

2SK3175A

Silicon N Channel MOS FET
UHF Power Amplifier

HITACHI

ADE-208-1452 (Z)

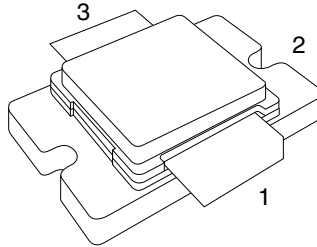
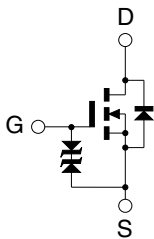
1st. Edition
September 2001

Features

- High power output, High gain, High efficiency
 $P_{1dB} = 110 \text{ W}$, $PG = 16.0 \text{ dB}$, $\eta_D = 60 \%$ (at P_{1dB}) typ. ($f = 860\text{MHz}$)
- Compact package

Outline

RFAK-G



1. Drain
2. Source
3. Gate

This Device is sensitive to Electro Static Discharge. An Adequate handling procedure is requested.
In AC testing , the part should be mounted on heat sink with thermal compound.

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS} ^{Note1}	60	V
Gate to source voltage	V_{GS}	±10	V
Drain current	I_D	8	A
Drain peak current	$I_{D(pulse)}$ ^{Note2}	16	A
Channel dissipation	Pch ^{Note3}	126	W
Channel temperature	Tch	175	°C
Storage temperature	Tstg	−55 to +150	°C

Note: 1. Pin = 0 , PW ≤ 0.1 sec
2. PW ≤ 10 ms, duty cycle ≤ 50 %
3. Value at Tc = 25°C

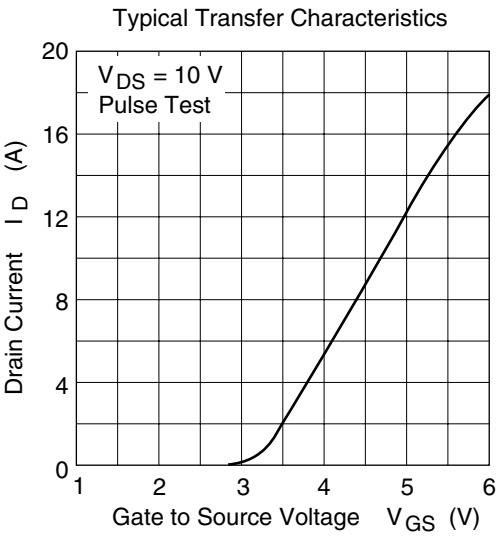
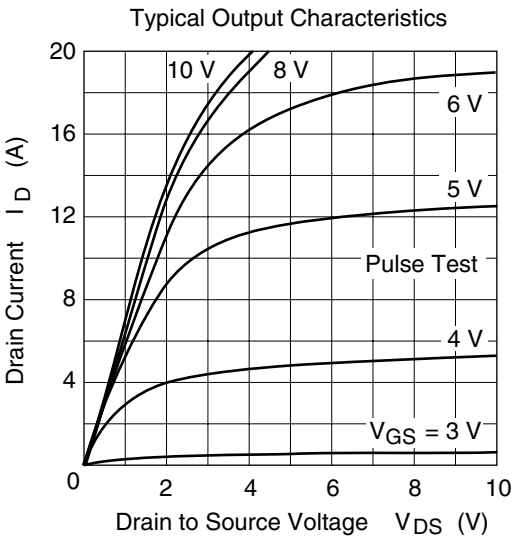
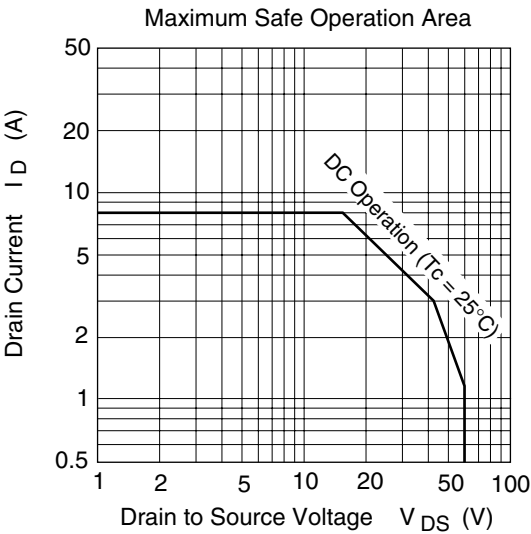
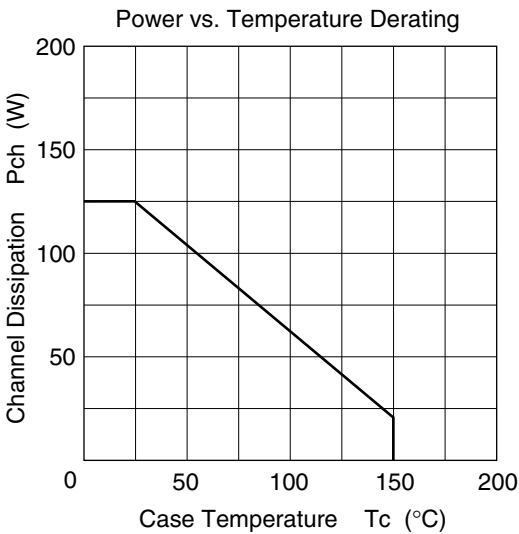
Electrical Characteristics

