Ordering number : ENN*0000

N-Channel Ga As MESFET

2SK1645

For C to X-band Local Oscillator and Amplifier

Preliminary

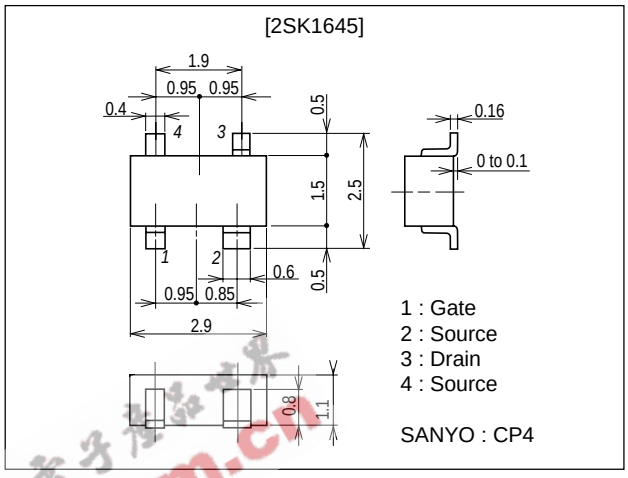
Features

- Lowest phase noise.
- Super miniaturized plastic-mold package (CP4).
- The chip surface is covered with the highly reliable protection film.
- Automatic surface mounting is available.

Package Dimensions

unit : mm

2134A



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		6.0	V
Gate-to-Source Voltage	V_{GS}		−5.0	V
Drain Current	I_D		100	mA
Allowable Power Dissipation	P_D		200	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

SANYO Electric Co.,Ltd. Semiconductor Company

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Electrical Characteristics at Ta=25°C

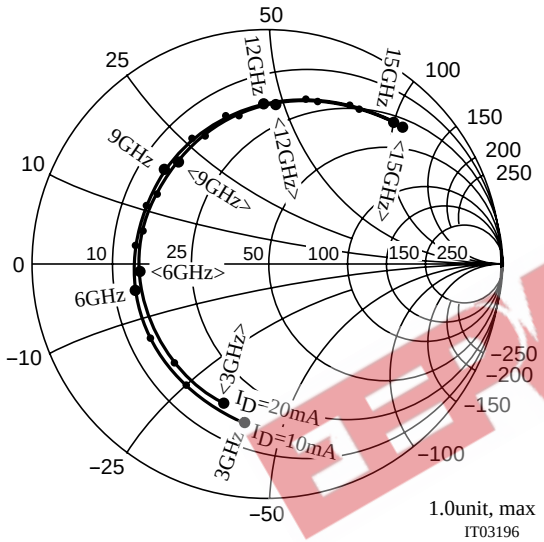
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Source Breakdown Voltage	$V_{(BR)GSO}$	I_{GS}=−10μA	−5.0			V
Saturated Drain Current	I_{DSS}	V_{DS}=3V, V_{GS}=0	30	60	100	mA
Gate-to-Source Cutoff Voltage	V_{GS}(off)	V_{DS}=3V, I_D=100μA	−0.5	−1.5	−5.0	V
Forward Transfer Admittance	|yfs|	V_{DS}=3V, I_D=10mA		40		mS
Minimum Noise Figure	NFmin	V_{DS}=3V, I_D=10mA, f=12GHz		2.5		dB
Associated Gain	Ga	V_{DS}=3V, I_D=10mA, f=12GHz		5.5		dB
Maximum Available Gain	MAG	V_{DS}=3V, I_D=10mA, f=12GHz		7.0		dB

* : The 2SK1645 is classified by I_{DSS} as follows : unit : mA

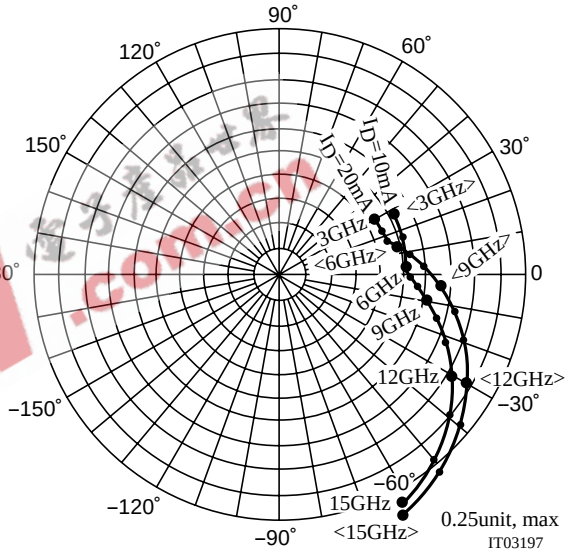
I_{DSS} RANK	RANGE (mA)
03	30 to 65
04	55 to 100

