Ordering number : ENN7546

N-Channel GaAs MESFET

2SK1646

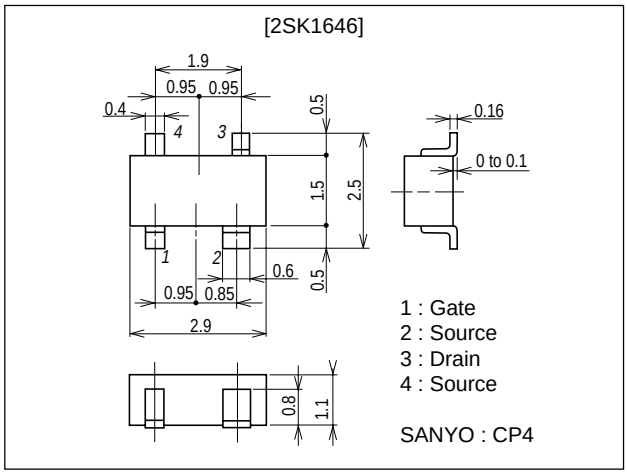
For C to X-band Local Oscillator and Amplifier

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 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

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Electrical Characteristics at Ta=25°C

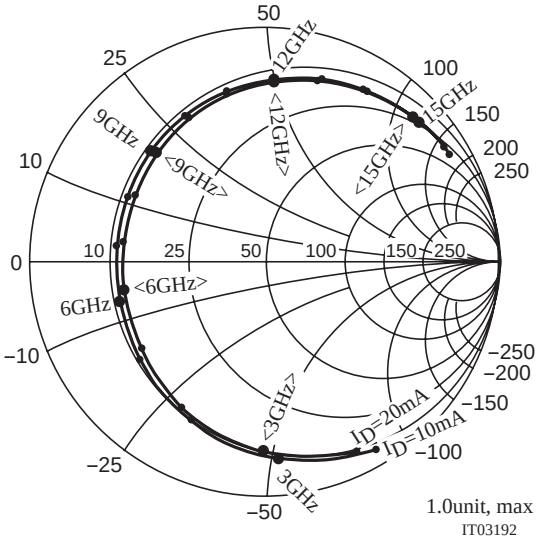
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Source Breakdown Voltage	$V_{(BR)GSO}$	I_{GS}=−10μA	−5.0			V
Saturated Drain Current	I_{DSS}	V_{DS}=3V, V_{GS}=0	30	45	70	mA
Cutoff Voltage	$V_{GS}(off)$	V_{DS}=3V, I_D=100μA	−0.5		−5.0	V
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=3V, 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.

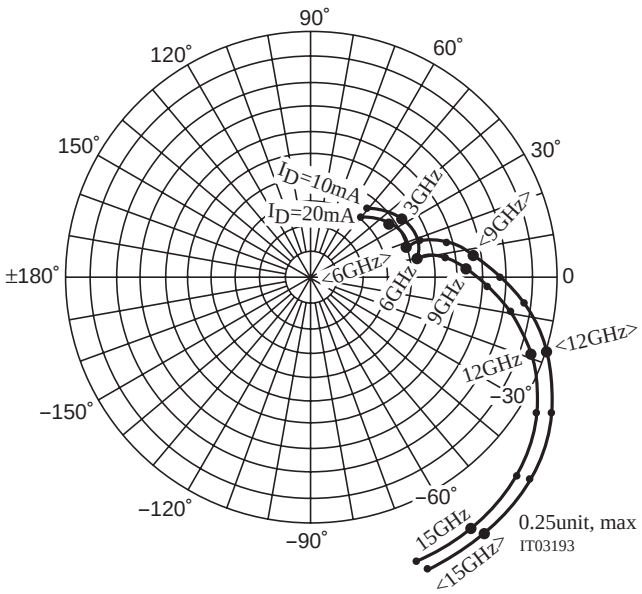
I_{DSS} RANK	RANGE (mA)
04	30 to 50
05	45 to 60
05H	45 to 70

S-Parameter

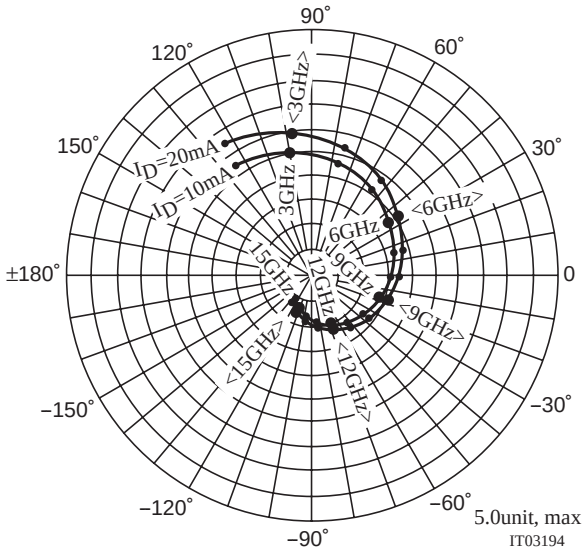
S11 V_{DS}=3V, I_D=10mA, 20mA



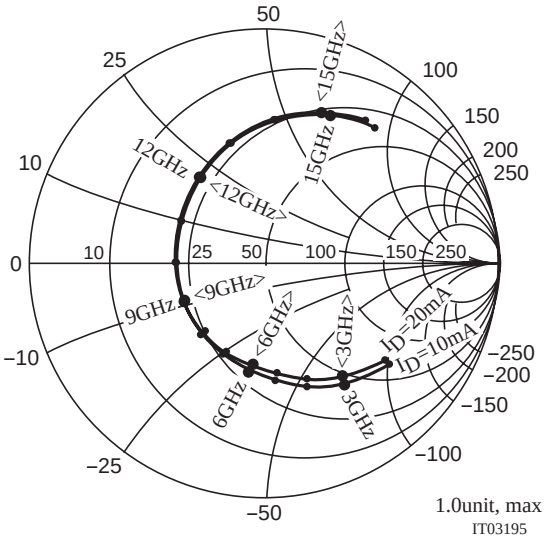
S12 V_{DS}=3V, I_D=10mA, 20mA



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



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



S-Parameter

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

FREQUENCY	S11		S21		S12		S22	
MHz	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	S11		S21		S12		S22	
MHz	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