NEC

MOS FIELD EFFECT TRANSISTOR
2SJ460

P-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR HIGH SPEED SWITCHING

DESCRIPTION

The 2SJ460 is a switching device which can be driven directly by a 2.5 V power source.

The MOS FET has excellent switching characteristics and is suitable for use as a high-speed switching device in digital circuits.

FEATURES

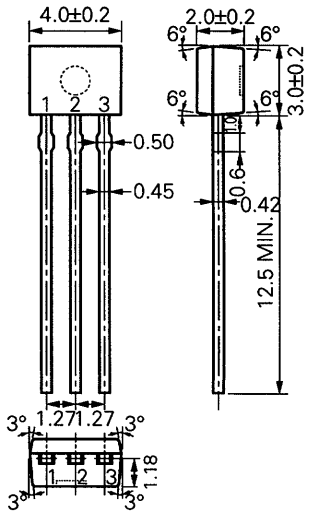
- Can be driven by a 2.5 V power source.
- Not necessary to consider driving current because of its high input impedance.
- Possible to reduce the number of parts by omitting the bias resistor.

ABSOLUTE MAXIMUM RATINGS (T_A = +25 °C)

Drain to Source Voltage	V_{DSS}	−50	V
Gate to Source Voltage	V_{GSS}	∓7.0	V
Drain Current (DC)	$I_{D(DC)}$	∓0.1	A
Drain Current (pulse)	$I_{D(pulse)}$	∓0.2 *	A
Total Power Dissipation	P_T	250	mW
Channel Temperature	T_{CH}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

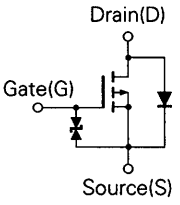
*PW ≦10 ms, Duty cycle ≦ 1 %

PACKAGE DRAWINGS (in millimeter)



EQUIVALENT CIRCUIT

1. Source
2. Drain
3. Gate



(Diode in the figure is the parasitic diode.)

The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device is actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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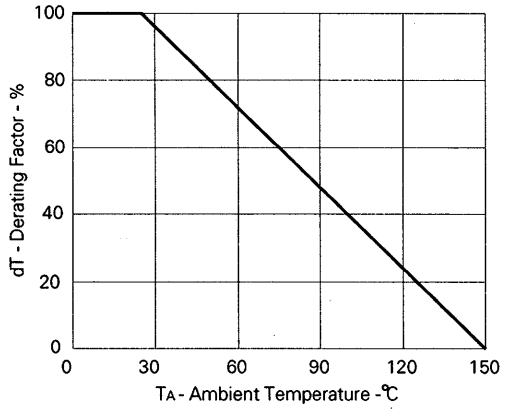
ELECTRICAL CHARACTERISTICS (T_A = +25 °C)

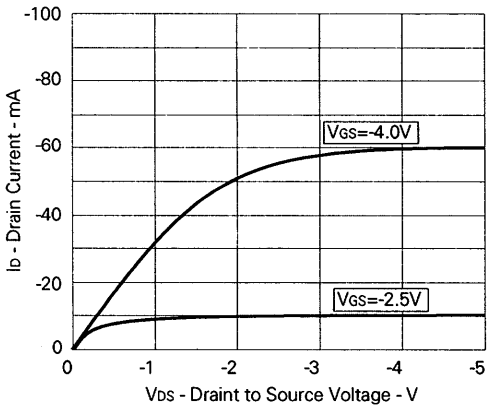
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I_{DSS}			−1.0	μA	V_{DS} = −50 V, V_{GS} = 0
Gate Leakage Current	I_{GSS}			∓3.0	μA	V_{GS} = ∓7.0 V, V_{DS} = 0
Gate Cut-off Voltage	$V_{GS(off)}$	−0.7	−0.9	−1.3	V	V_{DS} = −3.0 V, I_D = −1.0 μA
Forward Transfer Admittance	$\|y_{fs}\|$	12			mS	V_{DS} = −3.0 V, I_D = −10 mA
Drain to Source On-State Resistance	$R_{DS(on)1}$		46	100	Ω	V_{GS} = −2.5 V, I_D = −3 mA
Drain to Source On-State Resistance	$R_{DS(on)2}$		31	50	Ω	V_{GS} = −4.0 V, I_D = −10 mA
Input Capacitance	C_{iss}		6		pF	V_{DS} = −3.0 V, V_{GS} = 0 f = 1.0 MHz
Output Capacitance	C_{oss}		9		pF	
Reverse Transfer Capacitance	C_{rss}		1.6		pF	
Turn-On Delay Time	$t_{d(on)}$		32		ns	V_{DD} = −3.0 V, I_D = −20 mA $V_{GS(on)}$ = −3.0 V, R_G = 10 Ω R_L = 200 Ω
Rise Time	t_r		270		ns	
Turn-Off Delay Time	$t_{d(off)}$		45		ns	
Fall Time	t_f		130		ns	

TYPICAL CHARACTERISTICS (T_A = 25 °C)

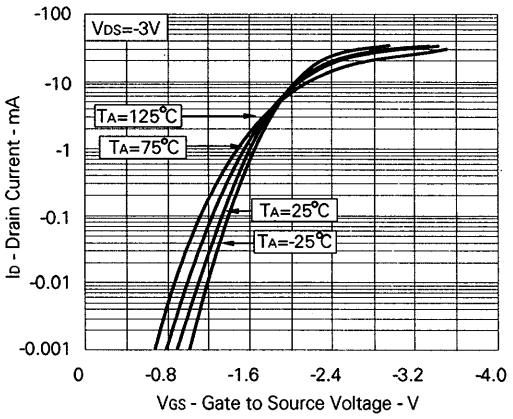
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



