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April 1st, 2010
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DATA SHEET

# MOS FIELD EFFECT POWER TRANSISTOR

Phase-out/Discontinued

# 2SJ132,132-Z

## P-CHANNEL POWER MOSFET FOR SWITCHING

### FEATURES

- Gate drive available at logic level ($V_{GS}$ = –4 V)
- High current control available in small dimension due to low $R_{DS(on)}$ (≅ 0.25 Ω)
- 2SJ132-Z is a lead process product and is ideal for mounting a hybrid IC.

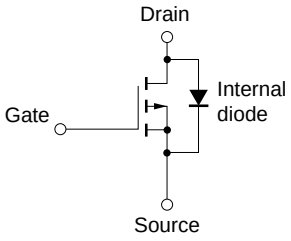
### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C)

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | $V_{GS}$ = 0 V | –30 | V |
| Gate to source voltage | $V_{GSS}$ | $V_{DS}$ = 0 V | ∓20 | V |
| Drain current (DC) | $I_{D(DC)}$ | $T_C$ = 25°C | ∓2.0 | A |
| Drain current (pulse) | $I_{D(pulse)}$ | PW ≤ 300 μs<br>duty cycle ≤ 10% | ∓8.0 | A |
| Total power dissipation | $P_{T1}$ | $T_C$ = 25°C | 20 | W |
| Total power dissipation | $P_{T2}$ | $T_A$ = 25°C | 1.0 Note 1, 2.0 Note 2 | W |
| Channel temperature | $T_{ch}$ | | 150 | °C |
| Storage temperature | $T_{stg}$ | | –55 to +150 | °C |

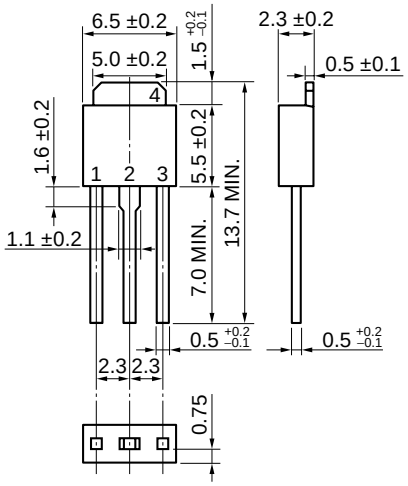
**Note 1.** Printing board mounted

**2.** 7.5 $cm^2$ × 0.7 mm ceramic board mounted

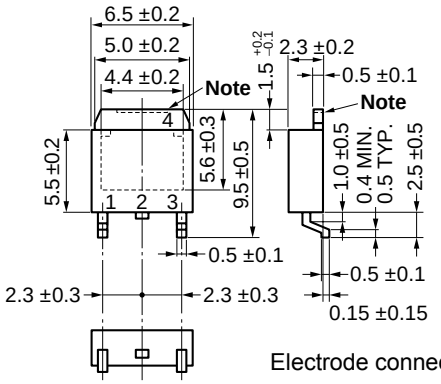
### EQUIVALENT CIRCUIT




### PACKAGE DRAWING (UNIT: mm)




<R> TO-251 (MP-3)




TO-252 (MP-3Z)

Electrode connection
1. Gate
2. Drain
3. Source
4. Fin (drain)

**Note** The depth of notch at the top of the fin is from 0 to 0.2 mm.

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Document No. D16192EJ4V0DS00 (4th edition)
Date Published January 2007 NS CP(K)
Printed in Japan

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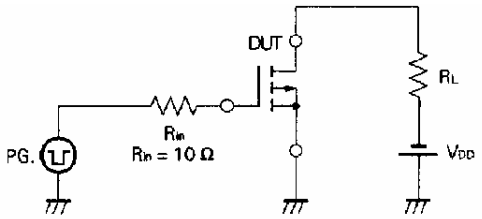
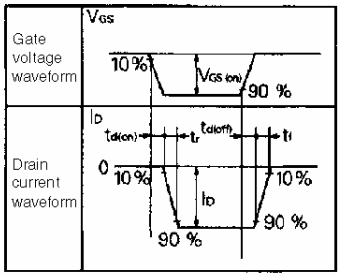
**The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.**

