2SJ160, 2SJ161, 2SJ162

Silicon P-Channel MOS FET

HITACHI

Application

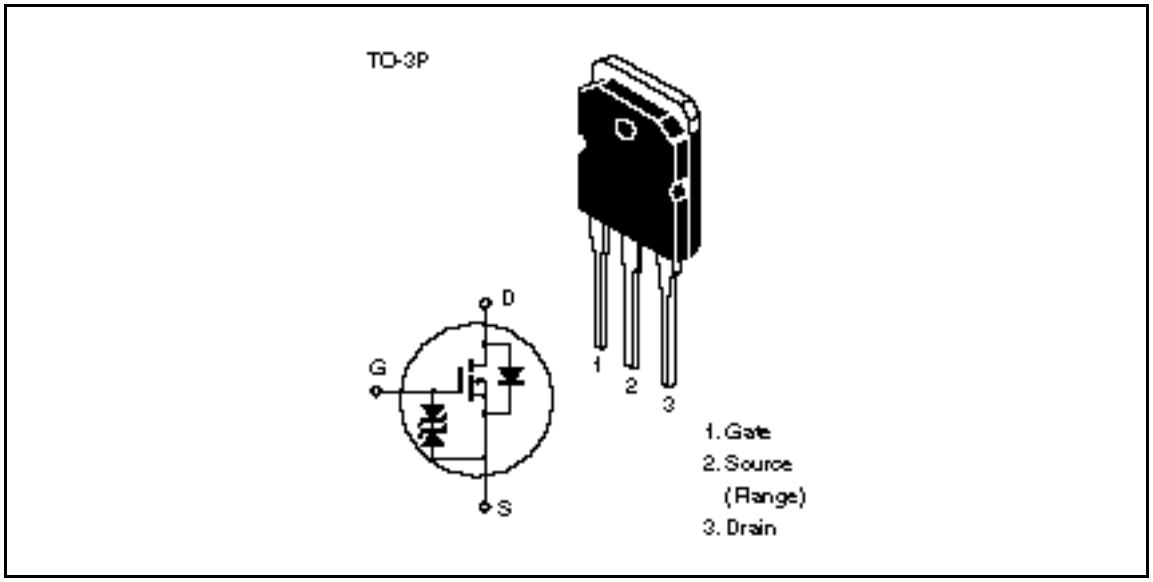
Low frequency power amplifier

Complementary pair with 2SK1056, 2SK1057 and 2SK1058

Features

- Good frequency characteristic
- High speed switching
- Wide area of safe operation
- Enhancement-mode
- Good complementary characteristics
- Equipped with gate protection diodes
- Suitable for audio power amplifier

Outline



Hitachi semiconductor

Absolute Maximum Ratings (Ta = 25°C)

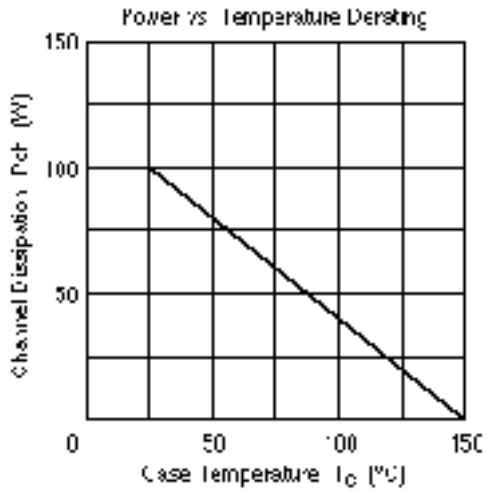
Item		Symbol	Ratings	Unit
Drain to source voltage	2SJ160	V_{DSX}	–120	V
	2SJ161		–140	
	2SJ162		–160	
Gate to source voltage		V_{GSS}	±15	V
Drain current		I_D	–7	A
Body to drain diode reverse drain current		I_{DR}	–7	A
Channel dissipation		Pch*[1]	100	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	–55 to +150	°C

