TRANSCOM

TC2282

REV3_20070504

Low Noise Ceramic Packaged PHEMT GaAs FETs

FEATURES

- 0.5 dB Typical Noise Figure at 12 GHz
- High Associated Gain: Ga = 12 dB Typical at 12 GHz
- Lg = 0.25 µm, Wg = 300 µm
- Tight Vp ranges control
- High RF input power handling capability
- 100 % DC Tested
- Micro-X Metal Ceramic Package

PHOTO ENLARGEMENT

DESCRIPTION

The TC2282 is a high performance field effect transistor housed in a ceramic micro-x package with TC1202 PHEMT Chip. It has very low noise figure, high associated gain and high dynamic range that makes this device suitable for use in low noise amplifiers. All devices are 100 % DC tested to assure consistent quality.

ELECTRICAL SPECIFICATIONS (T_A=25 °C)

Symbol	CONDITIONS	MIN	TYP	MAX	UNIT
NF	Noise Figure at V_{DS} = 4 V, I_{DS} = 25 mA, f = 12GHz		0.5	0.7	dB
G_a	Associated Gain at V_{DS} = 4 V, I_{DS} = 25 mA, f = 12GHz	11	12		dB
I_{DSS}	Saturated Drain-Source Current at V_{DS} = 2 V, V_{GS} = 0 V		90		mA
g_m	Transconductance at V_{DS} = 2 V, V_{GS} = 0 V		100		mS
V_P	Pinch-off Voltage at V_{DS} = 2 V, I_D = 0.6mA		-1.0*		Volts
BV_{DGO}	Drain-Gate Breakdown Voltage at I_{DGO} = 0.15mA	5	9		Volts
R_{th}	Thermal Resistance		150		°C/W

ABSOLUTE MAXIMUM RATINGS (T_A=25 °C)

Symbol	Parameter	Rating
V_{DS}	Drain-Source Voltage	5.0 V
V_{GS}	Gate-Source Voltage	-3.0 V
I_{DS}	Drain Current	I_{DSS}
I_{GS}	Gate Current	300 µA
P_{in}	RF Input Power, CW	20 dBm
P_T	Continuous Dissipation	400 mW
T_{CH}	Channel Temperature	175 °C
T_{STG}	Storage Temperature	- 65 °C to +175 °C

TYPICAL NOISE PARAMETERS (T_A=25 °C)

V_{DS} = 4 V, I_{DS} = 25 mA

Frequency	NF_{opt}	G_A	Γ_{opt}		Rn/50
			MAG	ANG	
2	0.33	26.0	0.76	40	0.38
4	0.37	20.1	0.67	78	0.31
6	0.41	16.7	0.60	110	0.24
8	0.46	14.3	0.55	136	0.20
10	0.52	12.7	0.50	162	0.16
12	0.56	11.7	0.46	188	0.14
14	0.68	11.1	0.43	-143	0.14
16	0.80	10.9	0.40	-109	0.14
18	0.98	10.8	0.37	-67	0.16

* For the tight control of the pinch-off voltage range, we divide TC2282 into 3 model numbers to fit customer design requirement
(1)TC2282P0710 : Vp = -0.7V to -1.0V (2)TC2282P0811 : Vp = -0.8V to -1.1V (3)TC2282P0912 : Vp = -0.9V to -1.2V
If required, customer can specify the requirement in purchasing document. For special Vp requirement, please contact factory for details.

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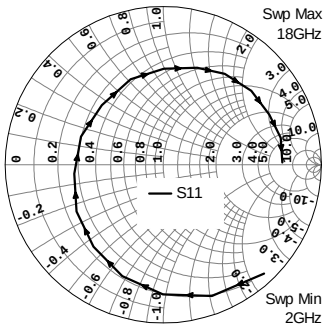
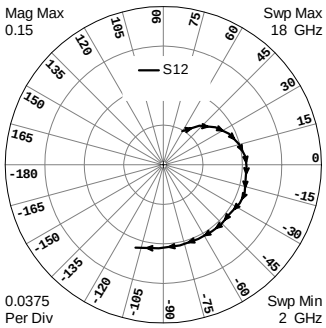
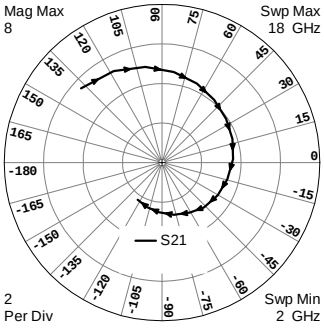
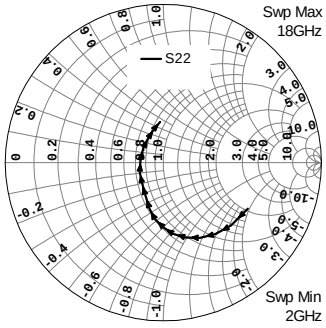
TYPICAL SCATTERING PARAMETERS (T_A=25 °C)

