

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

2SK2856

UHF BAND LOW NOISE AMPLIFIER APPLICATIONS

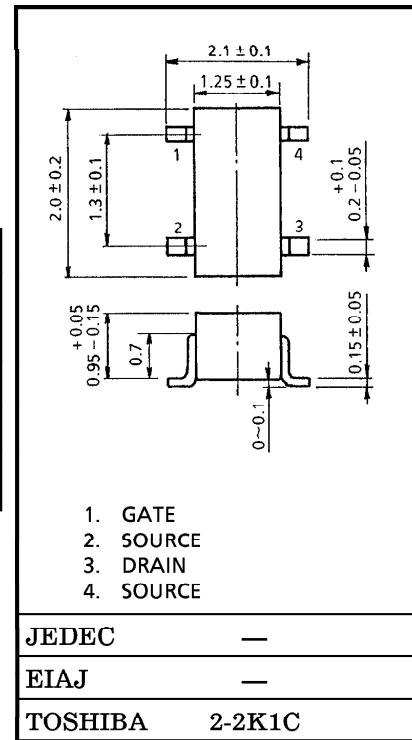
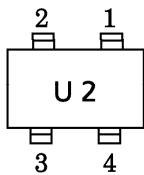
Unit in mm

- 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)

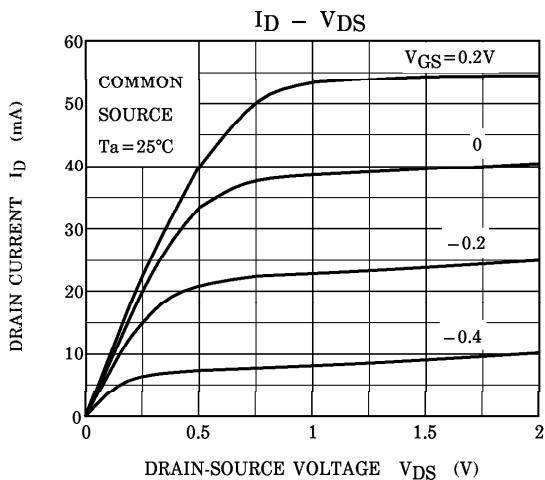
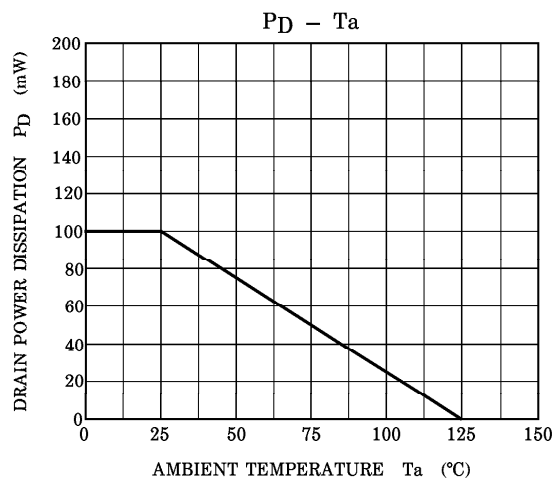
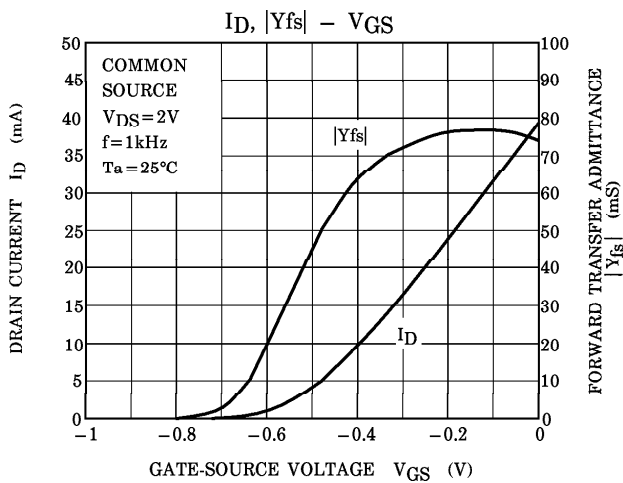
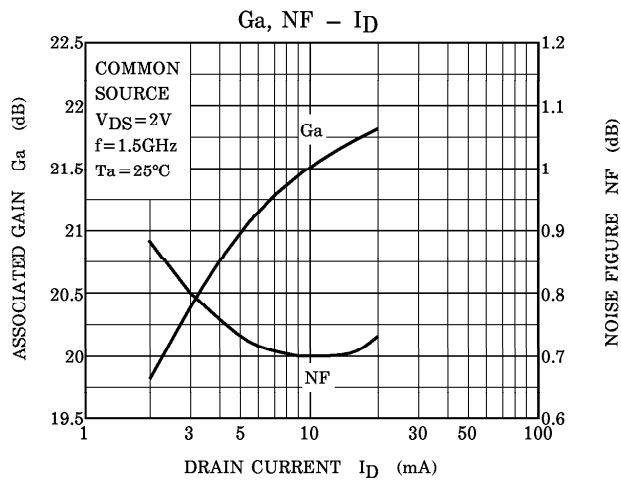
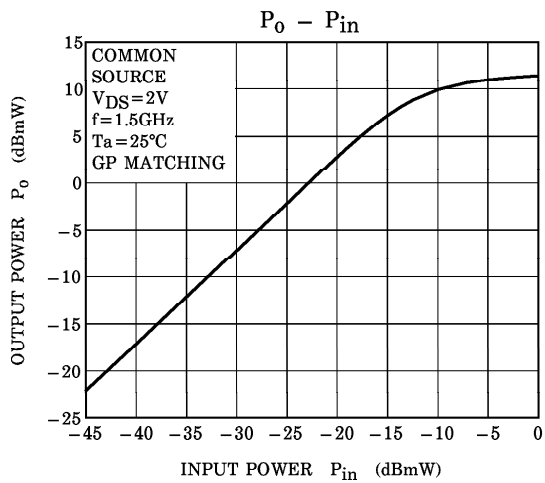
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I _{GSS}	V _{DS} =0, V _{GS} =-2V	—	—	-20	μA
Drain Current	I _{DSS}	V _{DS} =2V, V _{GS} =0	15	40	80	mA
Gate-Source Cut-off Voltage	V _{GS (OFF)}	V _{DS} =2V, I _D =100μA	-0.2	-0.8	-2	V
Forward Transfer Admittance	Y _{fs}	V _{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.

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

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

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

