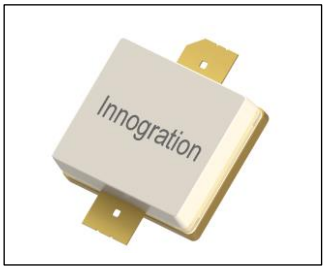
GaN HEMT 28V, HF-1.5GHz 180W, RF Power Transistor

Description



The STCH15180A2C is a 180W GaN HEMT, designed for multiple application up to 1.5GHz

It can be used in CW, Pulse and any other modulation modes. There is no guarantee of performance when this part is used in applications designed Outside of these frequencies.

- Typical class AB 960-1215MHz RF Performance with device soldered

  Vds=28V, Idq=300mA，CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
960	51.6	144.7	54.7	15.36	52.29	169.5	59.2
1010	51.64	146.0	57.3	15.62	52.37	172.6	60.2
1060	51.64	145.8	60.0	15.66	52.38	172.9	62.3
1110	51.67	146.8	62.8	15.43	52.5	177.9	66.2
1160	51.65	146.2	67.5	14.88	52.48	177.1	72.9
1215	51.23	132.9	69.0	14.74	52.05	160.2	73.9

Applications

- L band power amplifier
- P band power amplifier
- ISM/RF Energy power amplifier

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
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_{DSS}	+200	Vdc
Gate--Source Voltage	V_{GS}	-8 to +0.5	Vdc
Operating Voltage	V_{DD}	50	Vdc
Maximum gate current	Igs	34	mA
Storage Temperature Range	Tstg	-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 by FEA T_C= 85°C, at Pdiss=100W	$R_{\theta JC}$	0.85	°C /W

Table 3. Electrical Characteristics (TA = 25℃ unless otherwise noted)

DC Characteristics (measured on wafer prior to packaging)

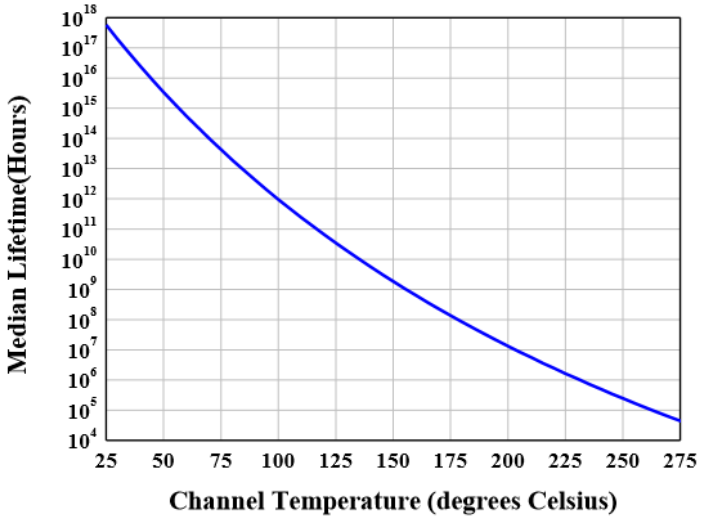
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VGS=-8V; IDS=47mA	V_{DSS}		200		V

Gate Threshold Voltage	VDS =10V, ID = 47mA	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	VDS =28V, IDS=300mA, Measured in Functional Test	$V_{GS(Q)}$		-3.2		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	1.5GHz, Pout=180W Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 2: Median Lifetime vs. Channel Temperature



