



GaN 28V 130W,S band RF Power Transistor

Description

The GTAH35131A2C is a 130W internally matched, GaN HEMT, designed from 2 to 3.5GHz, especially 5G NR or LTE application, as well as either Pulse or CW application

There is no guarantee of performance when this part is used in applications designed Outside of these frequencies.

- Typical broad band CW performance

$$V_{DS}=28V, I_{DQ}=100mA, V_{GS}=-2.77V$$

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
2000	50.00	99.97	47.96	10.63	51.84	152.88	57.12
2100	50.50	112.21	51.58	10.53	51.81	151.75	59.08
2200	50.50	112.30	52.35	11.25	51.95	156.56	60.45
2300	50.39	109.38	53.37	11.53	51.84	152.58	61.38
2400	50.25	105.97	53.44	11.60	51.79	151.07	61.76
2500	50.11	102.59	52.94	11.81	51.64	146.02	60.93
2600	49.91	97.94	53.64	11.97	51.47	140.34	61.55
2700	49.70	93.38	53.22	11.69	51.31	135.20	60.98
2800	49.53	89.83	52.28	12.36	51.17	130.85	59.89
2900	49.25	84.12	50.89	11.27	51.26	133.67	60.27
3000	49.18	82.86	49.96	11.79	51.18	131.17	59.20
3100	48.86	76.87	48.50	11.25	51.12	129.42	58.61
3200	49.15	82.19	50.39	10.65	51.08	128.26	58.80
3300	49.02	79.81	49.89	11.04	51.04	127.18	58.65
3400	49.29	84.90	51.93	10.26	51.08	128.13	59.74
3500	49.40	87.17	53.53	11.06	51.09	128.40	60.74

GTAH35131A2C



Applications and Features

- Suitable for wireless communication infrastructure, wideband amplifier, EMC testing, ISM etc.
- High Efficiency and Linear Gain Operations
- Thermally Enhanced Industry Standard Package
- High Reliability Metallization Process
- Excellent thermal Stability and Excellent Ruggedness
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

1. Set VGS to the pinch--off (VP) voltage, typically -5 V
2. Turn on VDS to nominal supply voltage (28V)
3. Increase VGS until IDS current is attained
4. Apply RF input power to desired level

Turning the device OFF

1. Turn RF power off
2. Reduce VGS down to VP, typically -5 V
3. Reduce VDS down to 0 V
4. Turn off VGS

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10,+2	Vdc



Operating Voltage	V_{DD}	36	Vdc
Maximum Forward Gate Current @ $T_C = 25^{\circ}\text{C}$	I_{gmax}	30	mA
Storage Temperature Range	T_{stg}	-65 to +150	$^{\circ}\text{C}$
Case Operating Temperature	T_C	+150	$^{\circ}\text{C}$
Operating Junction Temperature(See note 1)	T_J	+225	$^{\circ}\text{C}$

Note: 1. Continuous operation at maximum junction temperature will affect MTTF
2. Bias Conditions should also satisfy the following expression: $P_{diss} < (T_J - T_C) / R_{JC}$ and $T_C = T_{case}$

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case $T_C = 25^{\circ}\text{C}$, $T_J = 200^{\circ}\text{C}$, RF CW operation	$R_{\theta JC}$	1.4	C/W

Table 3. Electrical Characteristics ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $I_{DS} = 30\text{mA}$	V_{DSS}	150			V
Gate Threshold Voltage	$V_{DS} = 28\text{V}$, $I_D = 30\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 28\text{V}$, $I_{DS} = 120\text{mA}$, Measured in Functional Test	$V_{GS(Q)}$		-2.4		V



