2SK2220, 2SK2221

Silicon N-Channel MOS FET

HITACHI

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

Application

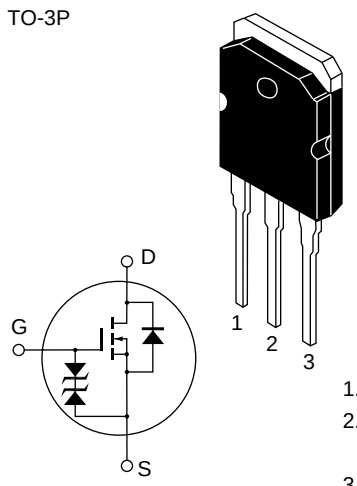
Low frequency power amplifier
Complementary pair with 2SJ351, 2SJ352

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



1. Gate
2. Source (Flange)
3. Drain

Hitachi semiconductor

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

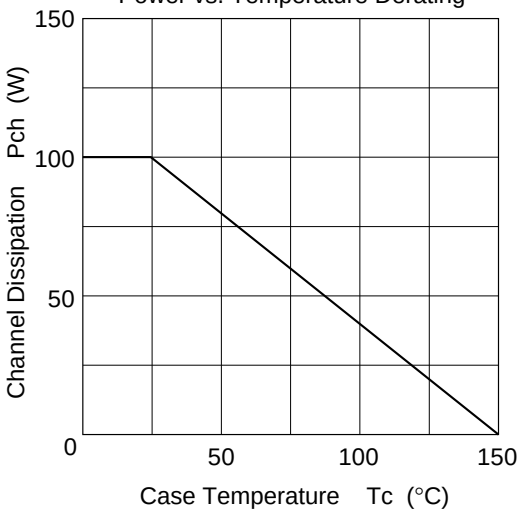
Note 1. Value at Tc = 25 °C

Electrical Characteristics (Ta = 25°C)

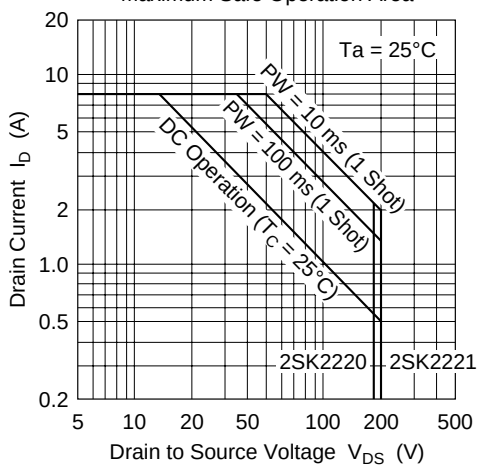
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK2220	$V_{(BR)DSX}$	180	—	—	V	I_D = 10 mA, V_{GS} = –10 V
	2SK2221		200	—	—		
Gate to source breakdown voltage		$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source cutoff voltage		$V_{GS(off)}$	0.15	—	1.45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