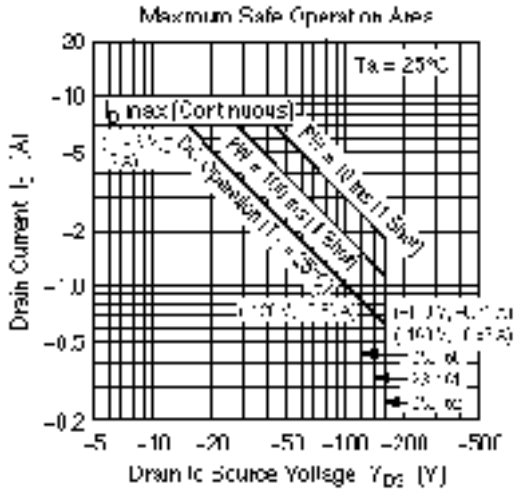
Note: 1. Value at T_C = 25°C

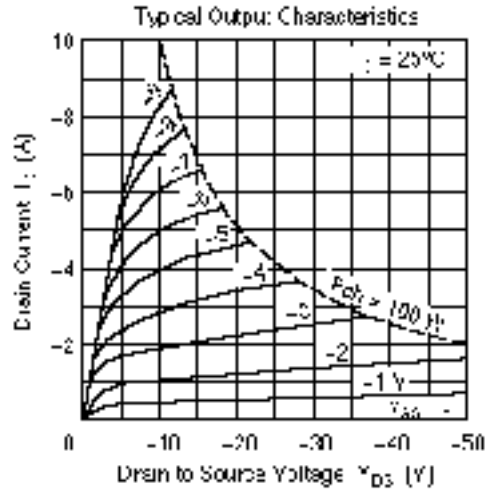
Electrical Characteristics (Ta = 25°C)

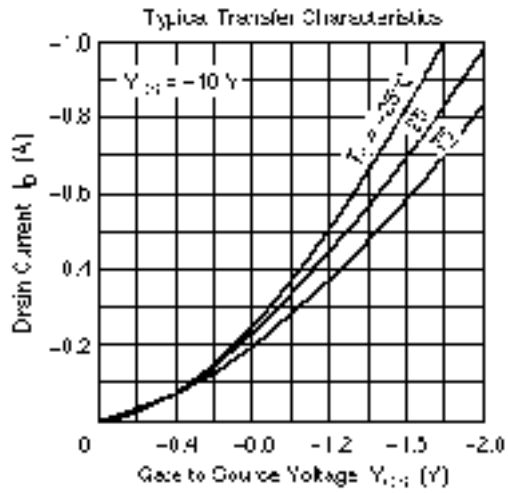
Item		Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SJ160	$V_{(BR)DSX}$	–120	—	—	V	I_D = –10 mA , V_{GS} = 10 V
	2SJ161		–140	—	—	V	
	2SJ162		–160	—	—	V	
Gate to source breakdown voltage		$V_{(BR)GSS}$	±15	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source cutoff voltage		$V_{GS(off)}$	–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 = –7 A, V_{GD} = 0*[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	—	900	—	pF	V_{GS} = 5 V, V_{DS} = –10V,
Output capacitance		Coss	—	400	—	pF	f = 1 MHz
Reverse transfer capacitance		Crss	—	40	—	pF	
Turn-on time		t_{on}	—	230	—	ns	V_{DD} = –20 V, I_D = –4 A
Turn-off time		t_{off}	—	110	—	ns	