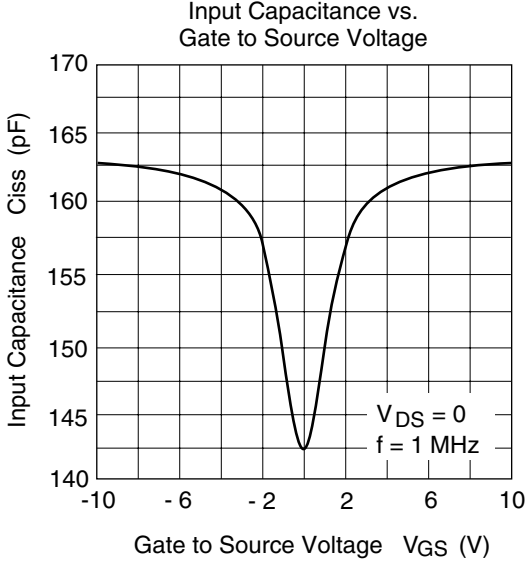
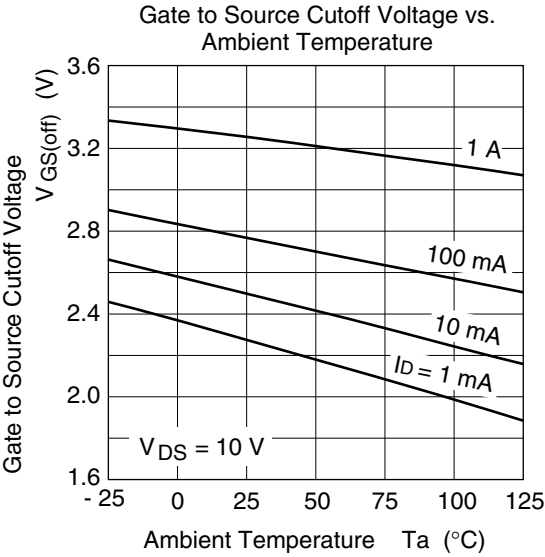
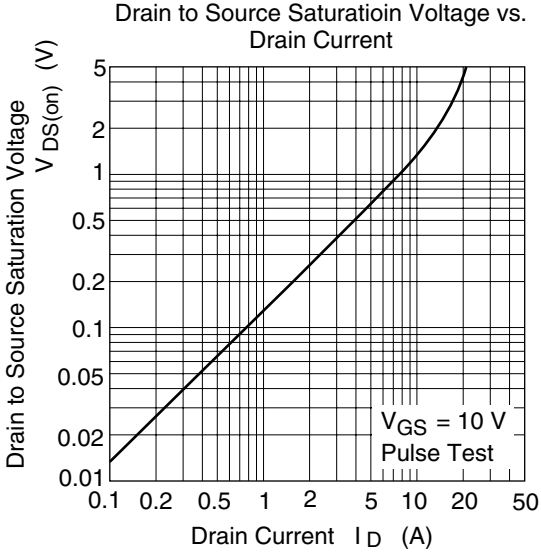
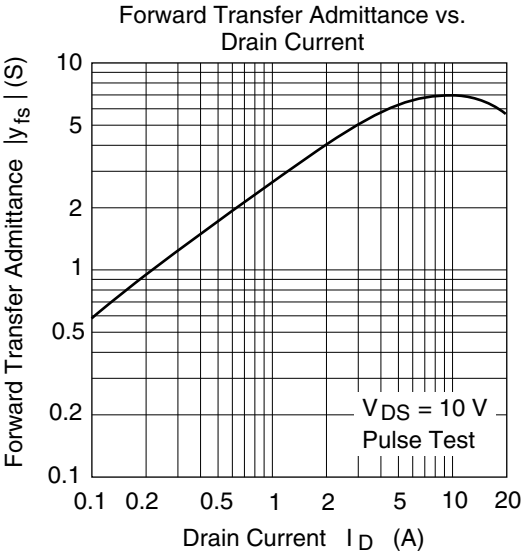
(Tc = 25°C)