Note 1. Pulse Test

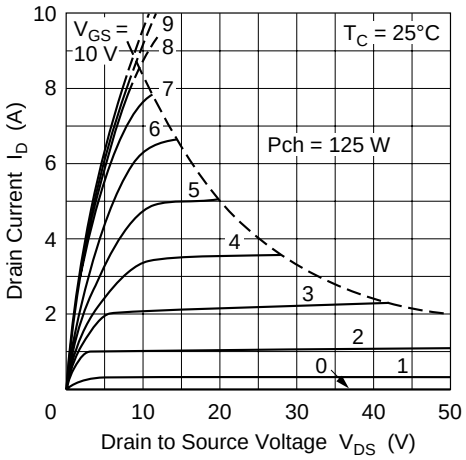
Power vs. Temperature Derating



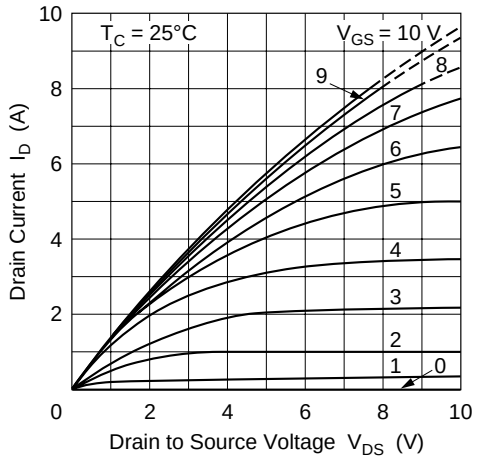
Maximum Safe Operation Area



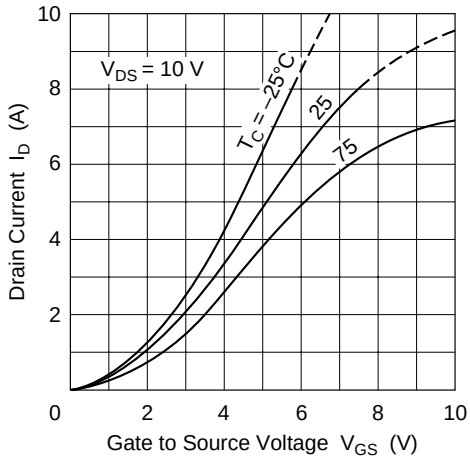
Typical Output Characteristics



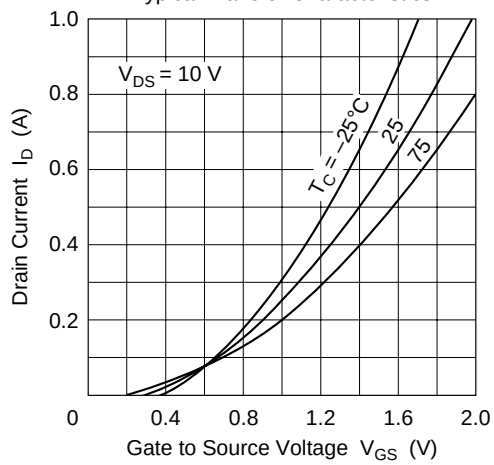
Typical Output Characteristics



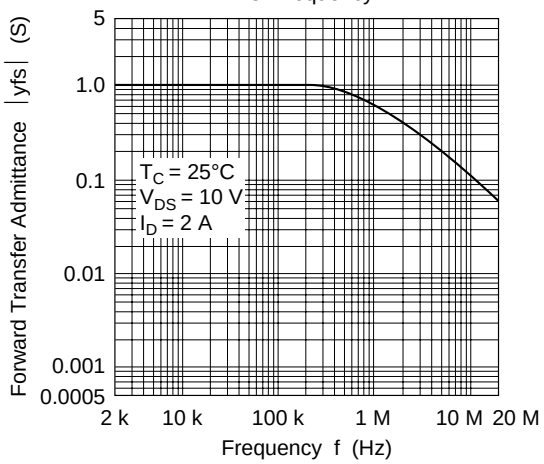
Typical Transfer Characteristics



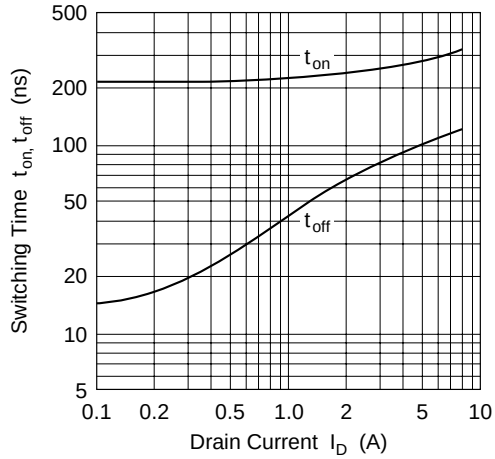
Typical Transfer Characteristics

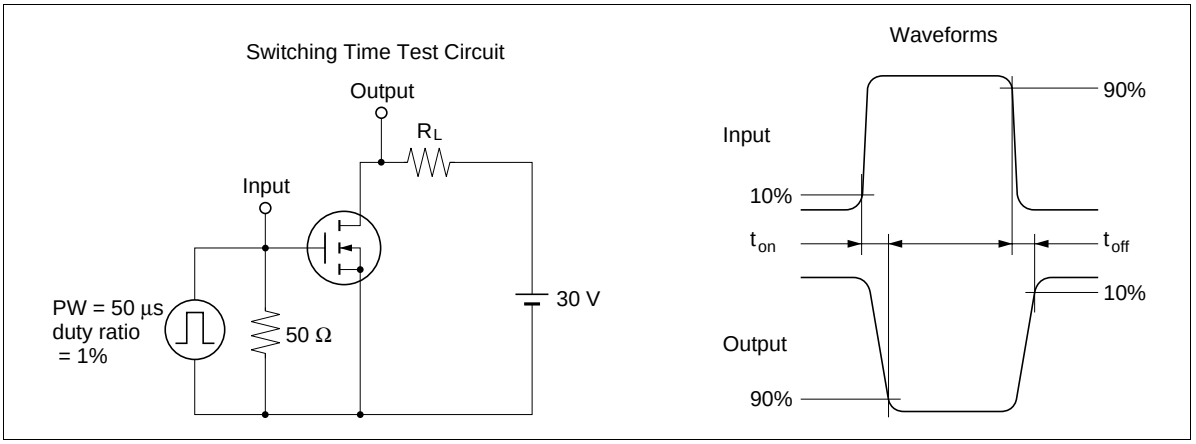