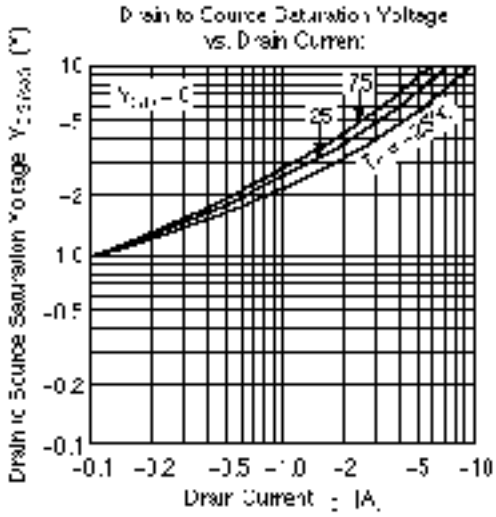
Note: 1. Pulse test

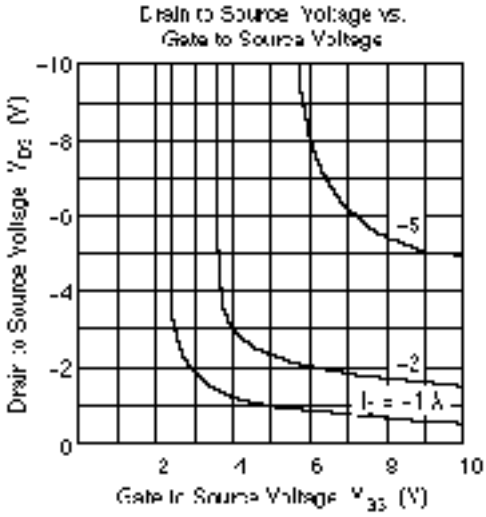

Power vs. Temperature Derating
Channel Dissipation Pch (W)
150
100
50
0
50
100
150
Case Temperature Tc (°C)

