

To all our customers

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Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

Cautions

Keep safety first in your circuit designs!

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2SK2220, 2SK2221

Silicon N-Channel MOS FET

RENESAS

ADE-208-1352 (Z)
1st. Edition
Mar. 2001

Application

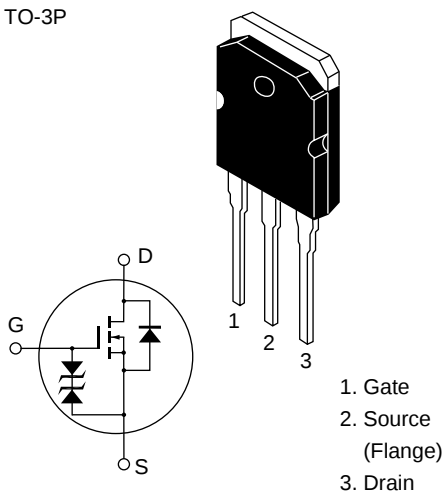
Low frequency power amplifier
Complementary pair with 2SJ351, 2SJ352

Features

- High power gain
- Excellent frequency response
- High speed switching
- Wide area of safe operation
- Enhancement-mode
- Good complementary characteristics
- Equipped with gate protection diodes

Outline

TO-3P



Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Ratings	Unit
Drain to source voltage	2SK2220	V_{DSX}	180	V
	2SK2221		200	
Gate to source voltage		V_{GSS}	±20	V
Drain current		I_D	8	A
Body to drain diode reverse drain current		I_{DR}	8	A
Channel dissipation		Pch*1	100	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

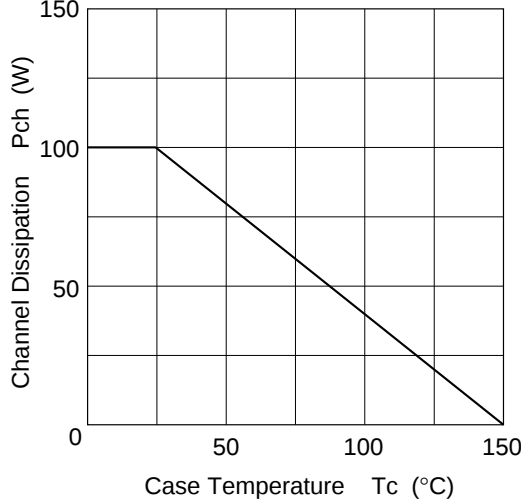
Note 1. Value at Tc = 25 °C

Electrical Characteristics (Ta = 25°C)

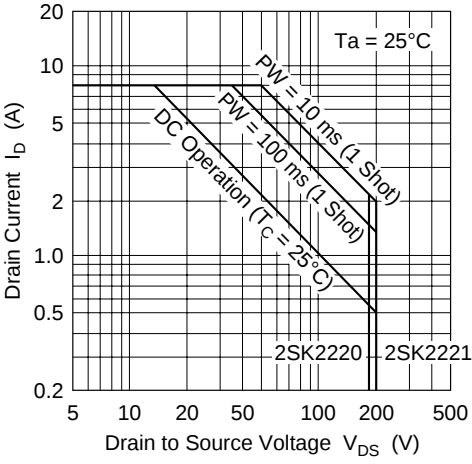
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK2220	$V_{(BR)DSX}$	180	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = -10 \text{ V}$
	2SK2221		200	—	—		
Gate to source breakdown voltage		$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}$, $V_{DS} = 0$
Gate to source cutoff voltage		$V_{GS(off)}$	0.15	—	1.45	V	$I_D = 100 \text{ mA}$ $V_{DS} = 10 \text{ V}$
Drain to source saturation voltage		$V_{DS(sat)}$	—	—	12	V	$I_D = 8 \text{ A}$, $V_{GD} = 0 \text{ V}^{*1}$
Forward transfer admittance		$ y_{fs} $	0.7	1.0	1.4	S	$I_D = 3 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance		Ciss	—	600	—	pF	$V_{GS} = -5 \text{ V}$
Output capacitance		Coss	—	800	—	pF	$V_{DS} = 10 \text{ V}$
Reverse transfer capacitance		Crss	—	8	—	pF	f = 1 MHz
Turn-on time		t _{on}	—	250	—	ns	$V_{DD} = 30 \text{ V}$
Turn-off time		t _{off}	—	90	—	ns	$I_D = 4 \text{ A}$