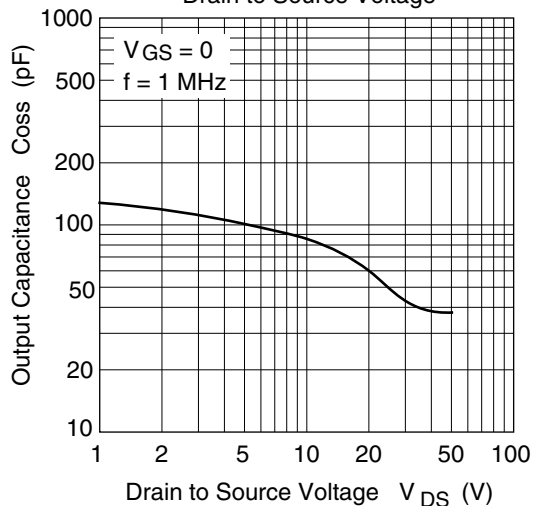
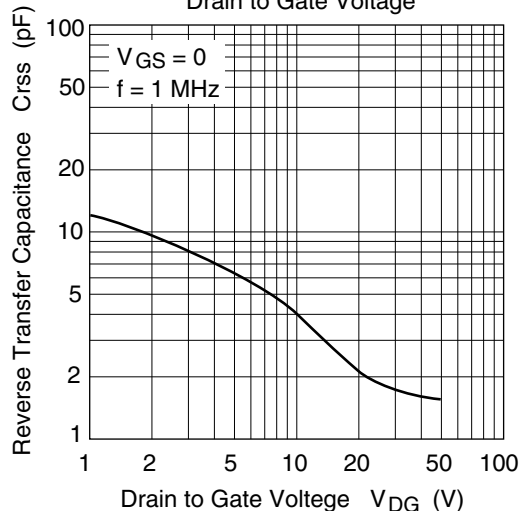
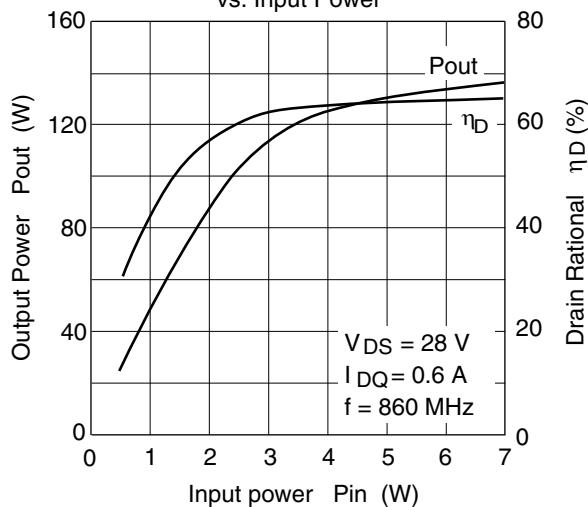
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage drain current	I_{DSS}	—	—	1	mA	$V_{DS} = 60\text{ V}, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±3	μA	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	2.2	3.0	V	$I_D = 1\text{ mA}, V_{DS} = 10\text{ V}$
Forward transfer admittance	$ y_{fs} $	4.0	6.7	—	S	$V_{DS} = 10\text{ V}, I_D = 5\text{ A}$ ^{Note4}
Input capacitance	Ciss	—	165	—	pF	$V_{GS} = 5\text{ V}, V_{DS} = 0$ $f = 1\text{ MHz}$
Reverse transfer capacitance	Crss	—	4	—	pF	$V_{DG} = 10\text{ V}, V_{GS} = 0$ $f = 1\text{ MHz}$
Output Power	Pout	100	135	—	W	$V_{DS} = 28\text{ V}, I_{DQ} = 0.6\text{ A}$ $f = 860\text{ MHz}$ Pin = 7 W
Drain Rational	ηD	—	65	—	%	$V_{DS} = 28\text{ V}, I_{DQ} = 0.6\text{ A}$ $f = 860\text{ MHz}$ Pin = 7 W

