2SK2216

Silicon N-Channel MOS FET

HITACHI

ADE-208-346A
2nd. Edition

Application

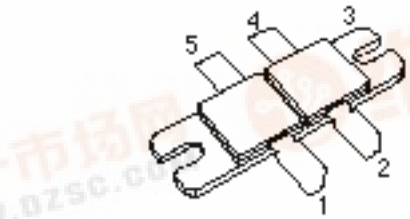
UHF power amplifier

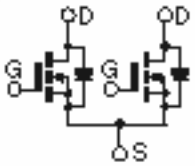
Features

- High power output, high gain, high efficiency
  PG = 9.7 dB, Pout = 140 W, ηD = 55% typ (f = 860 MHz)
- Compact package
  Suitable for push - pull circuit

Outline

RFPAK-B





1. Drain
2. Drain
3. Source
4. Gate
5. Gate

Absolute Maximum Ratings (Ta = 25°C)

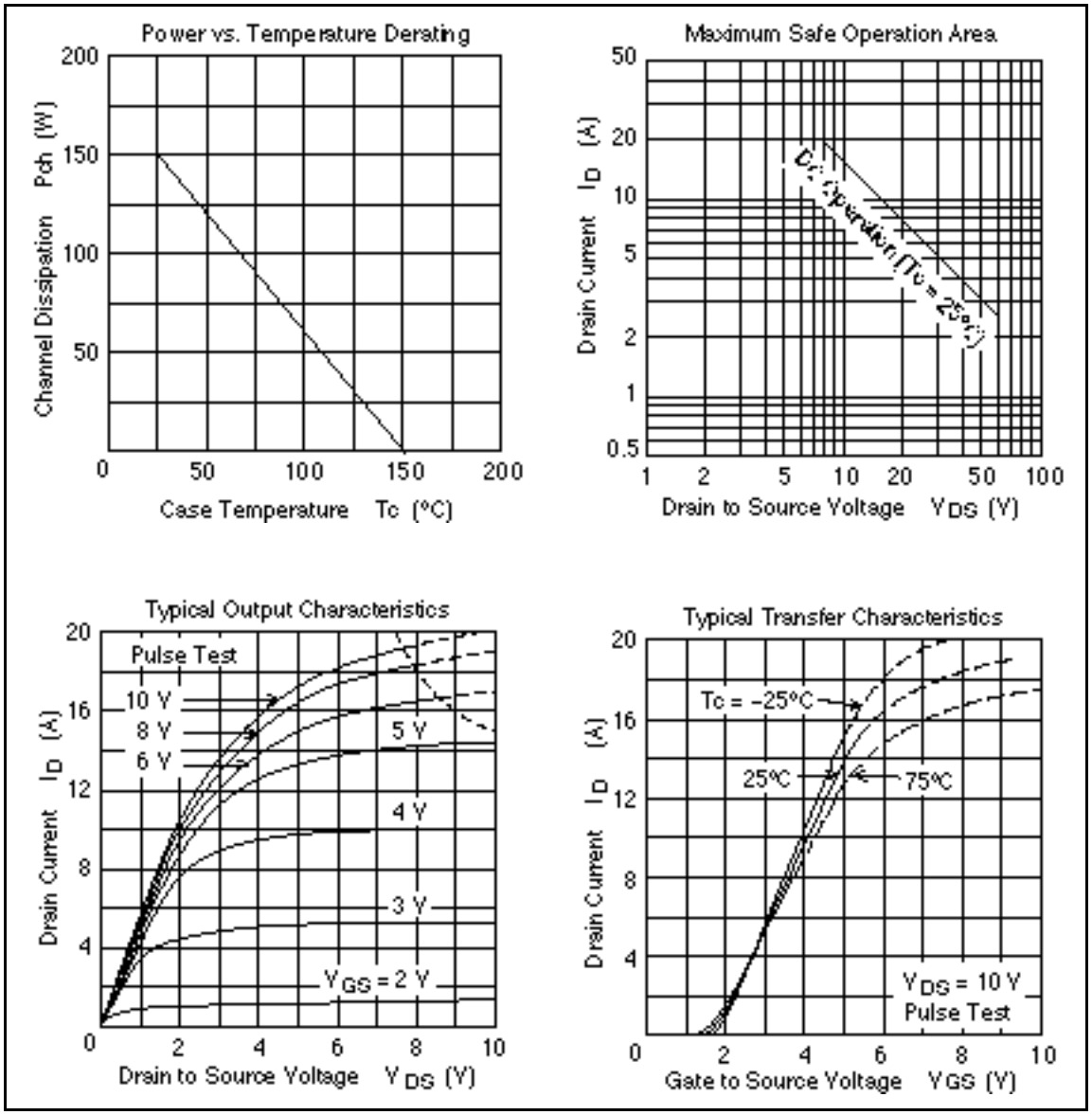
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	±10	V
Drain current	I_D	20	A
Channel dissipation	Pch*[1]	150	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