S-Parameter

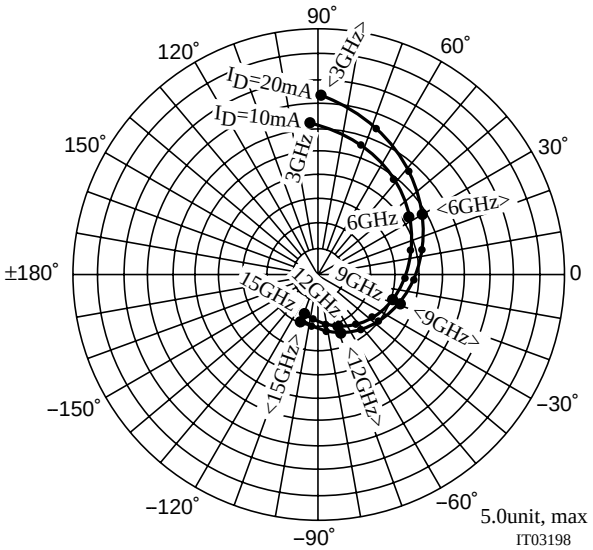
S11 V_{DS}=3V, I_D=10mA, 20mA



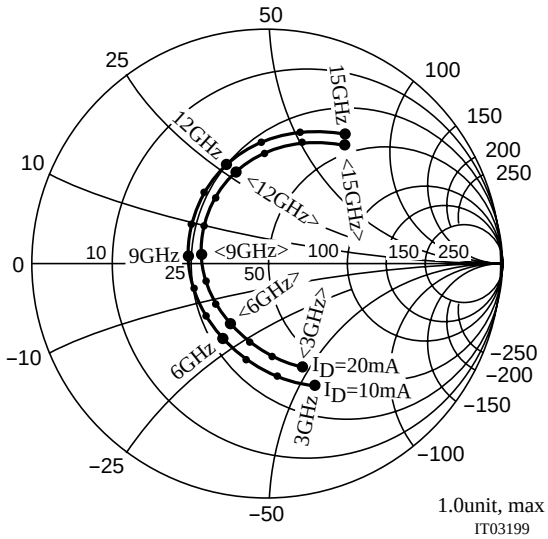
S12 V_{DS}=3V, I_D=10mA, 20mA



S21 V_{DS}=3V, I_D=10mA, 20mA



S22 V_{DS}=3V, I_D=10mA, 20mA



S-Parameter

V_{DS}=3V I_{DS}=10mA

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
3000.0000	.680	-98.6	3.086	93.5	.131	27.6	.556	-68.8
4000.0000	.621	-123.5	2.750	72.2	.130	16.3	.480	-85.8
5000.0000	.584	-147.0	2.445	51.8	.128	8.1	.418	-102.7
6000.0000	.564	-168.7	2.175	32.6	.128	2.7	.372	-120.5
7000.0000	.561	171.7	1.943	14.4	.133	-1.3	.343	-140.0
8000.0000	.570	153.6	1.747	-2.9	.141	-5.5	.332	-161.5
9000.0000	.590	136.8	1.579	-19.6	.152	-10.4	.339	175.7
10000.0000	.616	120.9	1.431	-35.9	.166	-16.1	.364	153.2
11000.0000	.648	105.7	1.297	-51.8	.183	-22.7	.403	131.8
12000.0000	.684	91.1	1.174	-67.3	.203	-30.6	.454	112.2
13000.0000	.724	77.1	1.059	-82.4	.225	-39.9	.511	94.1
14000.0000	.765	63.5	.951	-97.1	.247	-50.6	.570	77.0
15000.0000	.805	50.1	.847	-111.4	.266	-62.2	.627	60.6

V_{DS}=3V I_{DS}=20mA

FREQUENCY	S11		S21		S12		S22	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
3000.0000	.626	-107.6	3.654	89.5	.112	30.7	.465	-71.1
4000.0000	.576	-132.7	3.187	68.6	.113	22.4	.395	-87.4
5000.0000	.548	-155.9	2.779	49.0	.116	16.9	.340	-103.7
6000.0000	.539	-176.8	2.435	30.6	.123	12.8	.301	-121.4
7000.0000	.544	164.5	2.153	13.2	.134	8.3	.278	-141.5
8000.0000	.561	147.3	1.924	-3.3	.149	2.6	.272	-164.0
9000.0000	.586	131.3	1.735	-19.3	.165	-4.4	.283	172.2
10000.0000	.616	116.0	1.573	-35.0	.182	-12.1	.312	149.1
11000.0000	.650	101.4	1.428	-50.4	.200	-20.5	.355	127.9
12000.0000	.688	87.5	1.297	-65.5	.220	-29.7	.409	108.8
13000.0000	.728	74.0	1.176	-80.4	.240	-40.0	.469	91.2
14000.0000	.771	60.8	1.063	-95.0	.259	-51.2	.530	74.7
15000.0000	.812	47.9	.955	-109.4	.276	-63.0	.589	58.8