

# 2SK3174A

Silicon N Channel MOS FET  
UHF Power Amplifier

# HITACHI

ADE-208-1451 (Z)

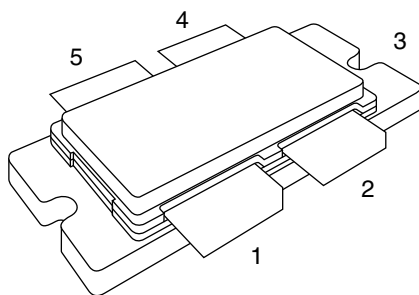
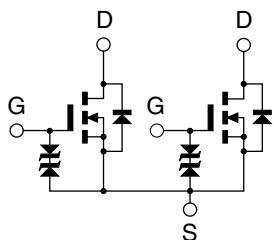
1st. Edition  
September 2001

## Features

- High power output, High gain, High efficiency  
 $P_{1dB} = 220\text{ W}$  ,  $PG = 15.3\text{dB}$  ,  $\eta_D = 61\%$  (at  $P_{1dB}$ ) typ. ( $f = 860\text{MHz}$ )
- Compact package  
Suitable for push - pull circuit

## Outline

RFPAK-F



1. Drain
2. Drain
3. Source
4. Gate
5. 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	$V_{DSS}$ <sup>Note1</sup>	60	V
Gate to source voltage	$V_{GSS}$	±10	V
Drain current	$I_D$	16	A
Drain peak current	$I_{D(pulse)}$ <sup>Note2</sup>	32	A
Channel dissipation	$P_{ch}$ <sup>Note3</sup>	252	W
Channel temperature	$T_{ch}$	175	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

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

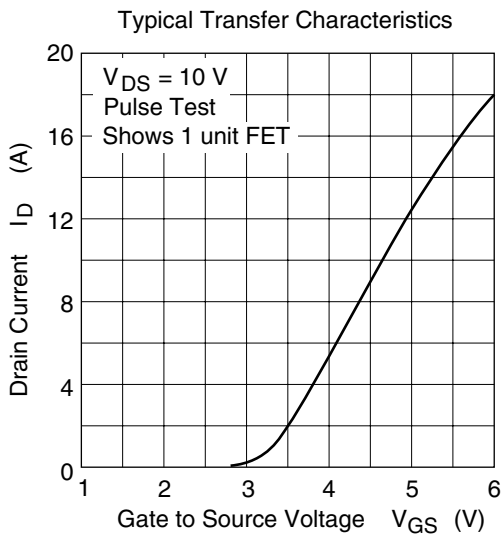
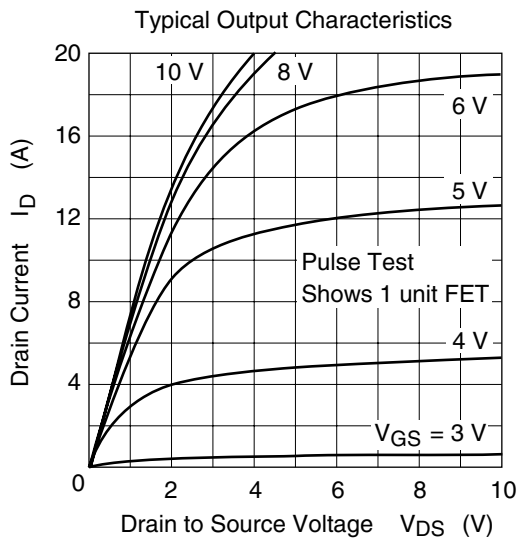
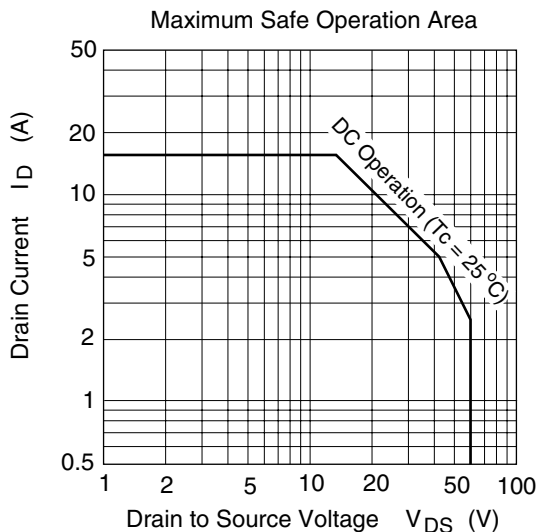
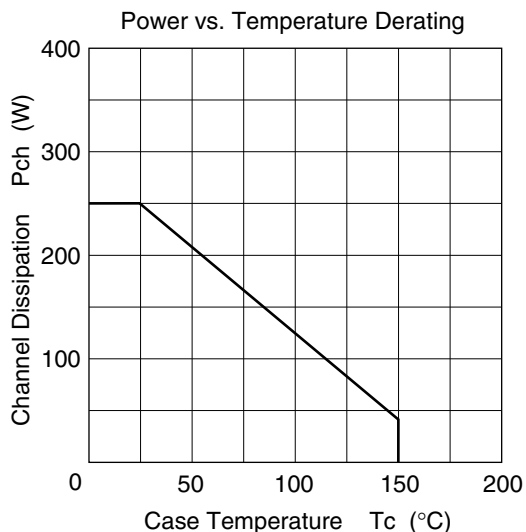
**Electrical Characteristics**