9160-1215MHz
Typical performance

Figure 3: Network analyzer output S11/S21

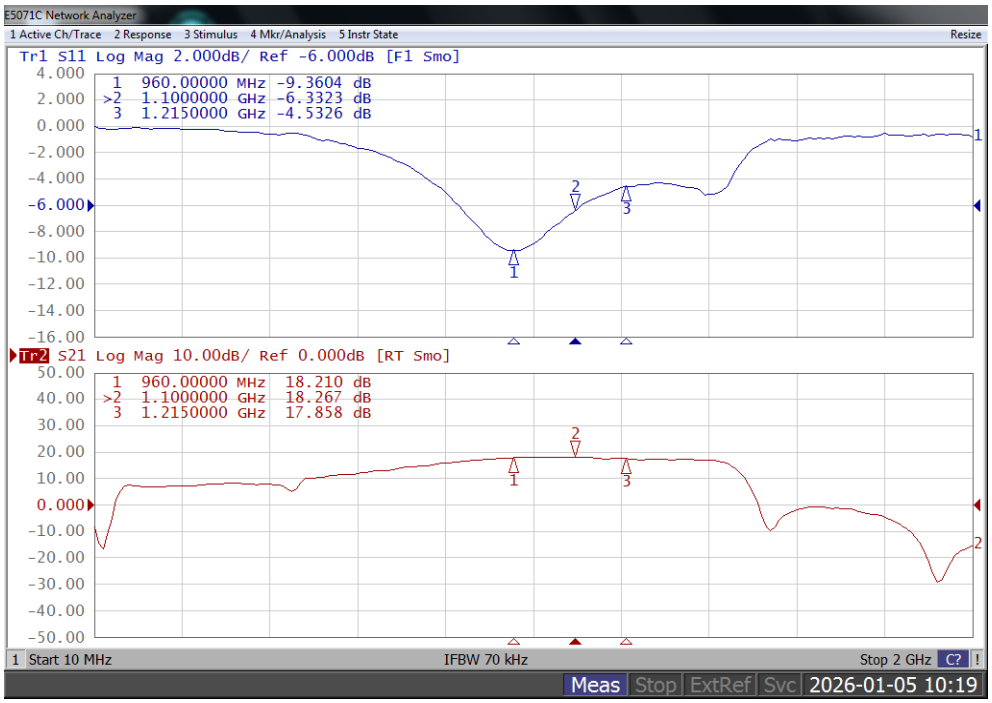
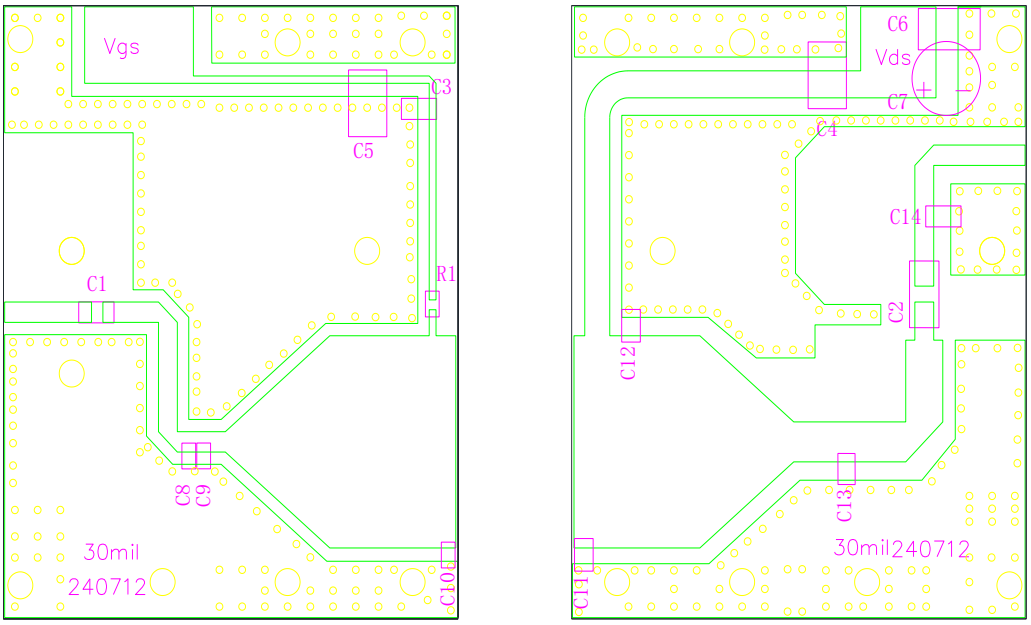
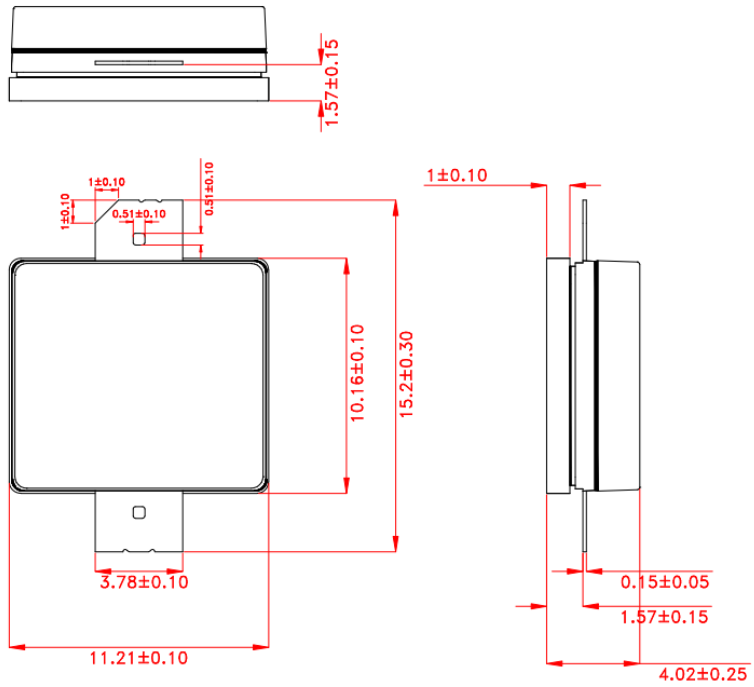


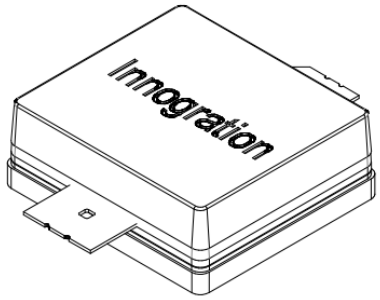
Figure 4: Picture of application board



Designator	Comment	Footprint	Quantity
C1, C10	6.8 pF	0603/0805	2
C2, C3, C4,	47 pF	0805	3
C5, C6	10uF/100V	1210	2
C7	470uF/63V		1
C8, C9, C11, C12	2.0 pF	0805	4
C13	3.0 pF	0805	1
C14	0.5 pF	0805	1
R1	10 Ω	0603	1

Package Dimensions （Unit:mm）





Unit:mm

Tolerance ±0.10mm,Except as Noted.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2026/1/5	V1.0	Preliminary Datasheet Creation

Application data based on: LSM-26-01

Notice

Specifications are subject to change without notice. Innogration believes the information within the data sheet to be reliable. Innogration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.

“Typical” parameter is the average values expected by Innogration in quantities and are provided for information purposes only. It can and do vary in different applications and related performance can vary over time. All parameters should be validated by customer’s technical experts for each application.

Innogration products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innogration product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility.

For any concerns or questions related to terms or conditions, please check with Innogration and authorized distributors