Note 1. Pulse Test

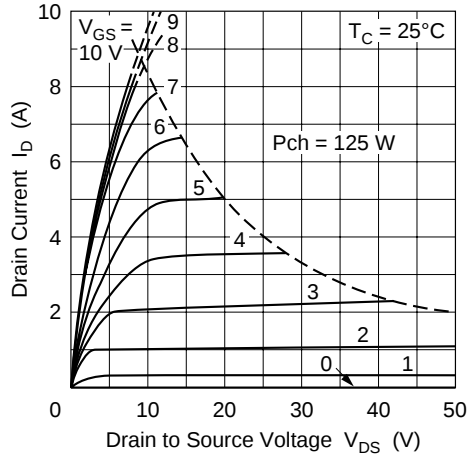
Power vs. Temperature Derating



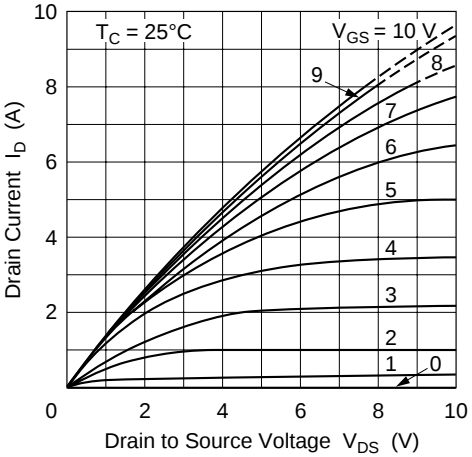
Maximum Safe Operation Area

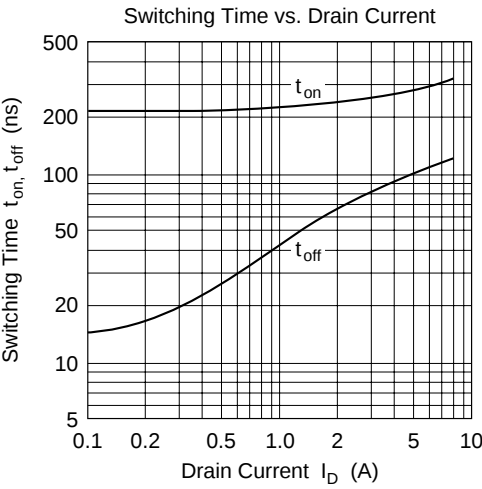
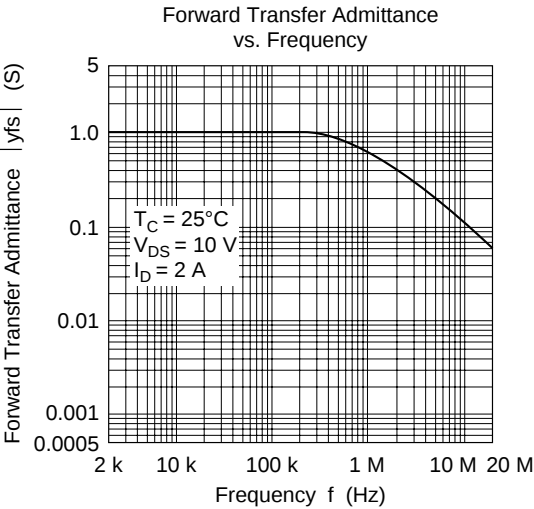
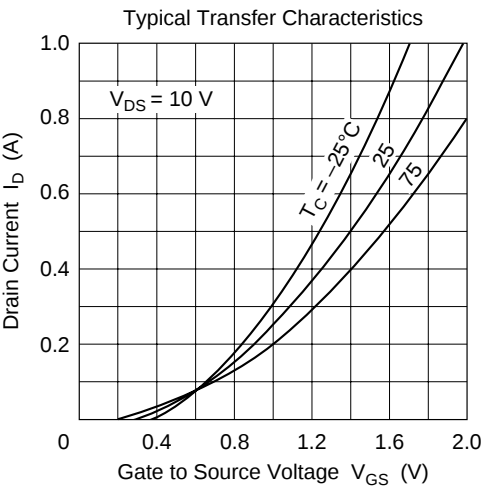
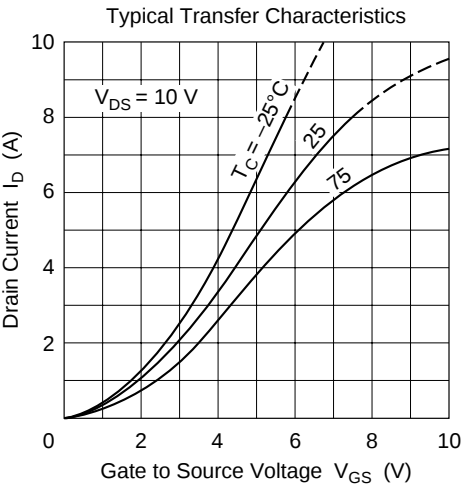