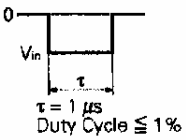
## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|
| Drain cutoff current | $I_{DSS}$ | $V_{DS}$ = –30 V, $V_{GS}$ = 0 V | | | –10 | μA |
| Gate cutoff current | $I_{GSS}$ | $V_{GS}$ = ∓20 V, $V_{DS}$ = 0 V | | | ∓100 | nA |
| Gate cutoff voltage | $V_{GS(off)}$ | $V_{DS}$ = –10 V, $I_D$ = –1.0 mA | –1.0 | –2.0 | –3.0 | V |
| Forward transfer admittance | $\|y_{ts}\|$ | $V_{DS}$ = –10 V, $I_D$ = –1.0 A | 1.0 | 1.8 | | S |
| Drain to source on-state resistance | $R_{DS(on)1}$ | $V_{GS}$ = –10 V, $I_D$ = –1.0 A | | 0.25 | 0.4 | Ω |
| Drain to source on-state resistance | $R_{DS(on)2}$ | $V_{GS}$ = –4 V, $I_D$ = –0.8 A | | 0.4 | 0.6 | Ω |
| Input capacitance | $C_{iss}$ | $V_{DS}$ = –10 V, $V_{GS}$ = 0 V<br>f = 1 MHz | | 730 | | pF |
| Output capacitance | $C_{oss}$ | | | 180 | | pF |
| Reverse transfer capacitance | $C_{rss}$ | | | 45 | | pF |
| Turn-on delay time | $t_{d(on)}$ | $I_D$ = –1.0 A, $V_{GS(on)}$ = –10 V<br>$V_{DD}$ ≅ –15 V, $R_L$ = 50 Ω,<br>$R_{in}$ = 10 Ω | | 30 | | ns |
| Rise time | $t_r$ | | | 30 | | ns |
| Turn-off delay time | $t_{d(off)}$ | | | 110 | | ns |
| Fall time | $t_f$ | | | 40 | | ns |

## SWITCHING TIME TEST CIRCUIT, TEST CONDITION (RESISTANCE LOAD)

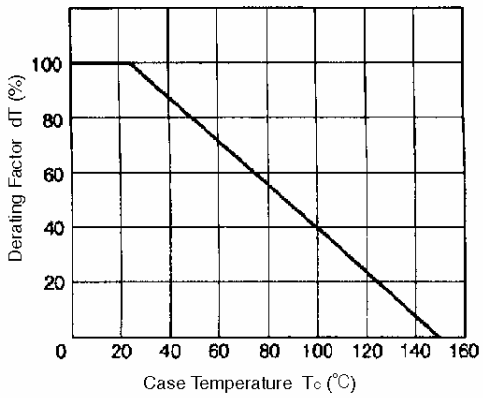


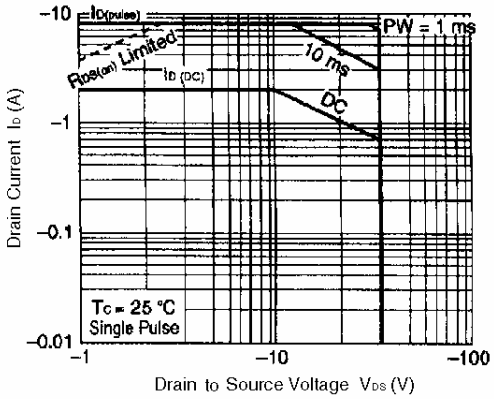



## TYPICAL CHARACTERISTICS ($T_A$ = 25°C)

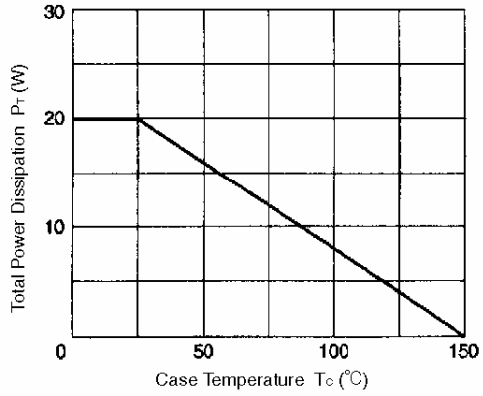
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



