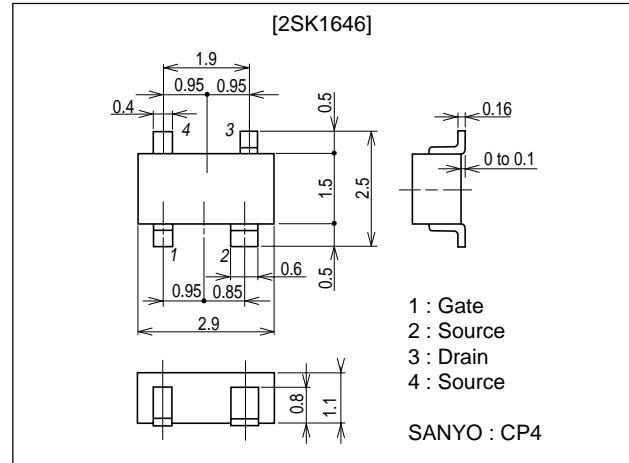


**2SK1646****For C to X-band Local Oscillator and Amplifier****Features**

- Ideal for use in C to X-band local oscillator and amplifier.
- The chip surface is covered with the highly reliable protection film.
- Super miniaturized plastic-mold package (CP4).
- Automatic surface mounting is available.

**Package Dimensions**unit : mm  
2134A**Specifications****Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$ 

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	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

- Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.
- SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

**SANYO Electric Co.,Ltd. Semiconductor Company**

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# 2SK1646

## Electrical Characteristics at Ta=25°C

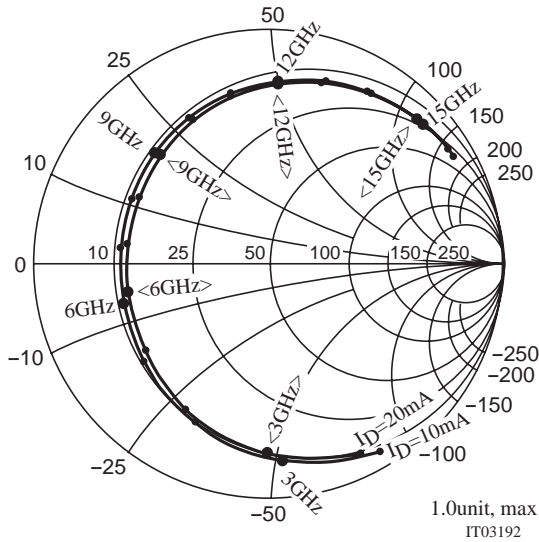
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Source Breakdown Voltage	$V_{(BR)GSO}$	$I_{GS}=-10\mu A$	-5.0			V
Saturated Drain Current	$I_{DSS}$	$V_{DS}=3V, V_{GS}=0$	30	45	70	mA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=3V, I_D=100\mu A$	-0.5		-5.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=3V, I_D=10mA$	20	34		mS
Minimum Noise Figure	NFmin	$V_{DS}=3V, I_D=10mA, f=12GHz$		2.5		dB
Associated Gain	Ga	$V_{DS}=3V, I_D=10mA, f=12GHz$		5.0		dB
Maximum Available Gain	MAG	$V_{DS}=3V, I_D=10mA, f=12GHz$		7.0		dB

\* : The 2SK1646 is classified by  $I_{DSS}$  as follows.

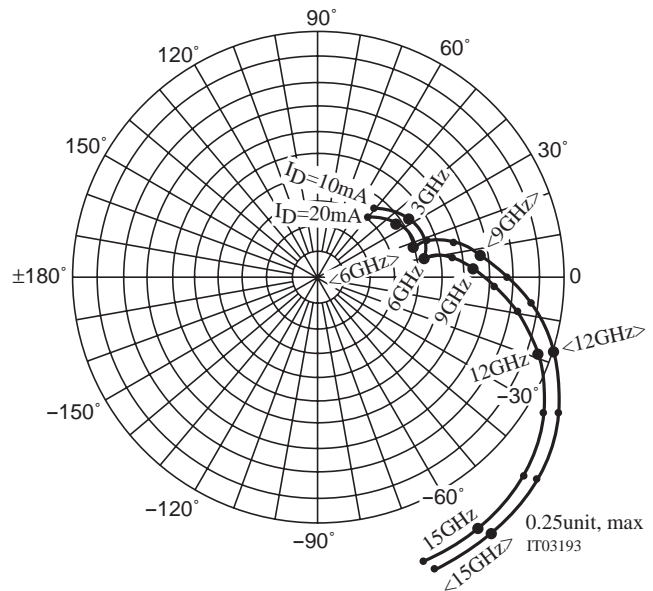
$I_{DSS}$ RANK	RANGE (mA)
04	30 to 50
05	45 to 60
05H	45 to 70

