2SK1999

Silicon N-Channel MOS FET

HITACHI

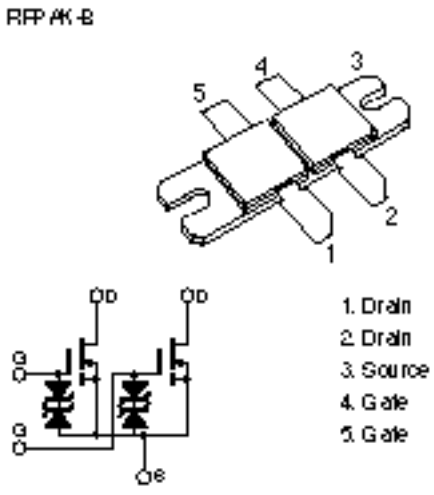
Application

VHF amplifier

Features

- High gain, high efficiency
  PG = 15 dB, ηD = 65% typ (f = 200 MHz)
- Compact package
  Suitable for push - pull circuit

Outline



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Absolute Maximum Ratings (Ta = 25°C)

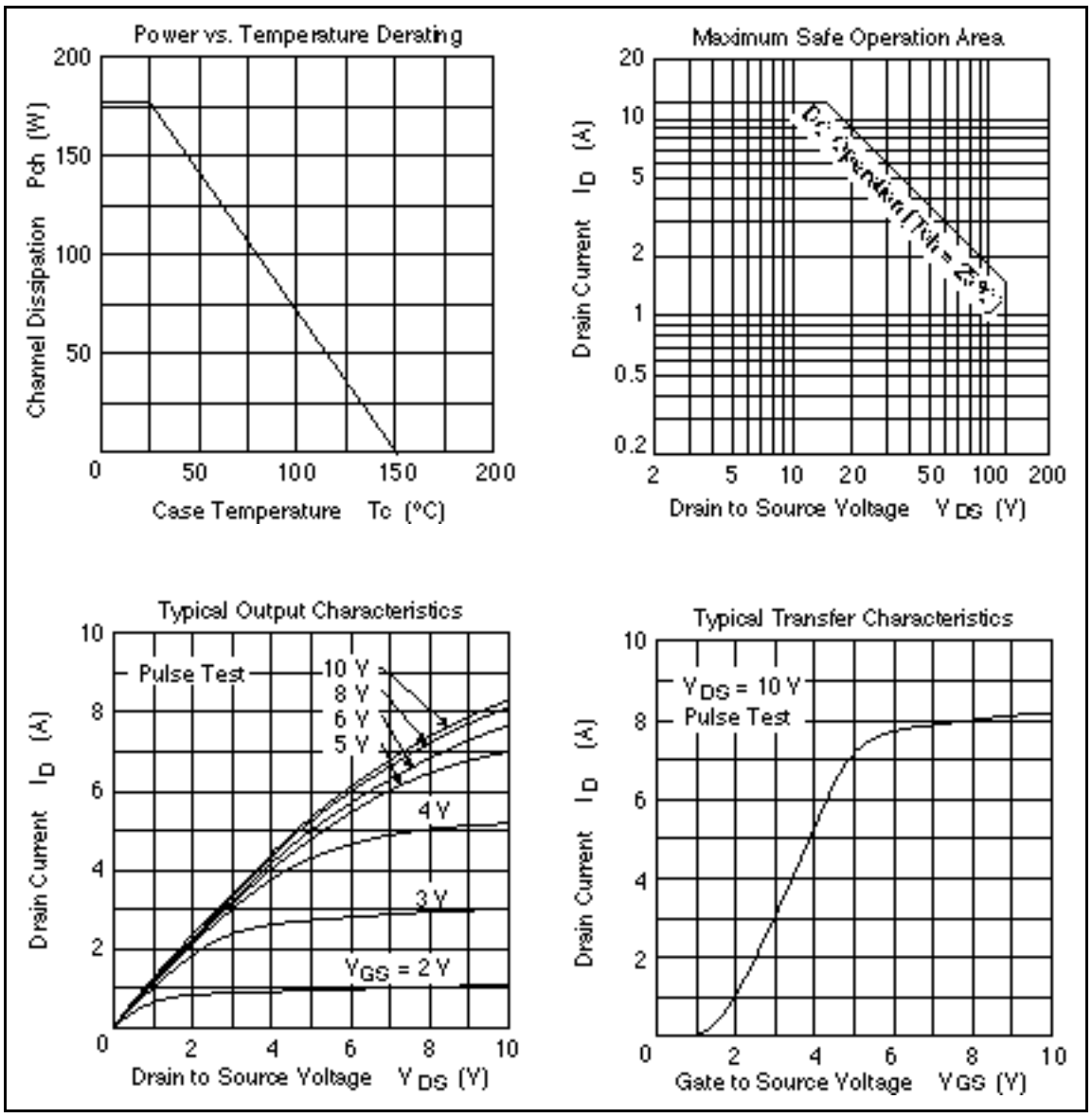
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	120	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	12	A
Channel dissipation	Pch*[1]	180	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