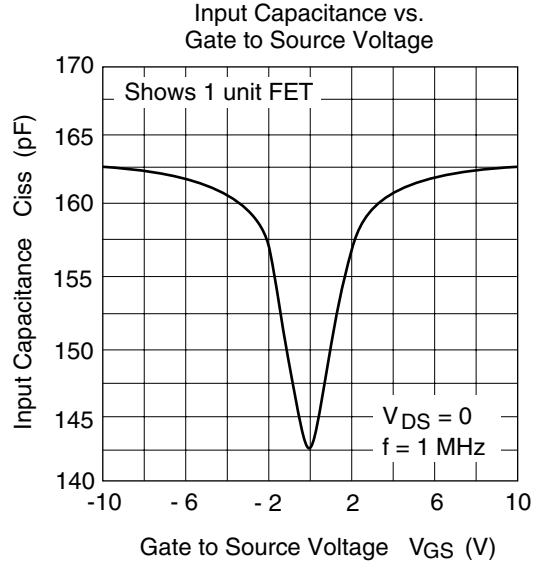
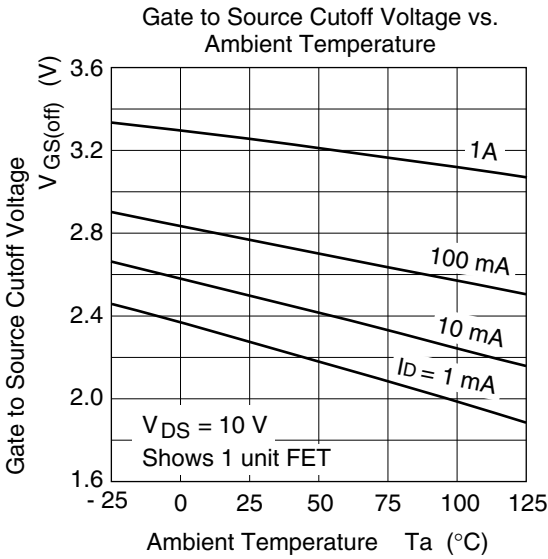
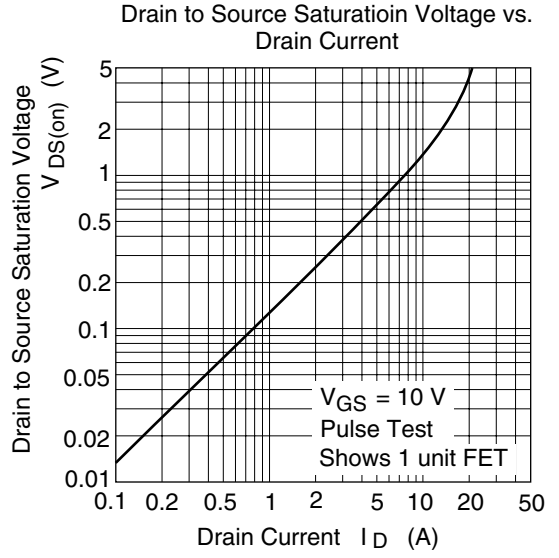
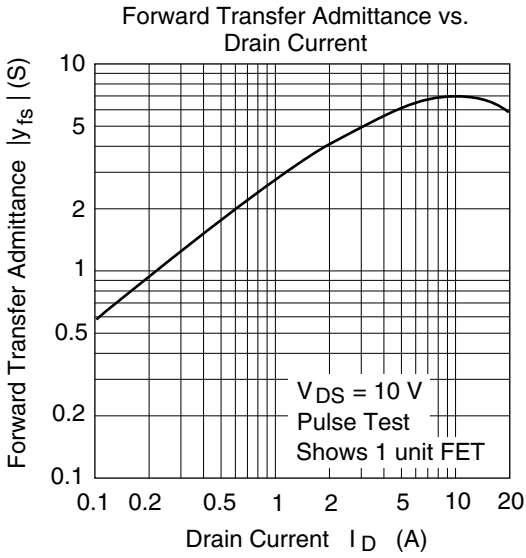
(Tc = 25°C)