## S-Parameter

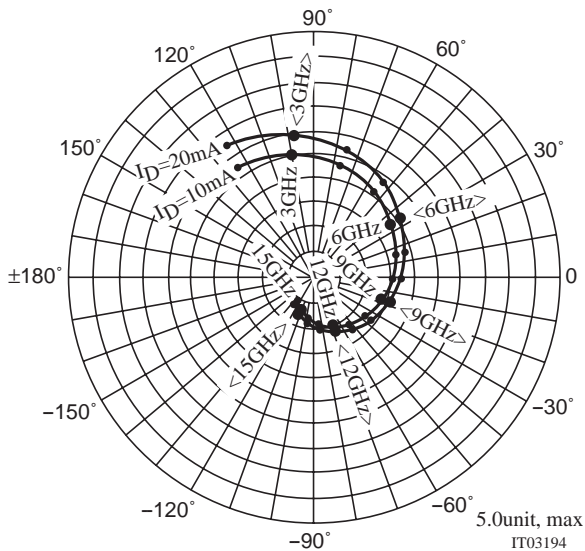
S11  $V_{DS}=3V, I_D=10mA, 20mA$



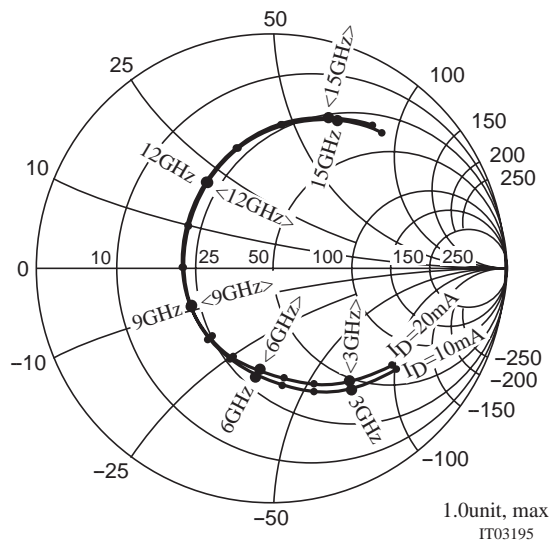
S12  $V_{DS}=3V, I_D=10mA, 20mA$



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



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



## 2SK1646

### S-Parameter

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

FREQUENCY MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2000.0000	.929	-59.3	2.713	125.9	.090	51.7	.665	-39.9
3000.0000	.834	-87.1	2.518	101.0	.110	32.9	.608	-56.7
4000.0000	.750	-114.8	2.300	77.2	.115	18.1	.547	-72.0
5000.0000	.686	-141.1	2.077	55.1	.111	9.8	.494	-85.9
6000.0000	.651	-164.9	1.872	35.0	.109	9.2	.454	-99.7
7000.0000	.643	173.8	1.700	16.3	.119	10.7	.427	-115.1
8000.0000	.658	154.3	1.557	-1.5	.138	8.2	.406	-133.6
9000.0000	.685	136.1	1.431	-19.0	.159	2.9	.392	-155.7
10000.0000	.715	118.8	1.308	-36.2	.180	-3.0	.392	179.2
11000.0000	.745	102.6	1.187	-53.0	.207	-9.9	.417	152.7
12000.0000	.777	87.4	1.070	-69.2	.239	-19.2	.469	127.2
13000.0000	.812	73.0	.954	-85.1	.269	-30.9	.540	104.4
14000.0000	.849	59.0	.837	-100.6	.292	-44.0	.618	84.4
15000.0000	.880	45.2	.717	-115.3	.304	-57.2	.688	67.0
16000.0000	.899	31.7	.599	-128.3	.309	-69.8	.742	51.7

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

FREQUENCY MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
2000.0000	.901	-63.5	3.226	124.1	.079	51.6	.640	-39.9
3000.0000	.803	-91.9	2.944	99.2	.096	33.6	.580	-56.4
4000.0000	.717	-119.8	2.641	75.5	.101	20.3	.518	-71.2
5000.0000	.654	-145.8	2.346	53.9	.098	15.0	.466	-84.4
6000.0000	.621	-168.8	2.090	34.4	.101	17.5	.432	-97.8
7000.0000	.618	171.0	1.886	16.4	.119	18.9	.410	-113.4
8000.0000	.639	152.5	1.725	-1.0	.144	14.6	.393	-132.5
9000.0000	.671	134.9	1.582	-18.2	.167	7.5	.381	-155.3
10000.0000	.705	118.1	1.444	-35.2	.190	.3	.385	179.1
11000.0000	.737	102.4	1.309	-51.7	.218	-7.6	.413	152.8
12000.0000	.770	87.8	1.180	-67.7	.251	-17.5	.468	127.9
13000.0000	.807	74.0	1.056	-83.4	.281	-29.6	.542	105.7
14000.0000	.847	60.6	.931	-98.8	.303	-42.7	.620	86.4
15000.0000	.881	47.3	.802	-113.6	.315	-55.8	.689	69.5
16000.0000	.901	34.1	.674	-126.8	.320	-68.1	.739	54.7

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