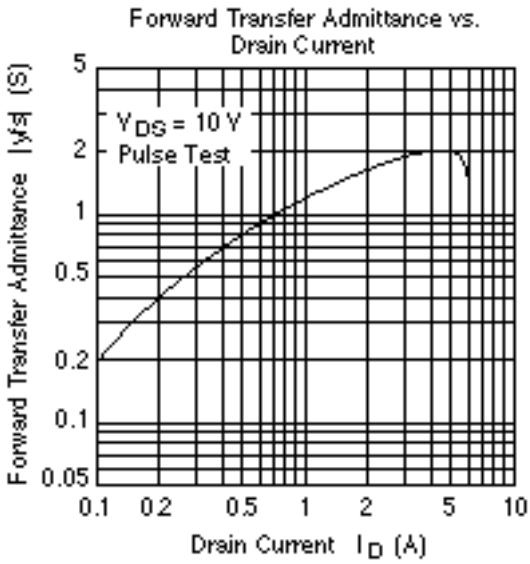
Note: 1. Value at T_C = 25°C

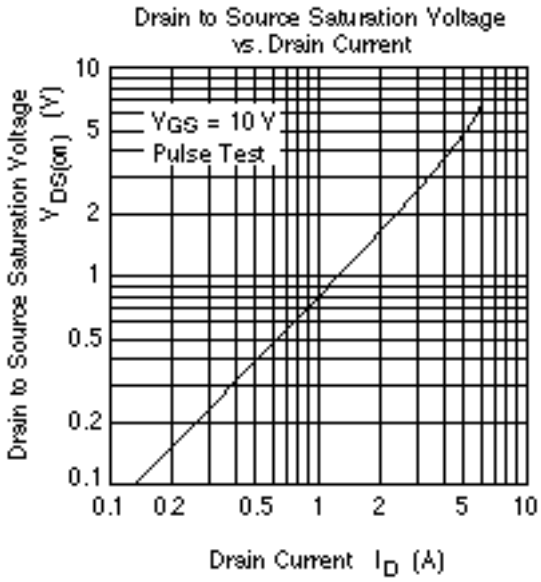
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage*[1]	$V_{(BR)DSS}$	120	—	—	V	I_D = 1 mA, V_{GS} = 0
Gate to source breakdown voltage*[1]	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Zero gate voltage drain current*[1]	I_{DSS}	—	—	0.5	mA	V_{DS} = 100 V, V_{GS} = 0
Gate to source cutoff voltage*[1]	$V_{GS(off)}$	0.5	—	2.0	V	I_D = 1 mA, V_{DS} = 10 V
Drain to source cutoff voltage*[1]	$V_{DS(on)}$	—	2.7	3.5	V	I_D = 3 A, V_{GS} = 10 V*[2]
Forward transfer admittance*[1]	$\|y_{fs}\|$	1.5	1.8	—	S	I_D = 2.5 A, V_{DS} = 10 V*[2]
Input capacitance*[1]	Ciss	—	185	—	pF	V_{GS} = 5 V, V_{DS} = 0 f = 1 MHz
Output capacitance*[1]	Coss	—	60	—	pF	V_{DS} = 50 V, V_{GS} = 0 f = 1 MHz
Output Power	Po	150	180	—	W	V_{DS} = 60 V, I_{DQ} = 0.2 A f = 200 MHz, Pin = 5 W
Drain Efficiency	ηD	—	65	—	%	

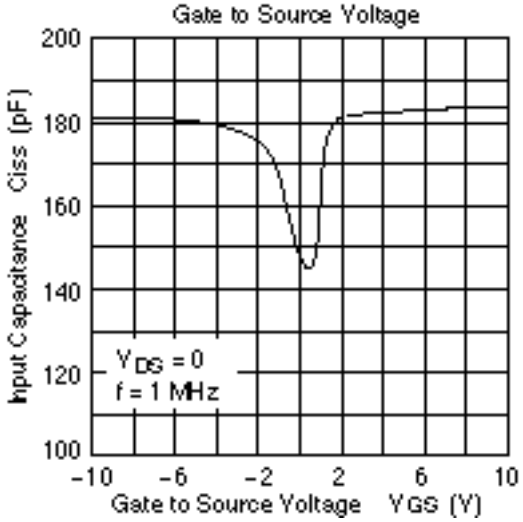
Notes: 1. Shows / unit FET
2. Pulse Test