Typical Output Characteristics

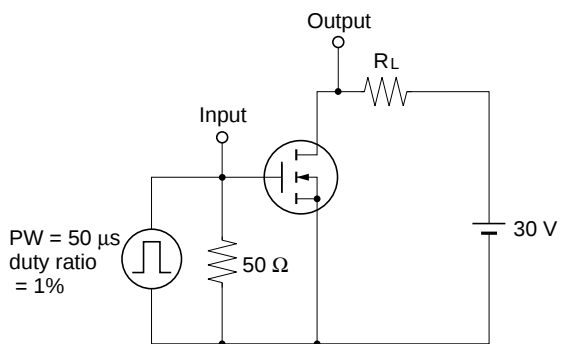


Typical Output Characteristics

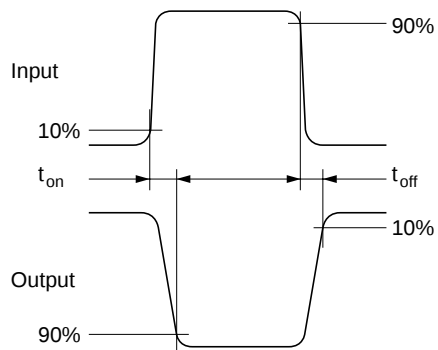




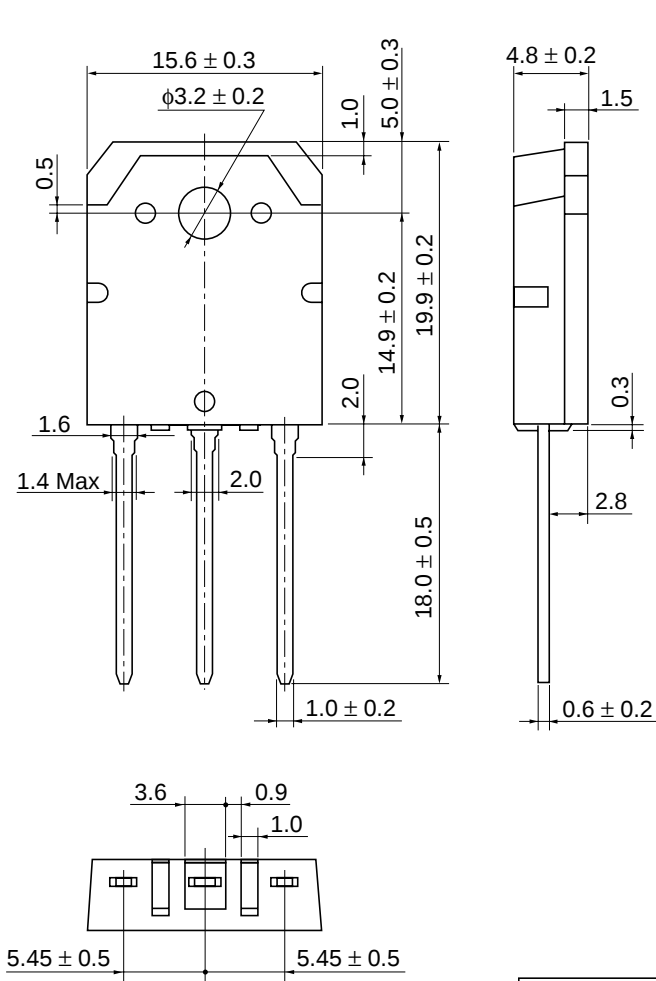
Switching Time Test Circuit



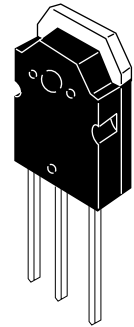
Waveforms



Package Dimensions



As of January, 2001
Unit: mm



Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Mass (reference value)	5.0 g

Cautions

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