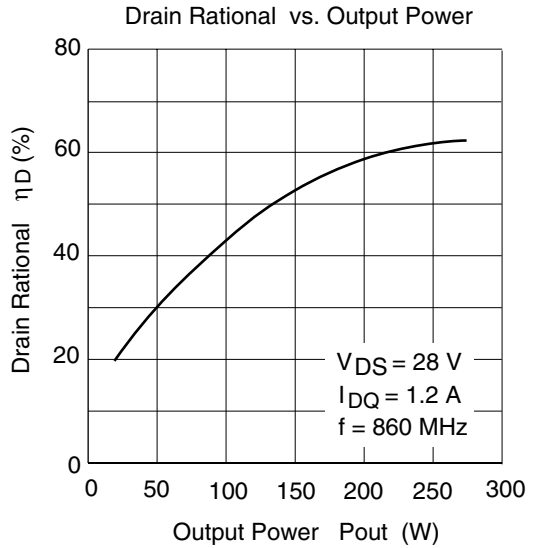
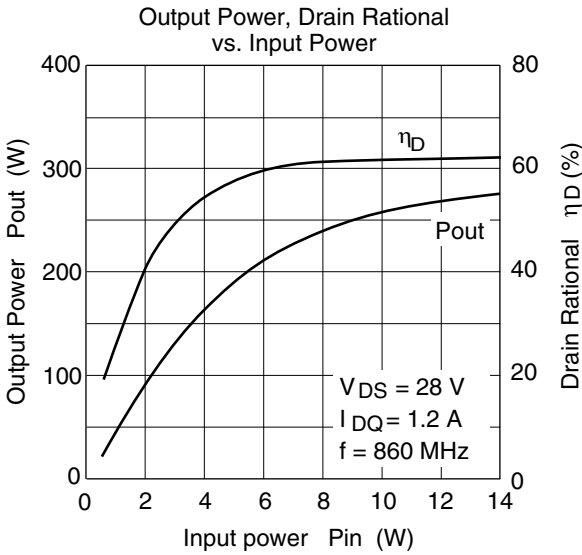
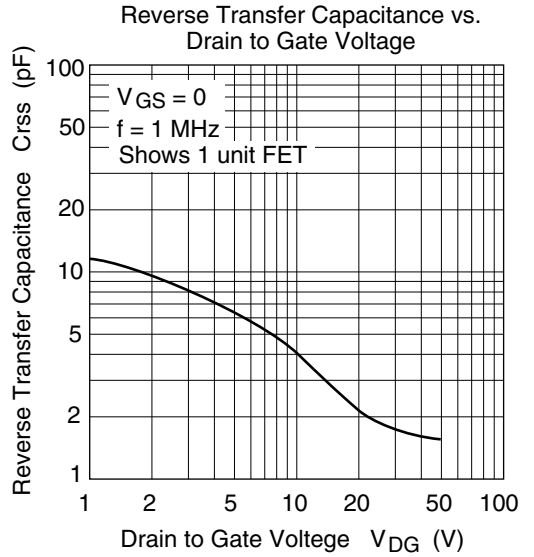
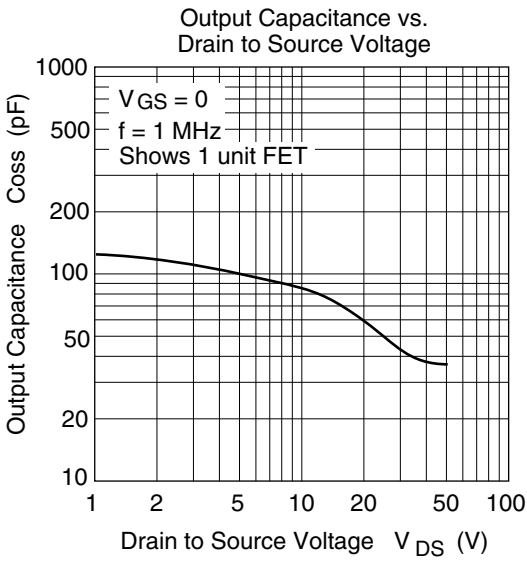
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage drain current <sup>Note4</sup>	$I_{DSS}$	—	—	1	mA	$V_{DS} = 60\text{ V}, V_{GS} = 0$
Gate to source leak current <sup>Note4</sup>	$I_{GSS}$	—	—	±3	μA	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0$
Gate to source cutoff voltage <sup>Note4</sup>	$V_{GS(off)}$	1.0	2.3	3.0	V	$I_D = 1\text{ mA}, V_{DS} = 10\text{ V}$
Forward transfer admittance <sup>Note4 5</sup>	$ y_{fs} $	4.0	6.7	—	S	$V_{DS} = 10\text{ V}, I_D = 5\text{ A}$ <sup>Note5</sup>
Input capacitance <sup>Note4</sup>	$C_{iss}$	—	162	—	pF	$V_{GS} = 5\text{ V}, V_{DS} = 0$ $f = 1\text{ MHz}$
Reverse transfer capacitance <sup>Note4</sup>	$C_{rss}$	—	4	—	pF	$V_{DG} = 10\text{ V}, V_{GS} = 0$ $f = 1\text{ MHz}$
Output Power	$P_{out}$	200	270	—	W	$V_{DS} = 28\text{ V}, I_{DQ} = 1.2\text{ A}$ $f = 860\text{ MHz}$ Pin = 14 W
Drain Rational	$\eta_D$	—	64	—	%	$V_{DS} = 28\text{ V}, I_{DQ} = 1.2\text{ A}$ $f = 860\text{ MHz}$ Pin = 14 W

