

TOSHIBA FIELD EFFECT TRANSISTOR GaAs N CHANNEL SINGLE GATE MODULATION DOPE TYPE

2SK2856

UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

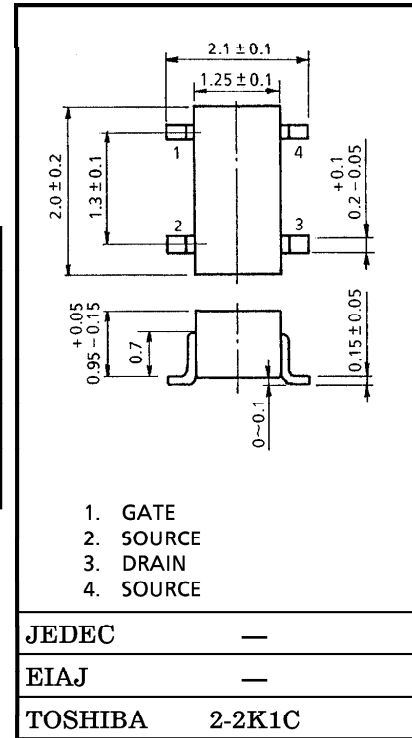
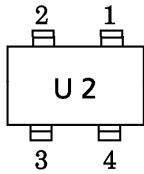
Unit in mm

- Low Noise Figure : NF=0.7dB (f=1.5GHz)
- High Gain : Ga=21.5dB (f=1.5GHz)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V _{GD0}	-3	V
Gate-Source Voltage	V _{GS0}	-3	V
Drain Current	I _D	80	mA
Power Dissipation	P _D	100	mW
Channel Temperature	T _{ch}	125	°C
Storage Temperature Range	T _{stg}	-55~125	°C

MARKING



Weight : 0.006g

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

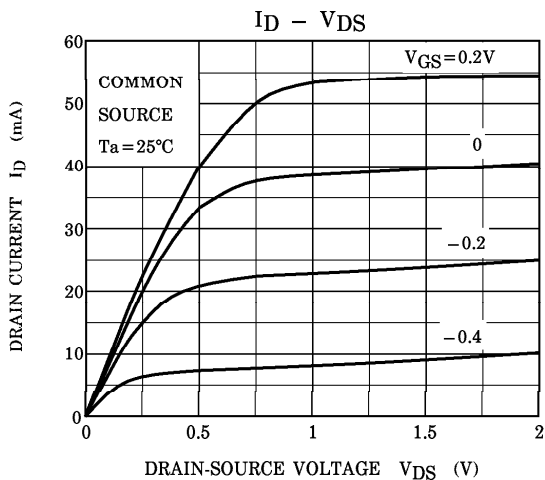
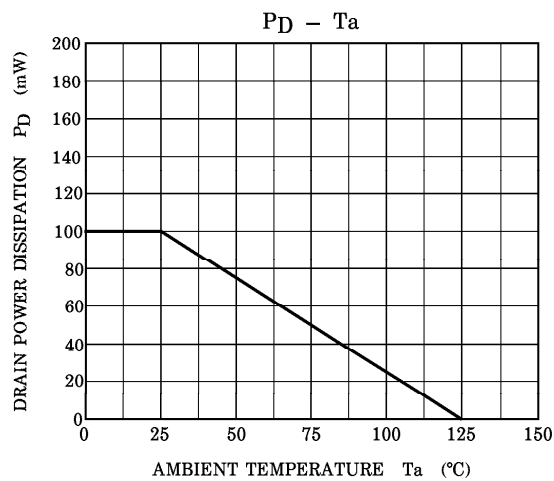
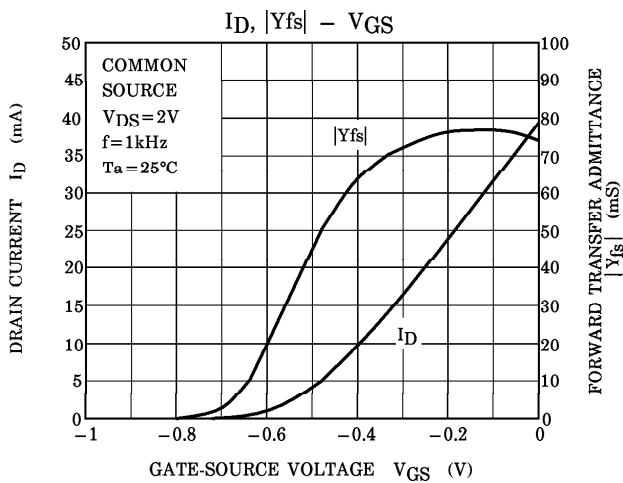
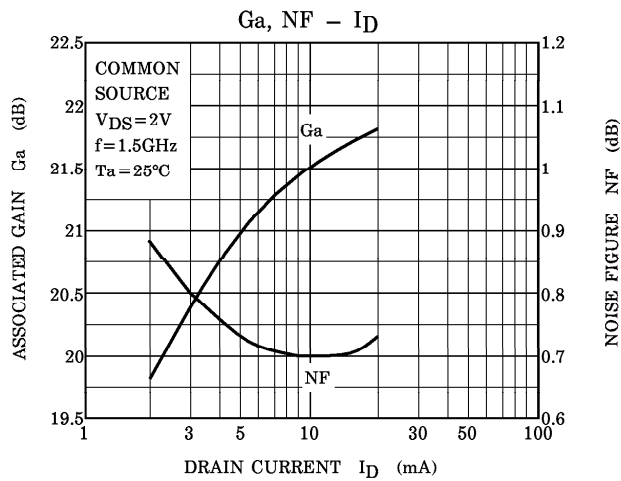
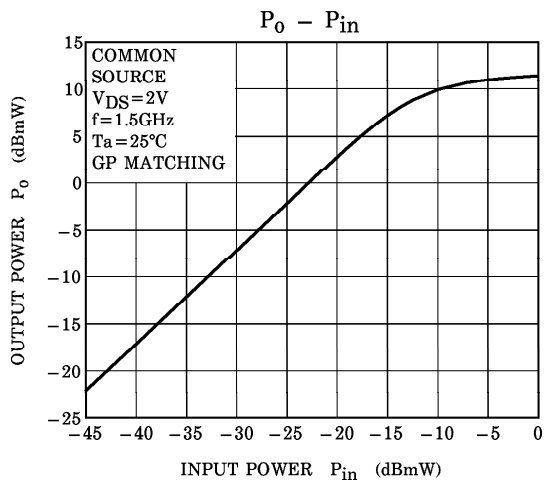
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I _{GSS}	V _{DS} =0, V _{GS} =-2V	—	—	-20	μA
Drain Current	I _{DSS}	V _{DS} =2V, V _{GS} =0	15	40	80	mA
Gate-Source Cut-off Voltage	V _{GS (OFF)}	V _{DS} =2V, I _D =100μA	-0.2	-0.8	-2	V
Forward Transfer Admittance	Y _{fs}	V _{DS} =2V, I _D =10mA, f=1kHz	—	55	—	mS
Noise Figure	NF	V _{DS} =2V, I _D =10mA, f=1.5GHz	—	0.7	1.5	dB
Associated Gain	Ga	V _{DS} =2V, I _D =10mA, f=1.5GHz	18	21.5	—	dB