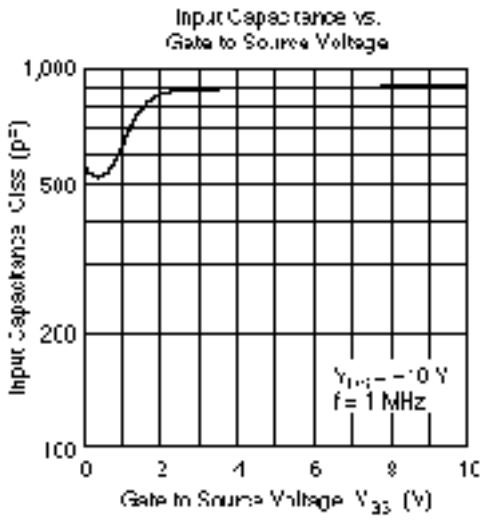

Maximum Safe Operation Area
Ta = 25°C
Drain Current
Drain to Source Voltage

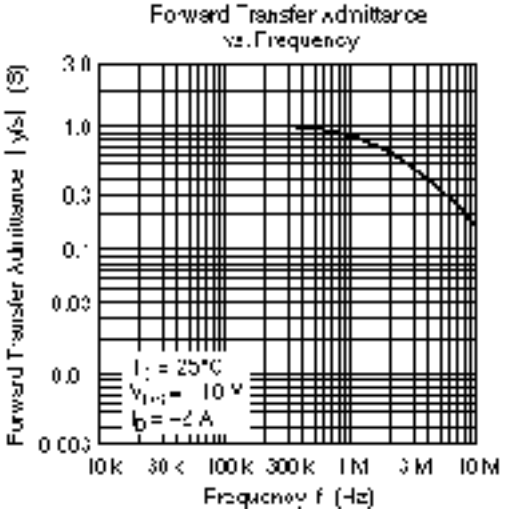

Typical Output Characteristics
Drain Current
Drain to Source Voltage
-1 V

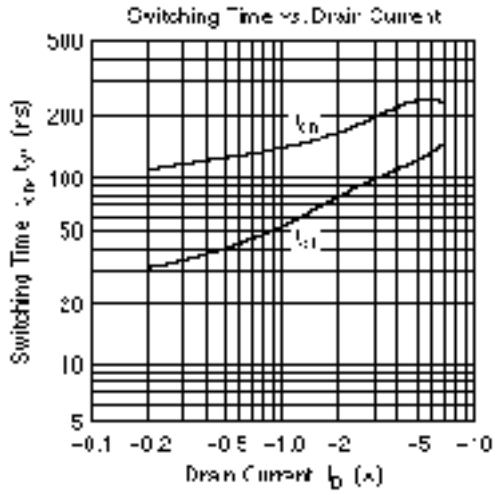

Typical Transfer Characteristics
Drain Current
Gate to Source Voltage

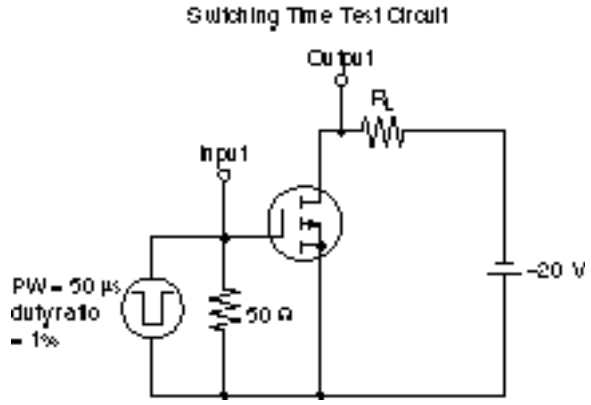

Drain to Source Saturation Voltage vs. Drain Current
Drain to Source Saturation Voltage
Drain Current

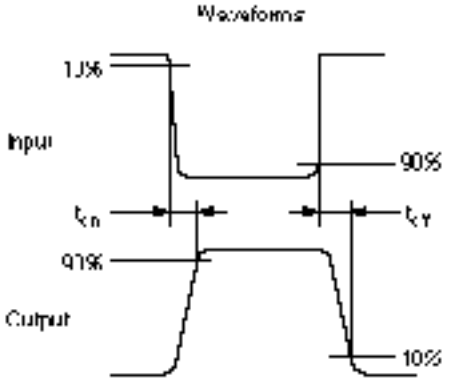

Drain to Source Voltage vs. Gate to Source Voltage
Drain to Source Voltage
Gate to Source Voltage
-5
-2
-1 A


Input Capacitance vs.
Gate to Source Voltage
1,000
500
200
100
Input Capacitance Ciss (pF)
0
2
4
6
8
10
Gate to Source Voltage V_{GS} (V)
f = 1 MHz


Forward Transfer Admittance
vs. Frequency
3.0
1.0
0.3
0.03
0.0
10k
30k
100k
300k
1M
3M
10M
Frequency f (Hz)


Switching Time vs. Drain Current
500
200
100
50
20
10
5
−0.1
−0.2
−0.5
−1.0
−2
−5
−10
Drain Current I_D (A)


Switching Time Test Circuit
Output
Input
PW = 50 µs
duty ratio
= 1%
50 Ω
−20 V


Waveforms
10%
Input
90%
90%
Output
10%

When using this document, keep the following in mind:

1. This document may, wholly or partially, be subject to change without notice.
2. All rights are reserved: No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without Hitachi's permission.
3. Hitachi will not be held responsible for any damage to the user that may result from accidents or any other reasons during operation of the user's unit according to this document.
4. Circuitry and other examples described herein are meant merely to indicate the characteristics and performance of Hitachi's semiconductor products. Hitachi assumes no responsibility for any intellectual property claims or other problems that may result from applications based on the examples described herein.
5. No license is granted by implication or otherwise under any patents or other rights of any third party or Hitachi, Ltd.
6. MEDICAL APPLICATIONS: Hitachi's products are not authorized for use in MEDICAL APPLICATIONS without the written consent of the appropriate officer of Hitachi's sales company. Such use includes, but is not limited to, use in life support systems. Buyers of Hitachi's products are requested to notify the relevant Hitachi sales offices when planning to use the products in MEDICAL APPLICATIONS.

HITACHI

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

For further information write to:

Hitachi America, Ltd.
Semiconductor & IC Div.
2000 Sierra Point Parkway
Brisbane, CA. 94005-1835
U.S.A.
Tel: 415-589-8300
Fax: 415-583-4207

Hitachi Europe GmbH
Electronic Components Group
Continental Europe
Dornacher Straße 3
D-85622 Feldkirchen
München
Tel: 089-9 91 80-0
Fax: 089-9 29 30 00

Hitachi Europe Ltd.
Electronic Components Div.
Northern Europe Headquarters
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA
United Kingdom
Tel: 0628-585000
Fax: 0628-778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 0104
Tel: 535-2100
Fax: 535-1533

Hitachi Asia (Hong Kong) Ltd.
Unit 706, North Tower,
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon
Hong Kong
Tel: 27359218
Fax: 27306071