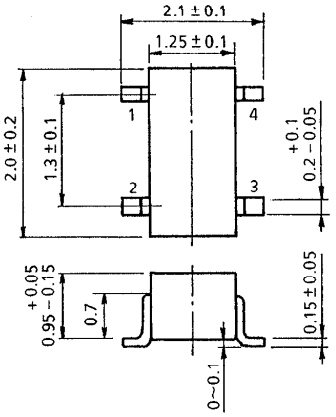
TOSHIBA FIELD EFFECT TRANSISTOR GaAs N CHANNEL SINGLE GATE MODULATION DOPE TYPE

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)



1. GATE
2. SOURCE
3. DRAIN
4. SOURCE

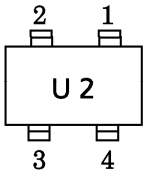
JEDEC	—
EIAJ	—
TOSHIBA	2-2K1C

Weight : 0.006g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V_{GDO}	−3	V
Gate-Source Voltage	V_{GSO}	−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



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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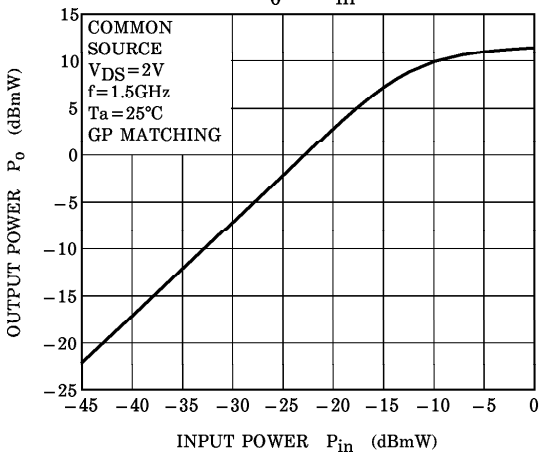
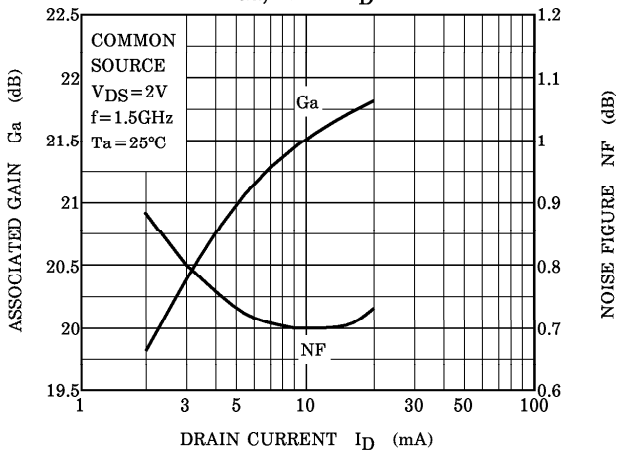
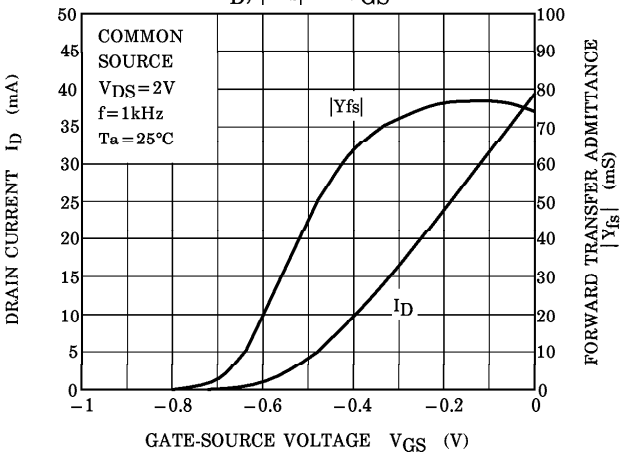
$P_o - P_{in}$



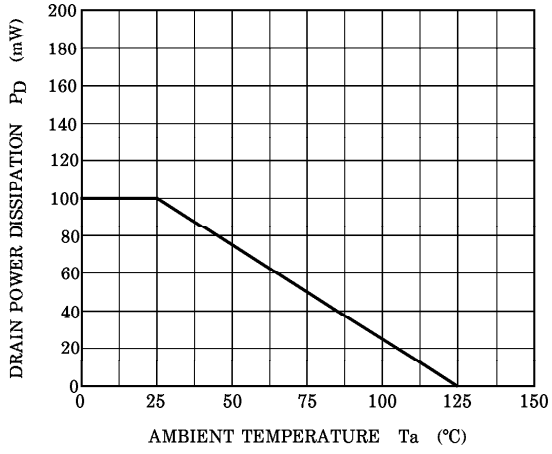
Ga, NF – I_D



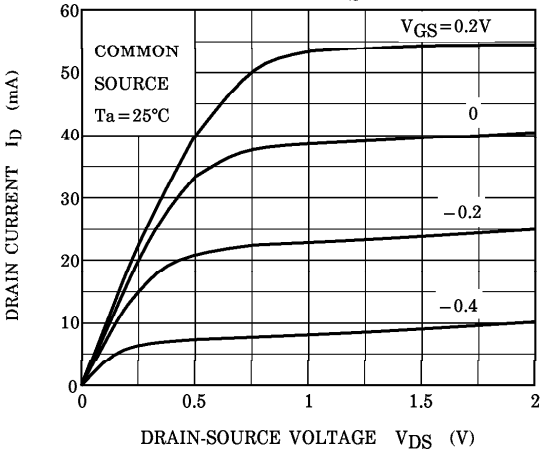
I_D, |Yfs| – V_{GS}



P_D – Ta



I_D – V_{DS}



S-PARAMETER

COMMON SOURCE

(V_{DS} = 2V, I_D = 10mA, Ta = 25°C, Z_o = 50Ω)

FREQ.	S11		S21		S12		S22	
(MHz)	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, $\Gamma_{opt} = 0.53\angle 14$, $R_n = 25\Omega$
@V_{DS} = 2V, I_D = 10mA, f = 1.5GHz
Ta = 25°C, $Z_o = 50\Omega$