CAUTION

This device electrostatic sensitivity. Please handle with caution.

961001EAC1

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.



S-PARAMETER

COMMON SOURCE

($V_{DS}=2V$, $I_D=10mA$, $T_a=25^{\circ}C$, $Z_o=50\Omega$)

FREQ. (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.999	-2	5.283	178	0.002	87	0.766	-2
200	0.997	-4	5.258	176	0.005	87	0.766	-3
300	0.997	-6	5.254	174	0.007	87	0.765	-4
400	0.990	-8	5.242	172	0.009	86	0.765	-6
500	0.987	-10	5.207	169	0.011	84	0.765	-7
600	0.985	-12	5.201	167	0.014	84	0.764	-8
700	0.982	-14	5.169	166	0.016	83	0.763	-10
800	0.980	-16	5.150	163	0.018	82	0.763	-11
900	0.975	-18	5.112	162	0.020	81	0.762	-12
1000	0.967	-20	5.089	159	0.022	81	0.760	-14
1100	0.965	-22	5.067	158	0.024	80	0.760	-15
1200	0.955	-24	5.047	156	0.026	79	0.757	-16
1300	0.948	-26	5.020	154	0.028	78	0.756	-18
1400	0.941	-27	4.991	151	0.030	77	0.754	-19
1500	0.931	-29	4.922	150	0.032	76	0.751	-20
1600	0.924	-31	4.917	147	0.034	75	0.751	-21
1700	0.915	-33	4.879	146	0.036	75	0.747	-22
1800	0.906	-34	4.809	144	0.038	75	0.747	-23
1900	0.897	-36	4.785	142	0.039	73	0.742	-24
2000	0.885	-38	4.697	139	0.041	72	0.740	-25
2100	0.873	-39	4.691	138	0.042	71	0.735	-26
2200	0.861	-41	4.575	136	0.044	71	0.730	-27
2300	0.848	-42	4.573	135	0.045	71	0.728	-28
2400	0.838	-44	4.434	131	0.047	70	0.723	-29
2500	0.823	-45	4.433	131	0.048	69	0.721	-29
2600	0.816	-46	4.325	128	0.049	69	0.718	-30

CONSTANT NOISE FIGURE

NF min = 0.7dB, $\Gamma_{opt} = 0.53 \angle 14^\circ$, $R_n = 25\Omega$

@ $V_{DS} = 2V$, $I_D = 10mA$, $f = 1.5GHz$

$T_a = 25^\circ C$, $Z_0 = 50\Omega$