Note: 4. Pulse Test

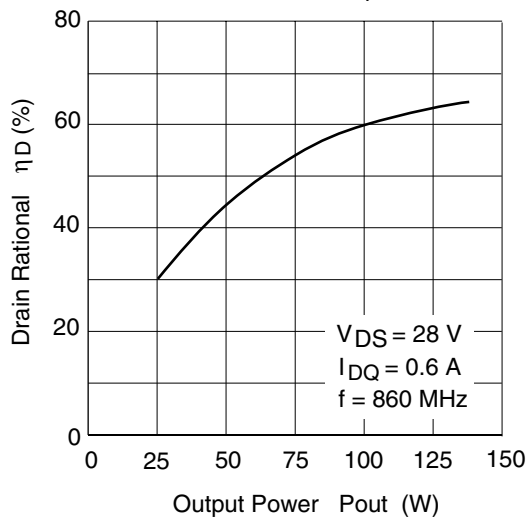
Main Characteristics

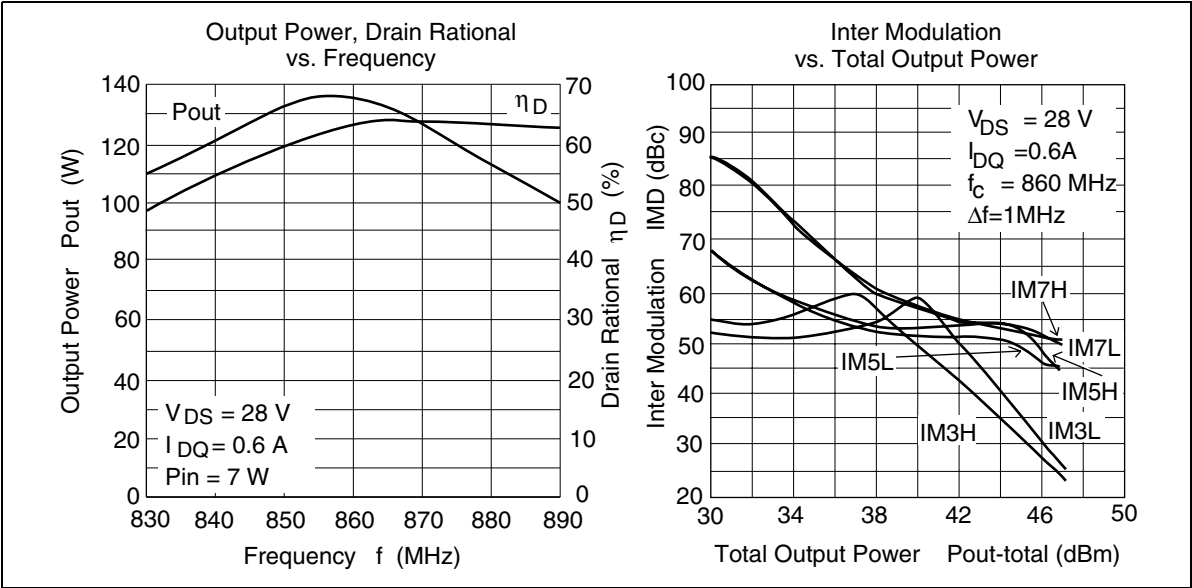




Output Capacitance vs.
Drain to Source VoltageReverse Transfer Capacitance vs.
Drain to Gate VoltageOutput Power, Drain Rational
vs. Input Power

