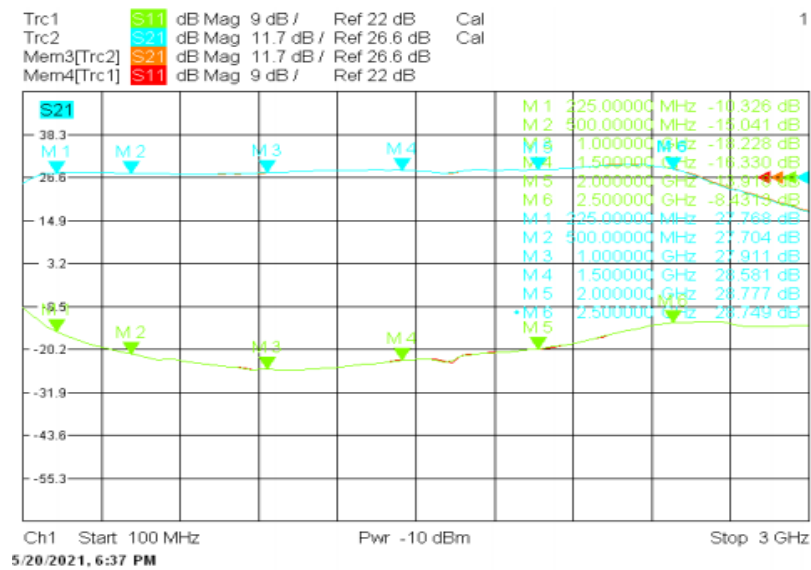


Figure 3 . Network Analyzer output S11/S21 Driver: VDS=30V, Vgs=-2.65V Idq=40mA/Final: VDS=30V Vgs=-2.75V Idq=100mA



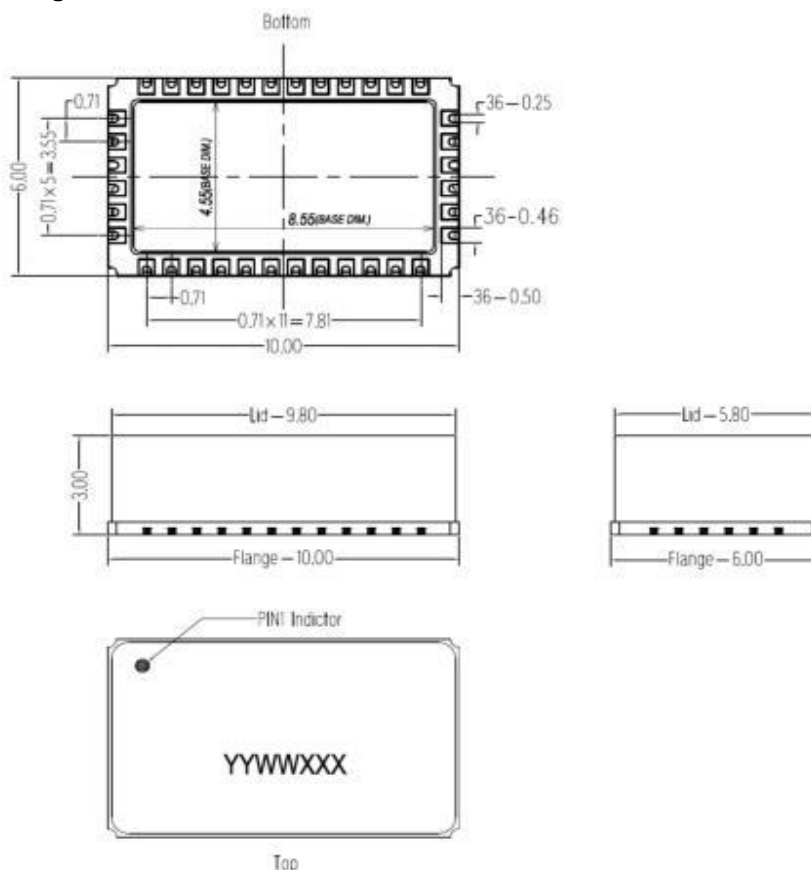
SAC3158

GaN Power Amplifier
200-2500MHz, 15W, 28V

Rev 1.0

Package Dimensions

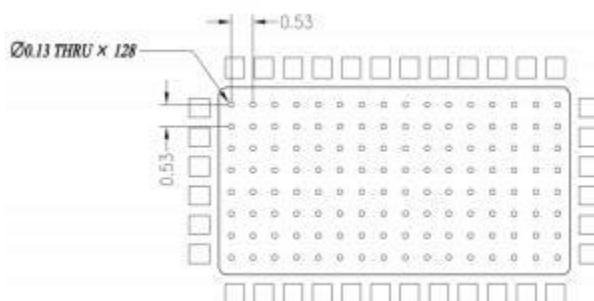
10*6 Ceramic QFN Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are ± 0.2 mm.

Mounting Footprint Pattern



Notes:

1. All dimensions are in mm;
2. Vias are required under the backside paddle of this device for proper RF/DC grounding and thermal dissipation. ALL vias are PTH to ground.

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