Power vs. Temperature Derating
Channel Dissipation Pch (W)
200
150
100
50
0
50
100
150
200
Case Temperature Tc (°C)
Maximum Safe Operation Area
Drain Current I_D (A)
20
10
5
2
1
0.5
0.2
2
5
10
20
50
100
200
Drain to Source Voltage V_{DS} (V)
Typical Output Characteristics
Pulse Test
10 V
8 V
6 V
5 V
4 V
3 V
V_{GS} = 2 V
Drain Current I_D (A)
Drain to Source Voltage V_{DS} (V)
Typical Transfer Characteristics
V_{DS} = 10 V
Pulse Test
Drain Current I_D (A)
Gate to Source Voltage V_{GS} (V)

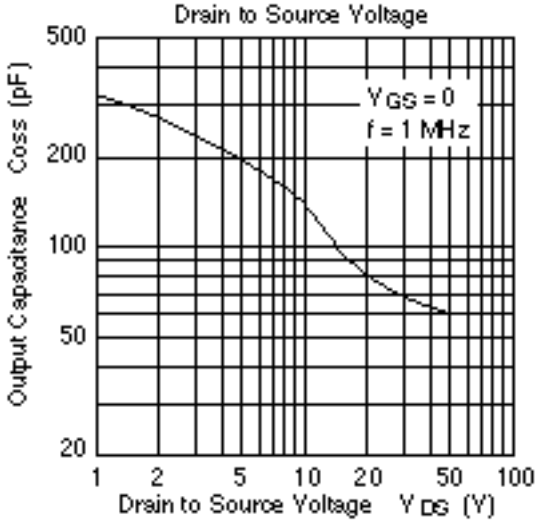

Forward Transfer Admittance vs.
Drain Current
Forward Transfer Admittance |yfs| (S)
5
2
1
0.5
0.2
0.1
0.05
VDS = 10 V
Pulse Test
0.1
0.2
0.5
1
2
5
10
Drain Current ID (A)


Drain to Source Saturation Voltage
vs. Drain Current
Drain to Source Saturation Voltage
VDS(on) (V)
10
5
2
1
0.5
0.2
0.1
VGS = 10 V
Pulse Test
0.1
0.2
0.5
1
2
5
10
Drain Current ID (A)

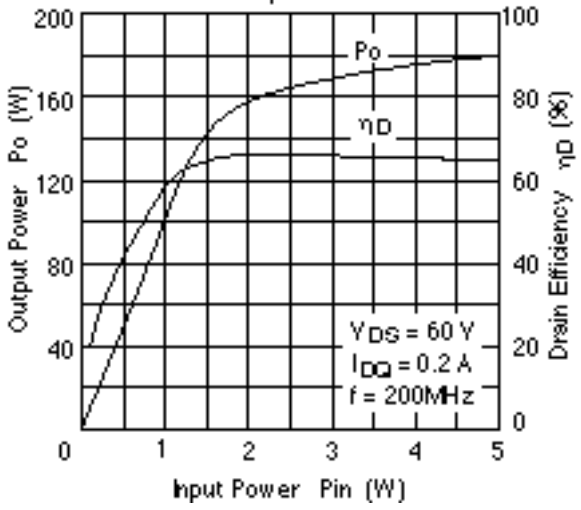
Input Capacitance vs.
Gate to Source Voltage



Output Capacitance vs.
Drain to Source Voltage

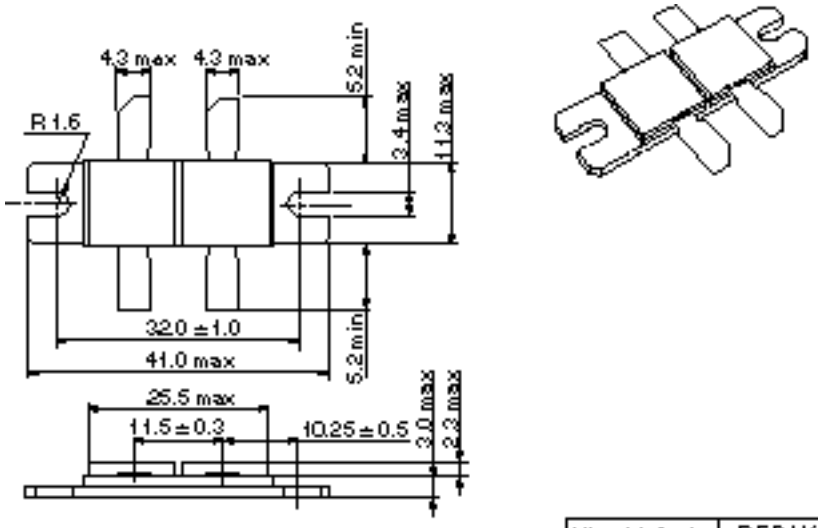


Output Power, Drain Efficiency
vs. Input Power



Package Dimensions

Unit: mm



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