V_{DS} = 4 V, I_{DS} = 25 mA



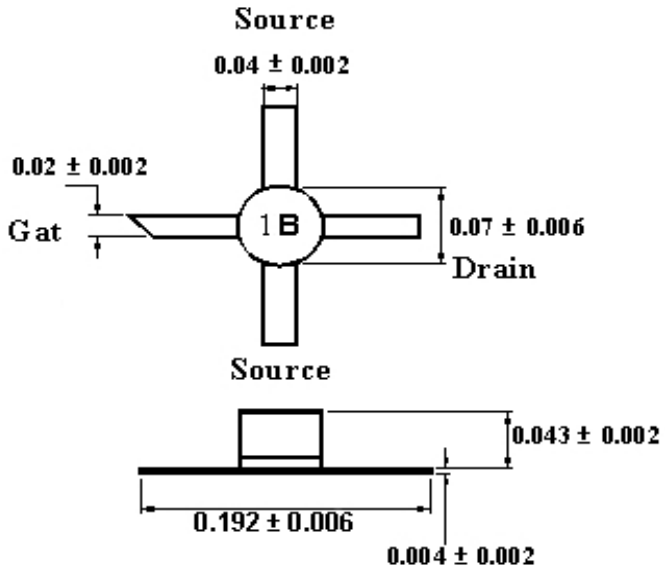




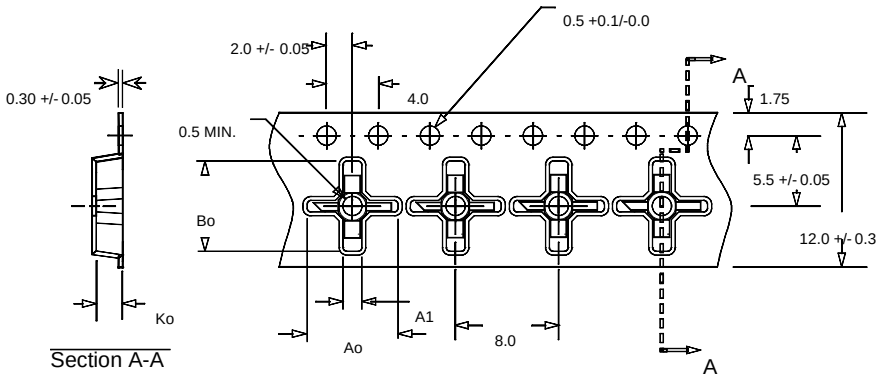


FREQUENCY	S11		S21		S12		S22	
(GHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2	0.9383	-47.10	5.5644	137.51	0.0366	60.59	0.6091	-28.60
3	0.8833	-69.67	5.2307	117.89	0.0504	47.12	0.5848	-42.78
4	0.8183	-90.11	4.9080	99.81	0.0609	35.57	0.5599	-53.75
5	0.7513	-110.28	4.6107	82.55	0.0690	25.21	0.5291	-63.92
6	0.6806	-130.47	4.3600	66.15	0.0743	15.47	0.4937	-73.46
7	0.6234	-151.73	4.1303	50.15	0.0783	5.35	0.4522	-82.42
8	0.5648	-174.18	3.9245	34.43	0.0791	-1.41	0.4086	-89.96
9	0.5489	161.07	3.7563	18.47	0.0792	-10.32	0.3595	-98.66
10	0.5420	135.99	3.6082	2.73	0.0820	-19.53	0.3029	-106.54
11	0.5773	111.02	3.4158	-14.20	0.0811	-26.65	0.2353	-119.08
12	0.6066	89.70	3.2708	-30.24	0.0783	-37.22	0.1834	-137.69
13	0.6487	70.69	3.0932	-46.84	0.0787	-45.97	0.1599	-159.10
14	0.6924	55.92	2.8975	-60.77	0.0782	-53.77	0.1445	171.54
15	0.7265	39.90	2.7090	-77.21	0.0778	-64.89	0.1579	142.38
16	0.7427	25.42	2.5108	-93.74	0.0781	-78.27	0.1872	118.94
17	0.7616	12.86	2.3699	-108.70	0.0795	-93.03	0.2212	104.97
18	0.7528	1.03	2.2433	-123.32	0.0830	-108.50	0.2577	94.56

OUTLINE DIMENSIONS (Unit: mm)



TAPE & REEL PACKAGE ORIENTATION (Unit :mm)



Ao = 7.0 mm
A1 = 1.45 mm
Bo = 7.0 mm
B1 = 0.9 mm
Ko = 2.0 mm

Standard Reel Size	7”
Standard Reel Quantity	1000