Typical performance

2.0-3.5GHz

Figure 2: Small signal gain and return loss Vs Frequency

V_{ds}=28V, I_{dq}=200mA, input power=0dBm

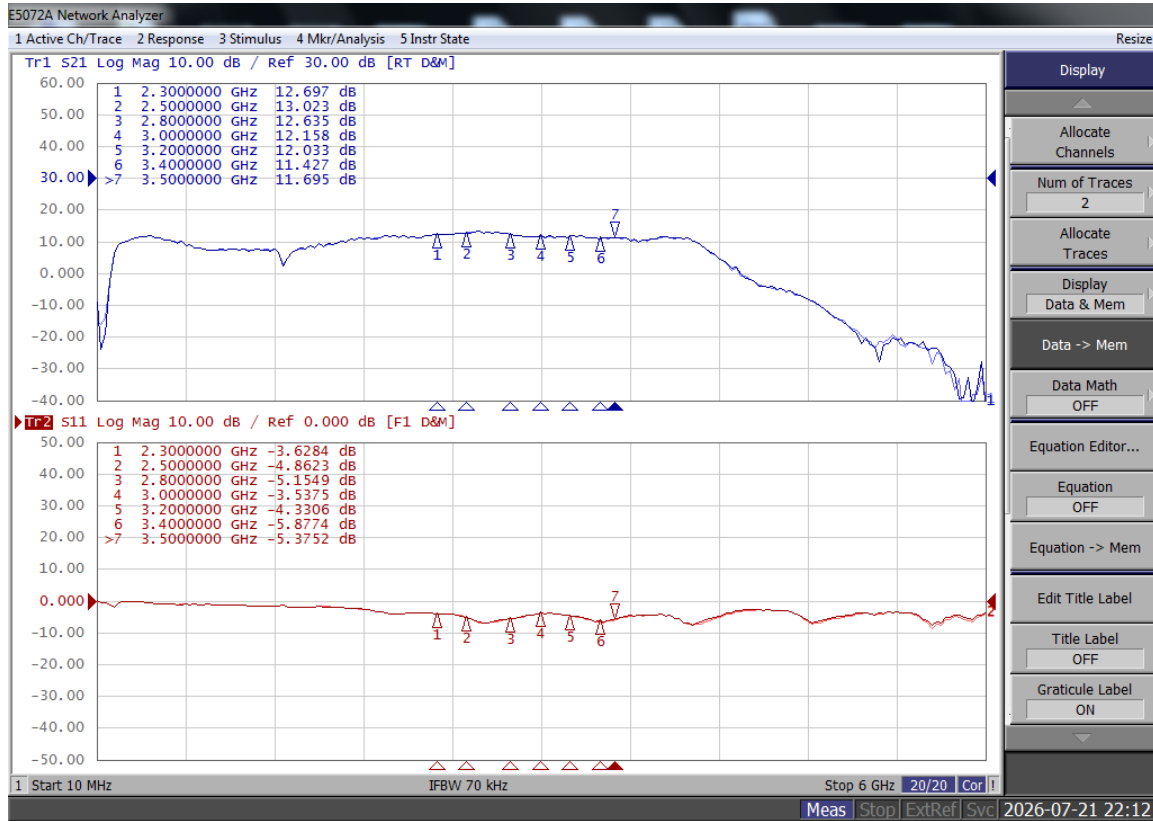


Figure 3: Efficiency and power gain as function of P_{out}

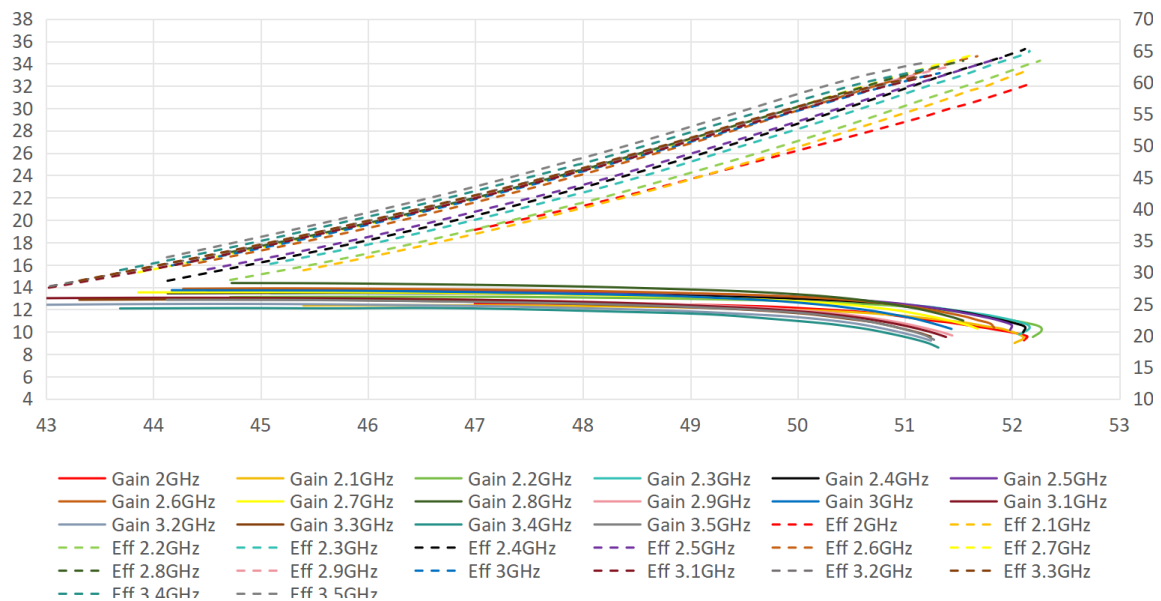
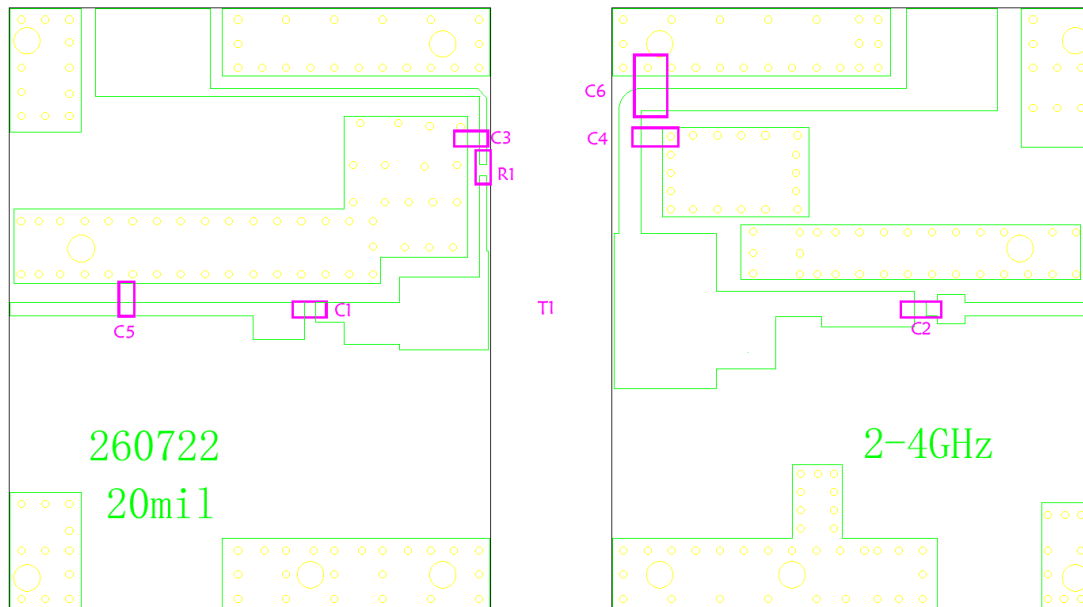