Note: 4. Shows 1 unit FET  
 5. Pulse Test

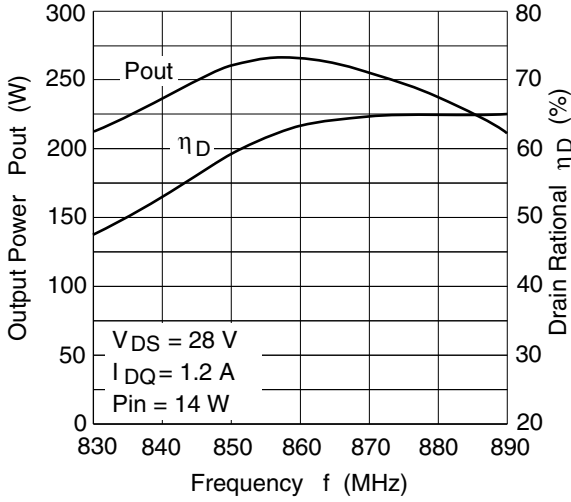
Main Characteristics



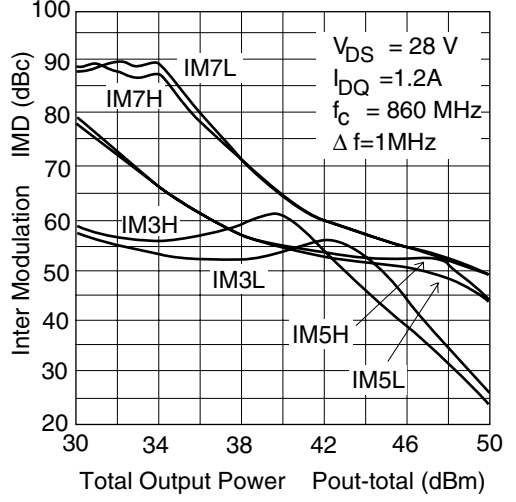




Output Power, Drain Rational vs. Frequency



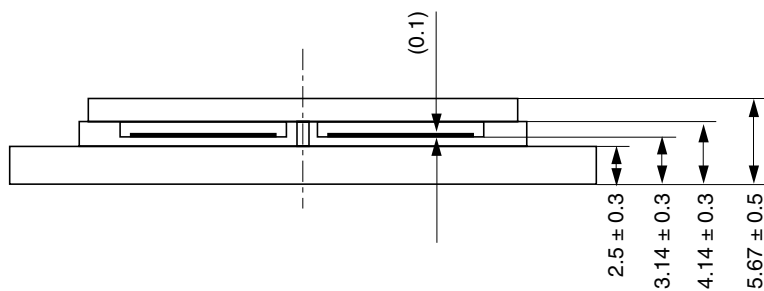
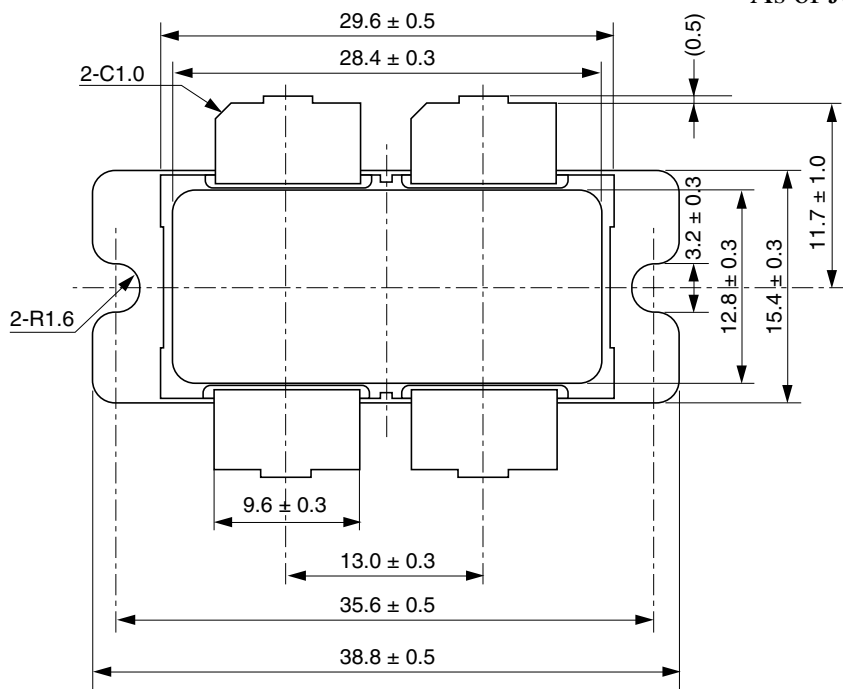
Inter Modulation vs. Total Output Power



Package Dimensions

As of July, 2001

Unit: mm



Hitachi Code	RFPAK-F
JEDEC	-
JEITA	-
Mass (reference value)	17.2 g

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