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# 2SJ160, 2SJ161, 2SJ162

Silicon P-Channel MOS FET

# HITACHI

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## Application

Low frequency power amplifier

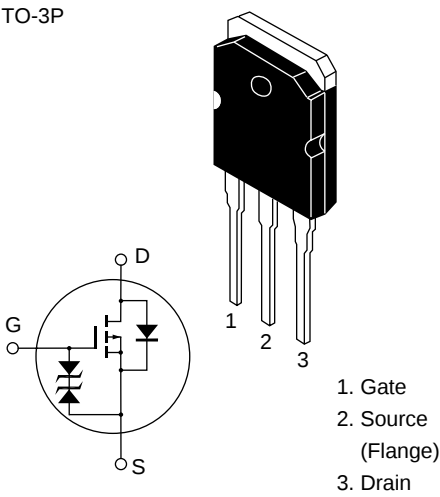
Complementary pair with 2SK1056, 2SK1057 and 2SK1058

## 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

# 2SJ160, 2SJ161, 2SJ162

## Outline



## Absolute Maximum Ratings (Ta = 25°C)

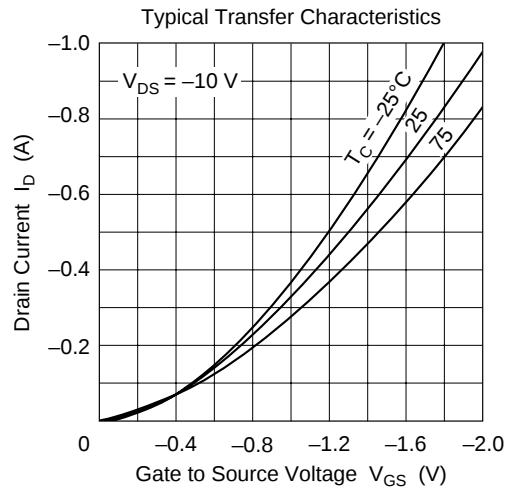
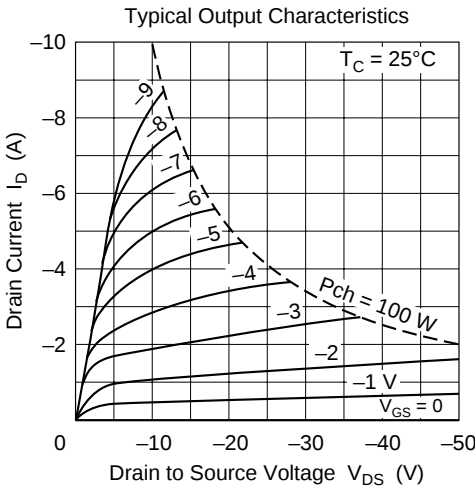
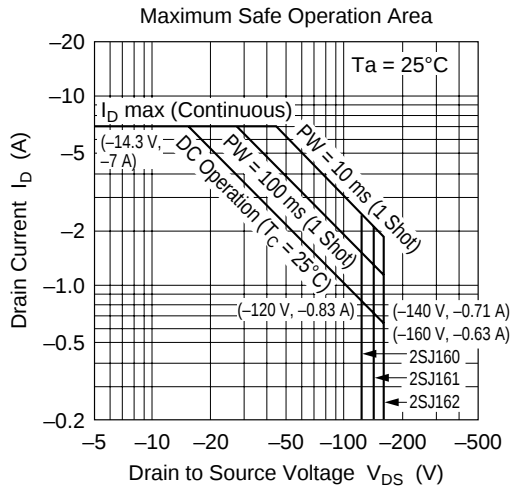
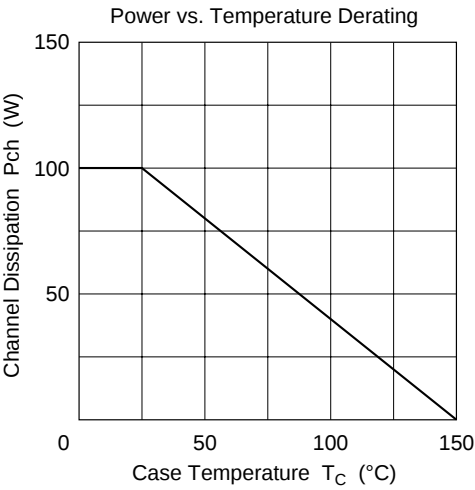
| Item                                      |        | Symbol     | Ratings     | Unit |
|-------------------------------------------|--------|------------|-------------|------|
| Drain to source voltage                   | 2SJ160 | $V_{DSX}$  | -120        | V    |
|                                           | 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  $T_c = 25^\circ\text{C}$