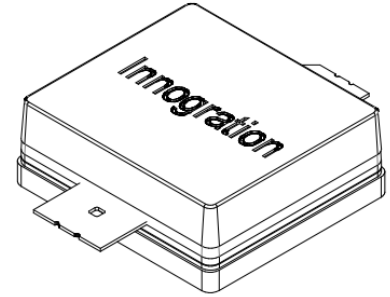
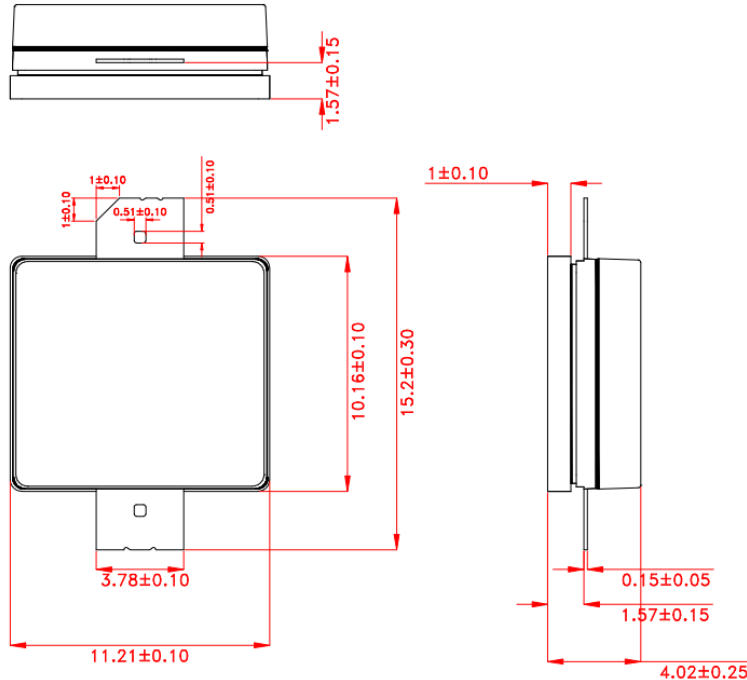
Figure 4: Picture and Bill of materials of application circuit
(Layout Gerber file upon request, 20mils RO4350B)



Part	Quantity	Description	Part Number	Manufacture
C1,C2,C3,C4	4	8.2pF High Q Capacitor	251SHS120BSE	TEMEX
C5	1	0.3pF High Q Capacitor	251SHS0R3BSE	TEMEX
R1	1	10 Ω Power Resistor	ESR03EZPF100	ROHM
C6	1	10uF MLCC	GRM32EC72A106ME05	Murata
T1	1	GaN Transistor	GTAH35131A2C	Innogrations



Package Dimensions (Unit:mm)



Unit:mm

Tolerance ±0.10mm, Except as Noted.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/7/22	V1.0	Preliminary Datasheet Creation

Application data based on LWH-26-19

Notice

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