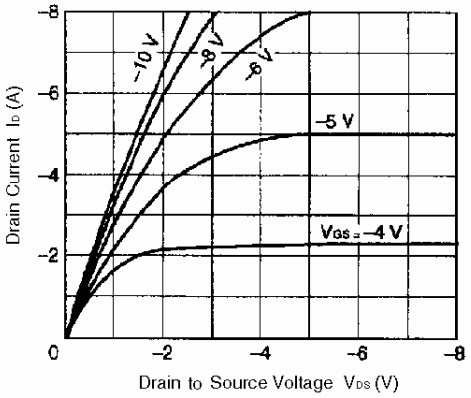

FORWARD BIAS SAFE OPERATING AREA



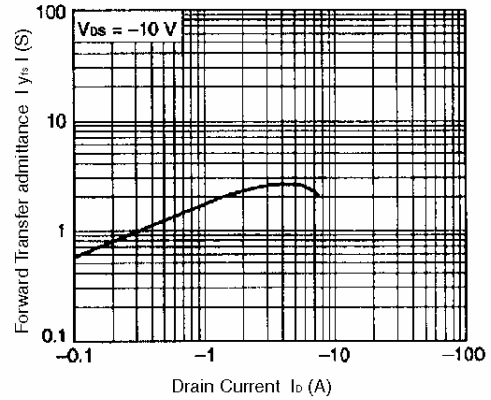

TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



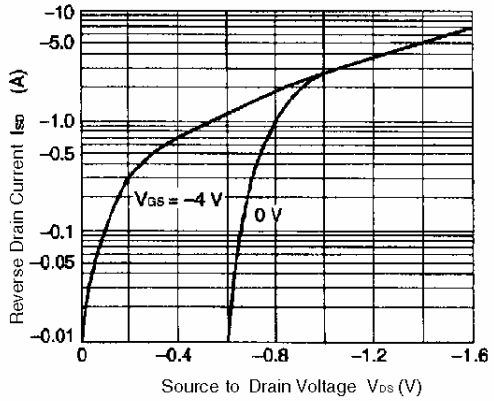

DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE




FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



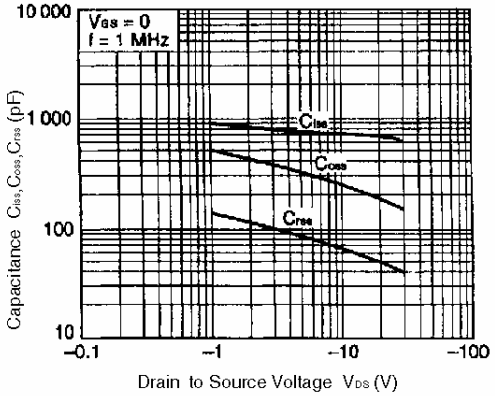

SOURCE TO DRAIN DIODE FORWARD VOLTAGE



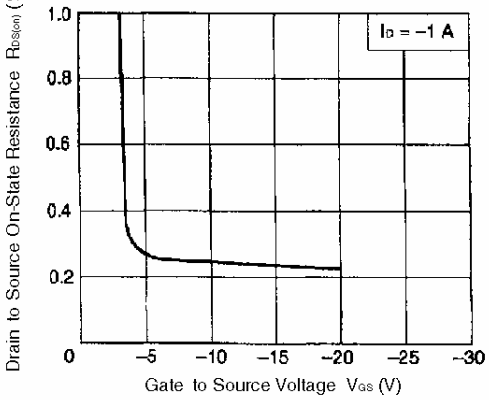
Phase-out/Discontinued



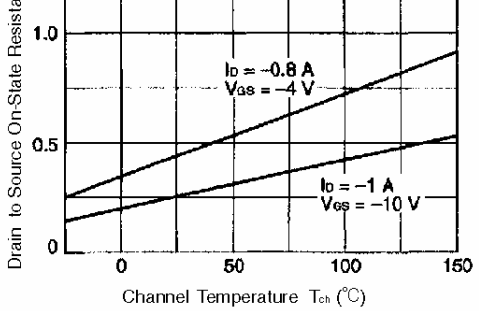
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