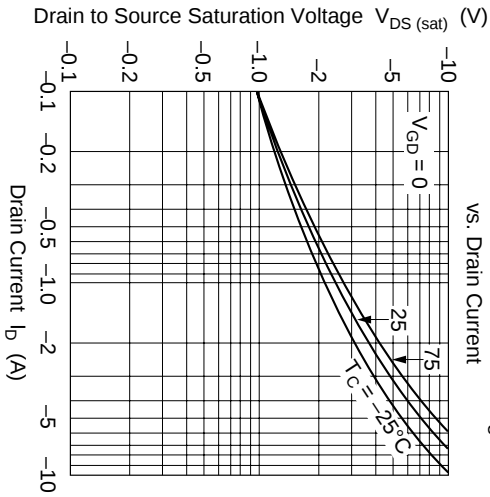
**Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

| Item                               |        | Symbol        | Min      | Typ | Max   | Unit | Test conditions                                                         |
|------------------------------------|--------|---------------|----------|-----|-------|------|-------------------------------------------------------------------------|
| Drain to source breakdown voltage  | 2SJ160 | $V_{(BR)DSX}$ | -120     | —   | —     | V    | $I_D = -10\text{ mA}$ , $V_{GS} = 10\text{ V}$                          |
|                                    | 2SJ161 |               | -140     | —   | —     | V    |                                                                         |
|                                    | 2SJ162 |               | -160     | —   | —     | V    |                                                                         |
| Gate to source breakdown voltage   |        | $V_{(BR)GSS}$ | $\pm 15$ | —   | —     | 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    | $I_D = -7\text{ A}$ , $V_{GD} = 0^{*1}$                                 |
| 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                  |        | $C_{iss}$     | —        | 900 | —     | pF   | $V_{GS} = 5\text{ V}$ , $V_{DS} = -10\text{ V}$ ,<br>$f = 1\text{ MHz}$ |
| Output capacitance                 |        | $C_{oss}$     | —        | 400 | —     | pF   |                                                                         |
| Reverse transfer capacitance       |        | $C_{rss}$     | —        | 40  | —     | pF   |                                                                         |
| Turn-on time                       |        | $t_{on}$      | —        | 230 | —     | ns   | $V_{DD} = -20\text{ V}$ , $I_D = -4\text{ A}$                           |
| Turn-off time                      |        | $t_{off}$     | —        | 110 | —     | ns   |                                                                         |

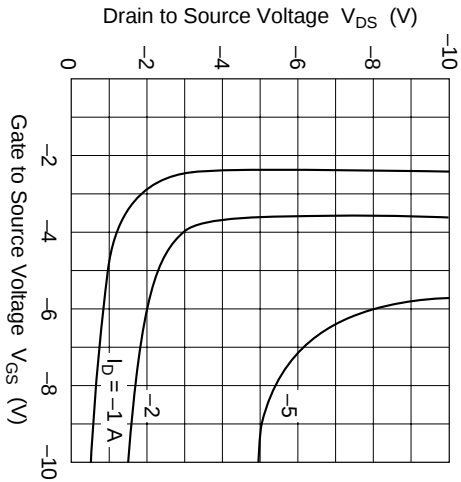
Note: 1. Pulse test



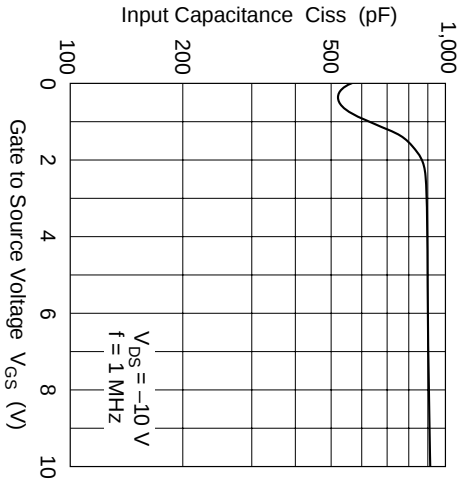
Drain to Source Saturation Voltage  
vs. Drain Current