Forward Transfer Admittance vs. Frequency



Switching Time vs. Drain Current

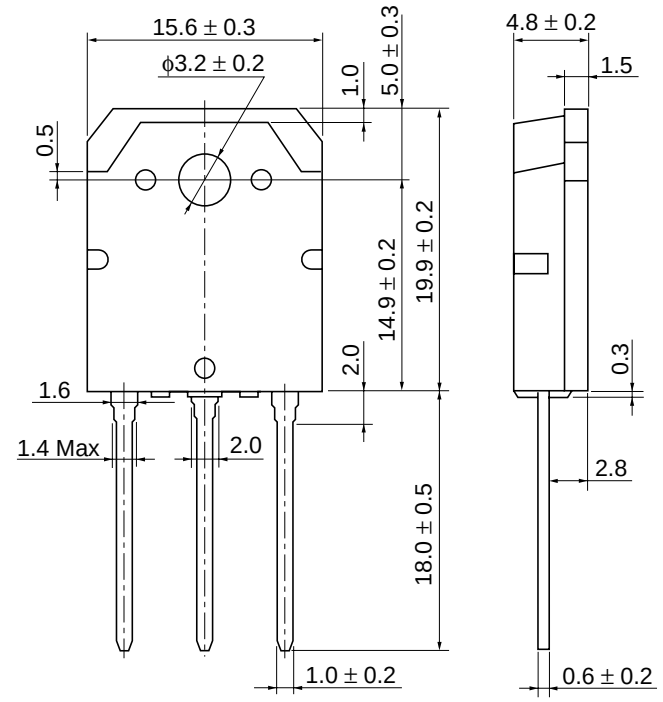


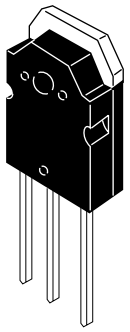

Switching Time Test Circuit
Output
R_L
Input
PW = 50 µs
duty ratio
= 1%
50 Ω
30 V
Waveforms
Input
90%
10%
t_{on}
t_{off}
10%
Output
90%

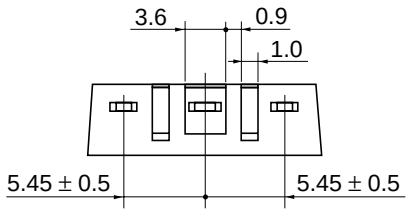
Package Dimensions

As of January, 2001

Unit: mm







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

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