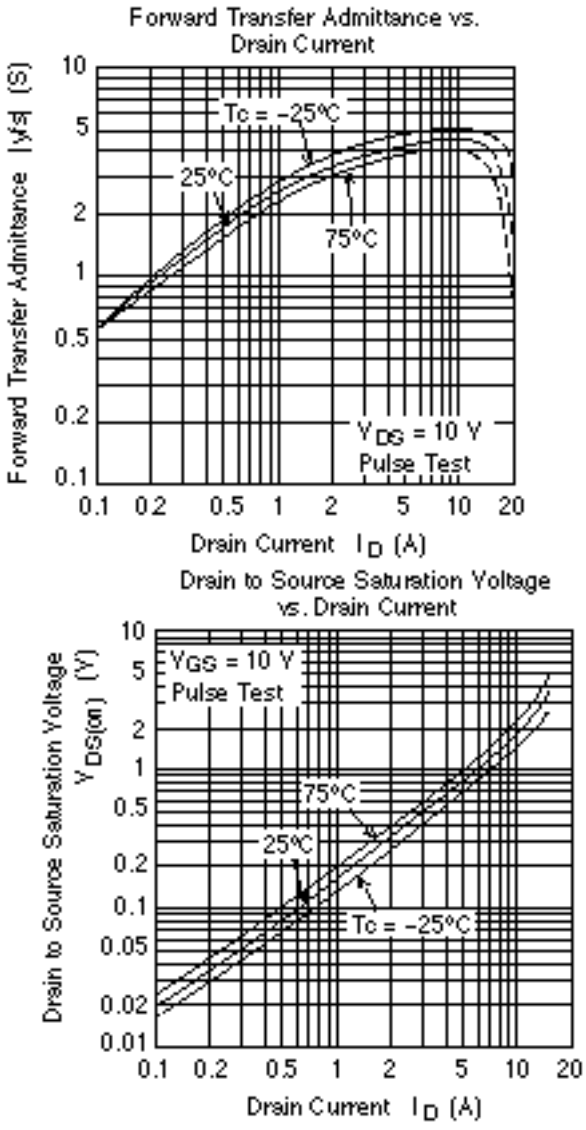
Note: 1. Value at T_C = 25°C

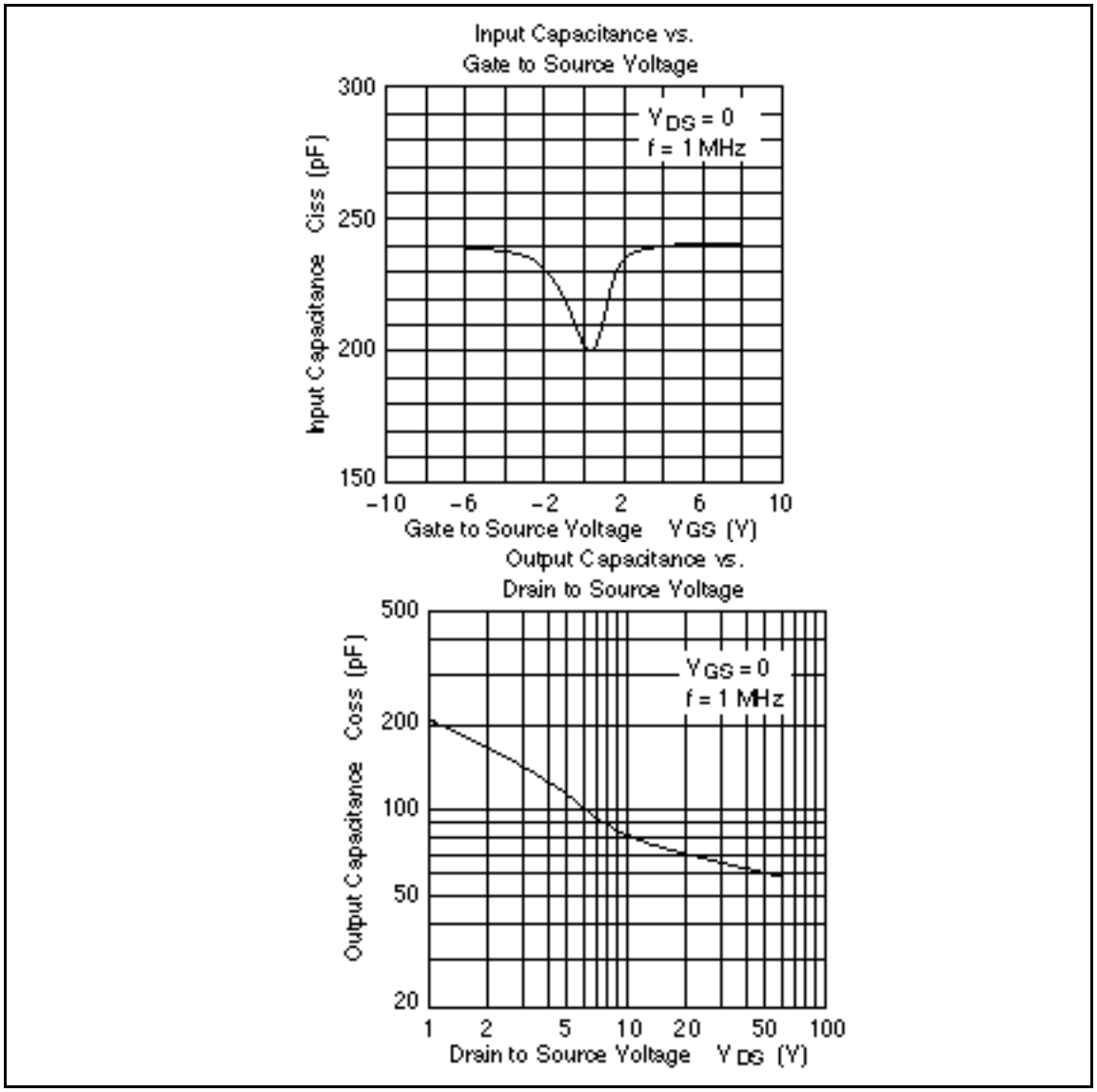
Electrical Characteristics (T_C = 25°C)

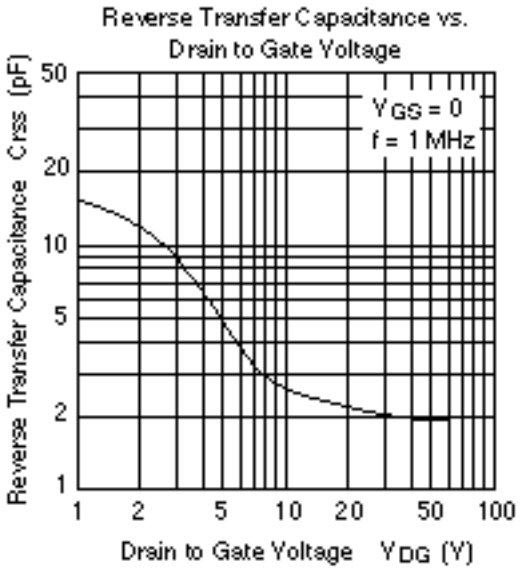
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain leakage current*[1]	I_{DSS}	—	—	1	mA	V_{DS} = 60 V, V_{GS} = 0
Gate leakage current*[1]	I_{GSS}	—	—	± 3	µA	V_{GS} = ± 10 V, V_{DS} = 0
Gate to source cutoff voltage*[1]	$V_{GS(off)}$	0.3	—	1.6	V	V_{DS} = 10 V, I_D = 1 mA
Drain to source voltage*[1]	$V_{DS(on)}$	—	1.2	2.5	V	V_{GS} = 10 V, I_D = 5 A*[2]
Forward transfer admittance*[1]	$\|y_{fs}\|$	3.0	4.0	—	S	V_{DS} = 10 V, I_D = 5 A*[2]
Input capacitance*[1]	Ciss	—	250	—	pF	V_{GS} = 5 V, V_{DS} = 0 f = 1MHz
Output capacitance*[1]	Coss	—	85	—	pF	V_{DS} = 10V, V_{GS} = 0 f = 1MHz
Output power	P_{OUT}	100	140	—	W	V_{DS} = 28 V, I_{DO} = 0.4 A
Drain efficiency	ηD	—	55	—	%	f = 860 MHz, Pin = 15 W