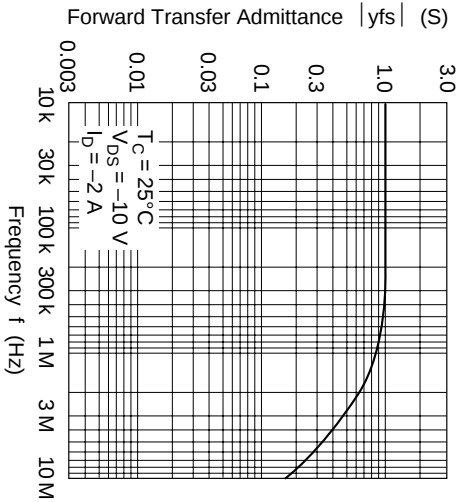
Drain to Source Voltage vs.  
Gate to Source Voltage

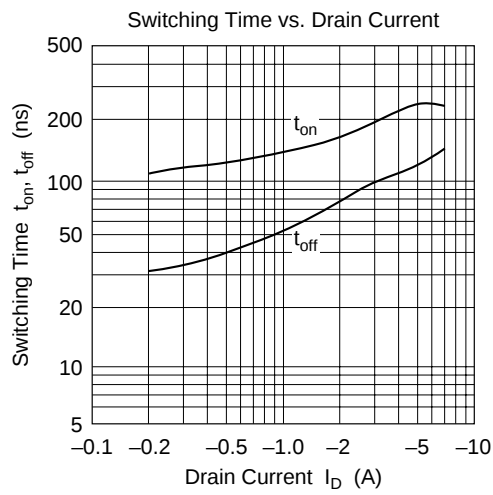


Input Capacitance vs.  
Gate to Source Voltage

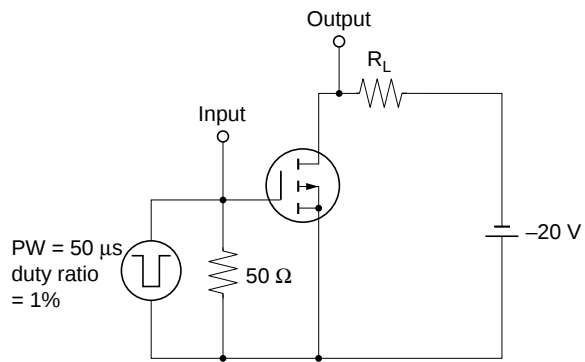


Forward Transfer Admittance  
vs. Frequency

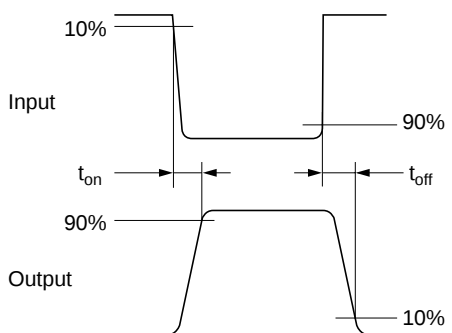




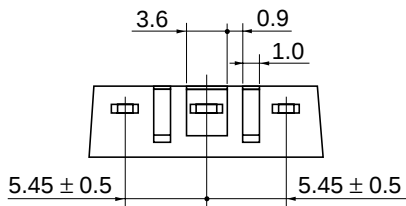
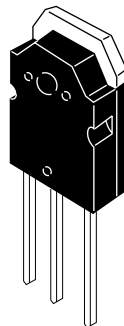
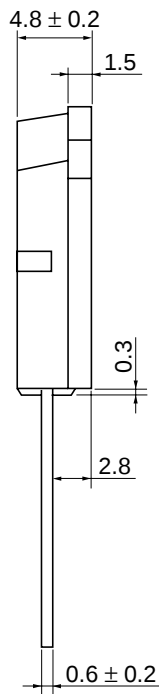
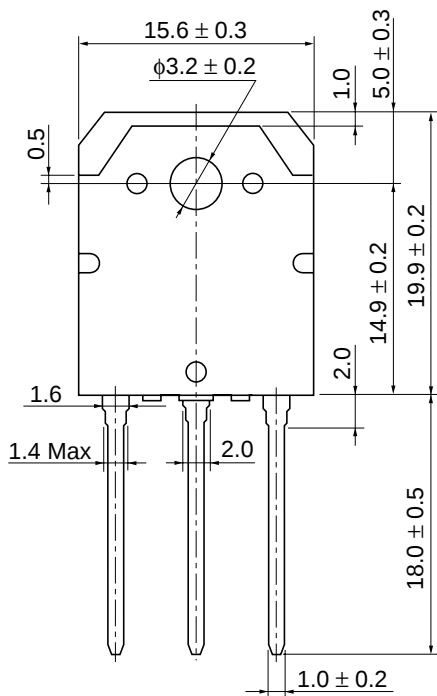
Switching Time Test Circuit



Waveforms



Unit: mm



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

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