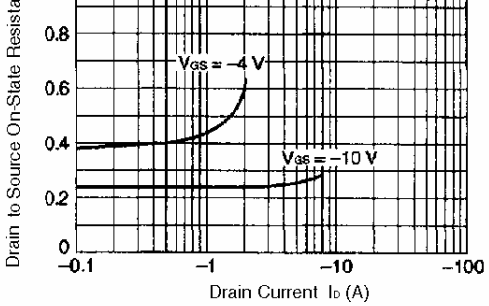

DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



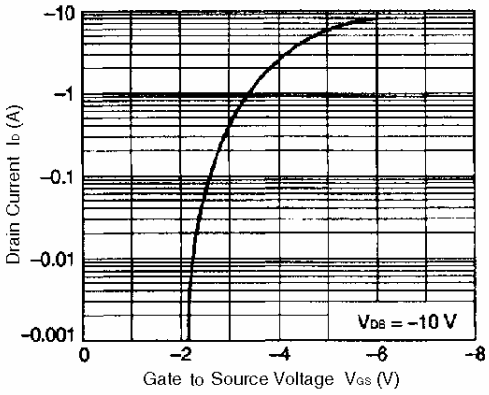

DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



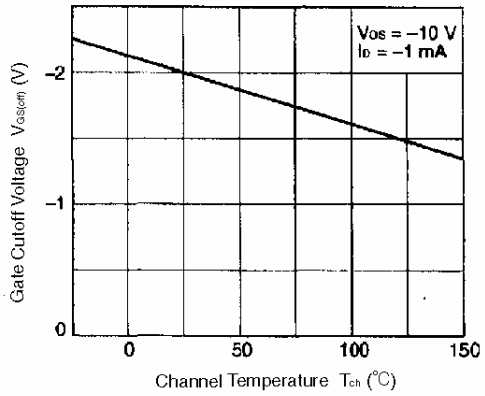

DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



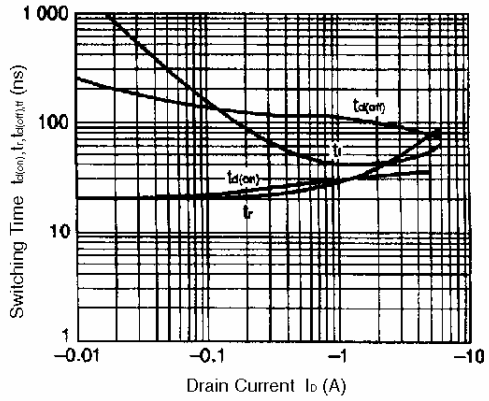

TRANSFER CHARACTERISTIC



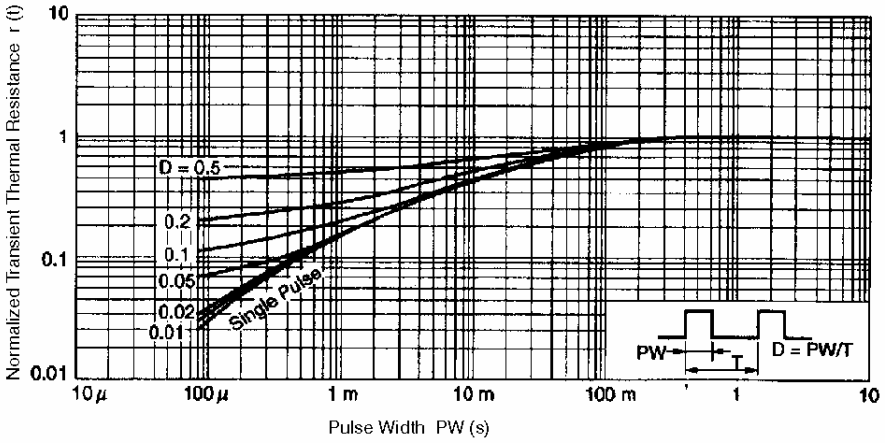

GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



SWITCHING TIME vs. DRAIN CURRENT




NORMALIZED TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



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