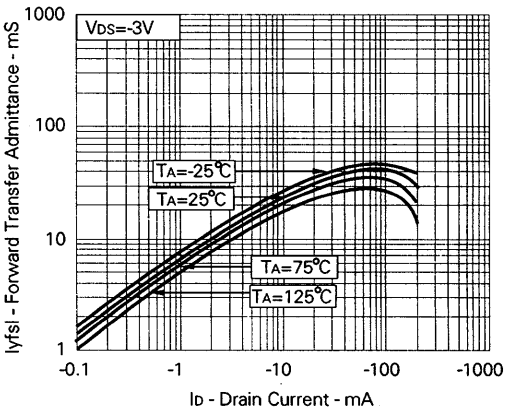
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



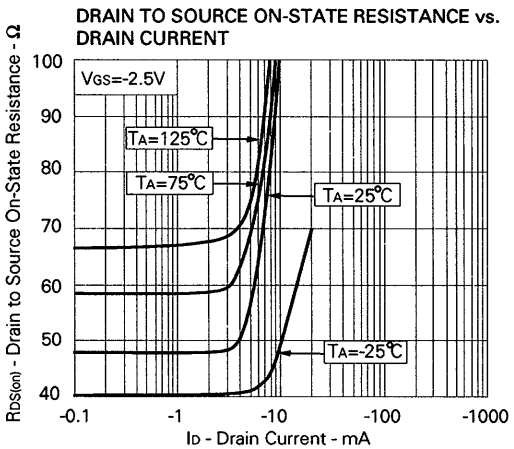
TRANSFER CHARACTERISTICS



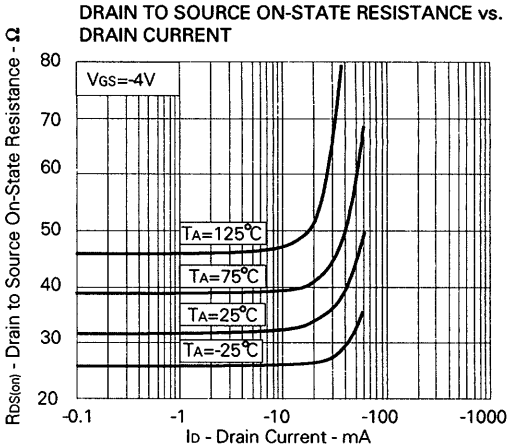
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



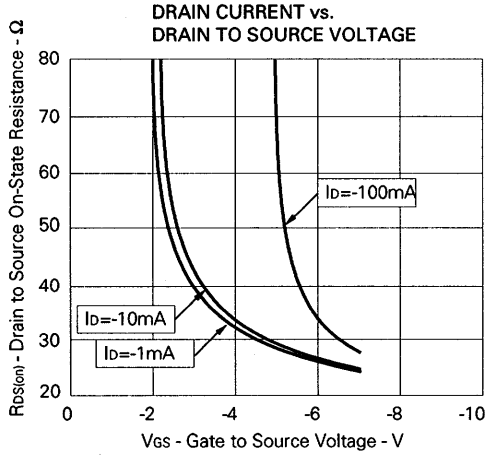
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



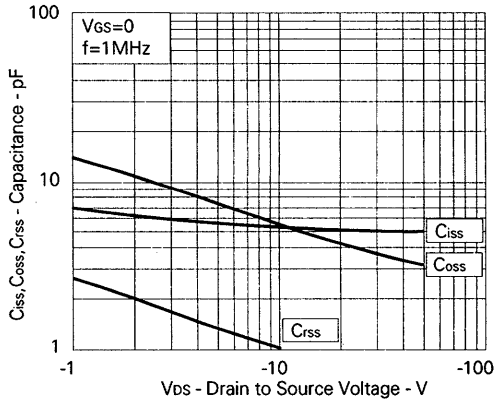
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



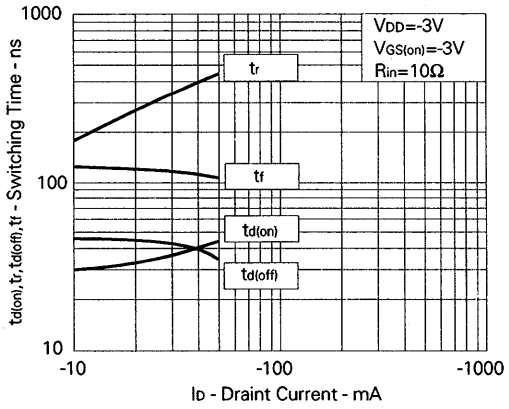
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



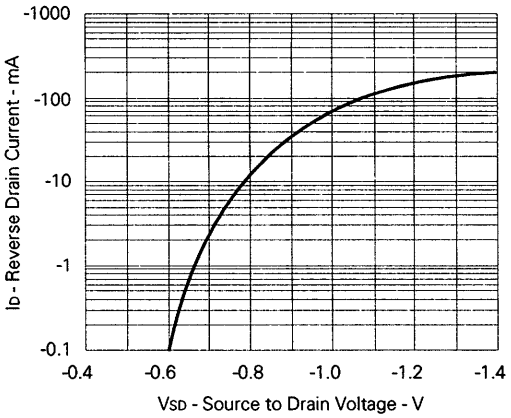
CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE
FORWARD VOLTAGE



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535EJ7V0IF00
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679EJAV0SG00

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