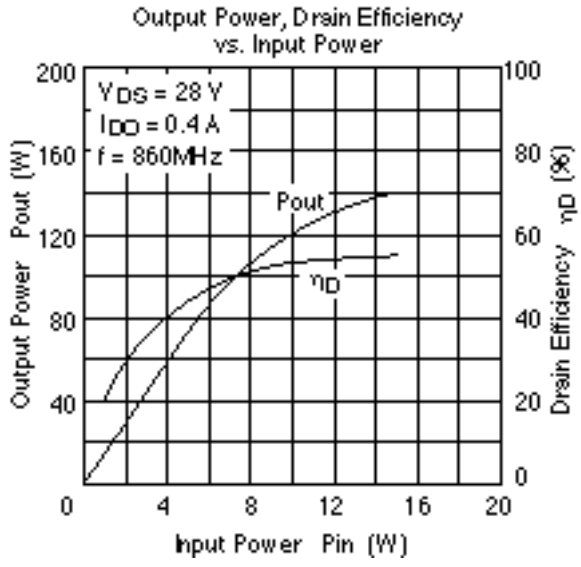
Notes: 1. Shows / unit FET
2. Pulse Test


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 ID (A)
50
20
10
5
2
1
0.5
1
2
5
10
20
50
100
Drain to Source Voltage VDS (V)
Typical Output Characteristics
Pulse Test
10 V
8 V
6 V
5 V
4 V
3 V
VGS = 2 V
Drain Current ID (A)
20
16
12
8
4
0
2
4
6
8
10
Drain to Source Voltage VDS (V)
Typical Transfer Characteristics
Tc = −25°C
25°C
75°C
VDS = 10 V
Pulse Test
Drain Current ID (A)
20
16
12
8
4
0
2
4
6
8
10
Gate to Source Voltage VGS (V)


Forward Transfer Admittance vs.
Drain Current
Forward Transfer Admittance |yfs| (S)
10
5
2
1
0.5
0.2
0.1
Tc = −25°C
25°C
75°C
VDS = 10 V
Pulse Test
0.1 0.2 0.5 1 2 5 10 20
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
0.05
0.02
0.01
VGS = 10 V
Pulse Test
75°C
25°C
Tc = −25°C
0.1 0.2 0.5 1 2 5 10 20
Drain Current ID (A)

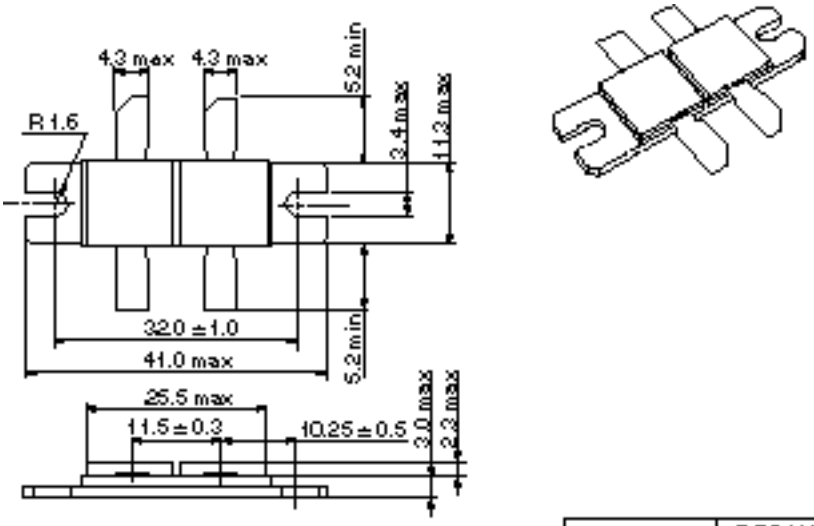

Input Capacitance vs.
Gate to Source Voltage
Input Capacitance Ciss (pF)
300
250
200
150
VDS = 0
f = 1 MHz
-10
-6
-2
2
6
10
Gate to Source Voltage VGS (V)
Output Capacitance vs.
Drain to Source Voltage
Output Capacitance Coss (pF)
500
200
100
50
20
VGS = 0
f = 1 MHz
1
2
5
10
20
50
100
Drain to Source Voltage VDS (V)


Reverse Transfer Capacitance vs.
Drain to Gate Voltage
Reverse Transfer Capacitance Crss (pF)
50
20
10
5
2
1
VGS = 0
f = 1 MHz
1
2
5
10
20
50
100
Drain to Gate Voltage VDG (V)


Output Power, Drain Efficiency
vs. Input Power
VDS = 28 V
IDO = 0.4 A
f = 860MHz
Pout
ηD
Output Power Pout (W)
200
160
120
80
40
Drain Efficiency ηD (%)
100
80
60
40
20
0
0
4
8
12
16
20
Input Power Pin (W)

Package Dimensions

Unit: mm



Hitachi Code	RFPAK-B
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