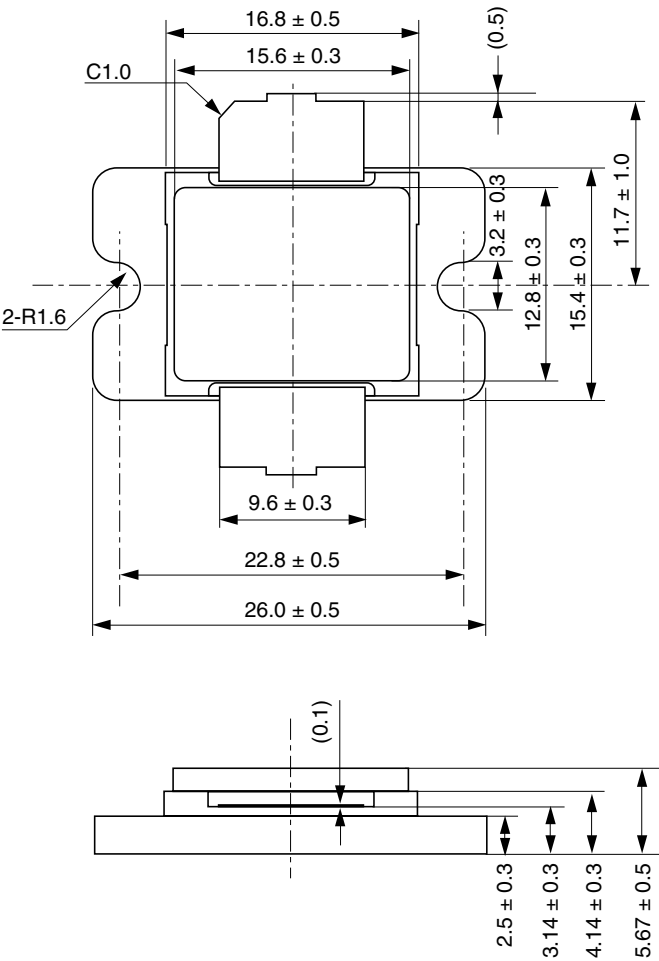
Drain Rational vs. Output Power





Package Dimensions

As of July, 2001
Unit: mm



Hitachi Code	RFPK-G
JEDEC	-
JEITA	-
Mass (reference value)	11.0 g

Disclaimer

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
 2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
 3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
 4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
 5. This product is not designed to be radiation resistant.
 6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
 7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

Sales Offices

HITACHI

Hitachi, Ltd.
Semiconductor & Integrated Circuits
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: (03) 3270-2111 Fax: (03) 3270-5109

URL <http://www.hitachisemiconductor.com/>

For further information write to:

Hitachi Semiconductor (America) Inc. 179 East Tasman Drive San Jose, CA 95134 Tel: <1> (408) 433-1990 Fax: <1> (408) 433-0223	Hitachi Europe Ltd. Electronic Components Group Whitebrook Park Lower Cookham Road Maidenhead Berkshire SL6 8YA, United Kingdom Tel: <44> (1628) 585000 Fax: <44> (1628) 585200	Hitachi Asia Ltd. Hitachi Tower 16 Collyer Quay #20-00 Singapore 049318 Tel : <65>-538-6533/538-8577 Fax : <65>-538-6933/538-3877 URL : http://semiconductor.hitachi.com.sg	Hitachi Asia (Hong Kong) Ltd. Group III (Electronic Components) 7/F., North Tower World Finance Centre, Harbour City, Canton Road Tsim Sha Tsui, Kowloon Hong Kong Tel : <852>-(2)-735-9218 Fax : <852>-(2)-730-0281 URL : http://semiconductor.hitachi.com.hk
	Hitachi Europe GmbH Electronic Components Group Dornacher Straße 3 D-85622 Feldkirchen Postfach 201, D-85619 Feldkirchen Germany Tel: <49> (89) 9 9180-0 Fax: <49> (89) 9 29 30 00	Hitachi Asia Ltd. (Taipei Branch Office) 4/F, No. 167, Tun Hwa North Road Hung-Kuo Building Taipei (105), Taiwan Tel : <886>-(2)-2718-3666 Fax : <886>-(2)-2718-8180 Telex : 23222 HAS-TP URL : http://www.hitachi.com.tw	

Copyright © Hitachi, Ltd., 2001. All rights reserved. Printed in Japan.
Colophon 5.0