

# 2SJ122

## SILICON P-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING,  
HIGH FREQUENCY POWER AMPLIFIER  
Complementary pair with 2SK428

### FEATURES

- Low On-Resistance.
- High Speed Switching.
- High Cutoff Frequency.
- No Secondary Breakdown.
- Suitable for Switching Regulator, DC-DC Converter, PWM Amplifiers, and Ultrasonic Power Oscillators.

### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

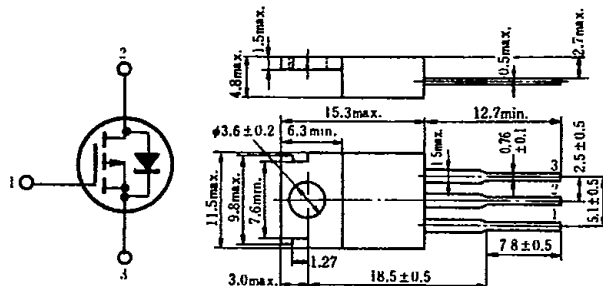
Item	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	$I_D$	-10	A
Drain Peak Current	$I_{Dpeak}$	-15	A
Body-Drain Diode Reverse Drain Current	$I_{DR}$	-10	A
Channel Dissipation	$P_{ch}^*$	50	W
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ +150	$^\circ\text{C}$

\*Value at  $T_c=25^\circ\text{C}$

### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-10\text{mA}$ , $V_{GS}=0$	-60	—	—	V
Gate-Source Leak Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0$	—	—	$\pm 1$	$\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-50\text{V}$ , $V_{GS}=0$	—	—	-1	mA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D=-1\text{mA}$ , $V_{DS}=-10\text{V}$	-2.0	—	-5.0	V
Static Drain-Source On State Resistance	$R_{DS(on)}$	$I_D=-5\text{A}$ , $V_{GS}=-15\text{V}^*$	—	0.15	0.2	$\Omega$
Drain-Source Saturation Voltage	$V_{DS(on)}$	$I_D=-5\text{A}$ , $V_{GS}=-15\text{V}^*$	—	-0.75	-1.0	V
Forward Transfer Admittance	$ y_f $	$I_D=-5\text{A}$ , $V_{DS}=-10\text{V}^*$	1.5	2.2	—	S
Input Capacitance	$C_{iss}$	$V_{DS}=-10\text{V}$ , $V_{GS}=0$ $f=1\text{MHz}$	—	1200	—	pF
Output Capacitance	$C_{oss}$		—	1050	—	pF
Reverse Transfer Capacitance	$C_{rss}$		—	170	—	pF
Turn-on Time	$t_{d(on)}$	$I_D=-2\text{A}$ , $V_{GS}=-15\text{V}$ $R_L=15\Omega$	—	20	—	ns
Rise Time	$t_r$		—	60	—	ns
Turn-off Delay Time	$t_{d(off)}$		—	100	—	ns
Fall Time	$t_f$		—	100	—	ns
Body-Drain Diode Forward Voltage	$V_{DF}$	$I_F=-5\text{A}$ , $V_{GS}=0$	—	-0.9	—	V
Body-Drain Diode Reverse Recovery Time	$t_{rr}$	$I_F=-5\text{A}$ , $V_{GS}=0$ $di_F/dt=50\text{A}/\mu\text{s}$	—	200	—	ns

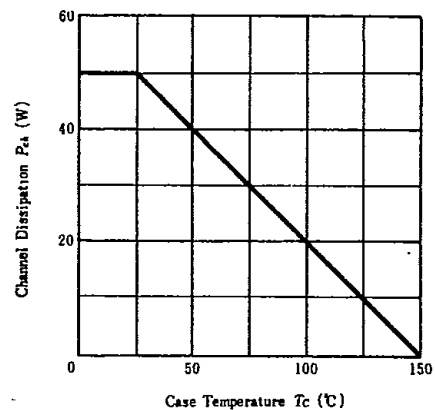
\*Pulse Test



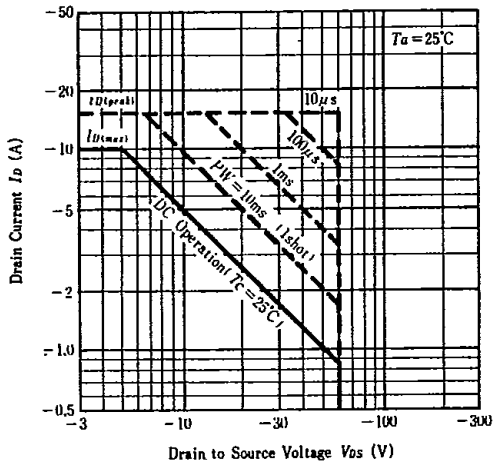
1. Gate  
2. Drain  
(Flange)  
3. Source  
(Dimensions in mm)

(JEDEC TO-220AB)

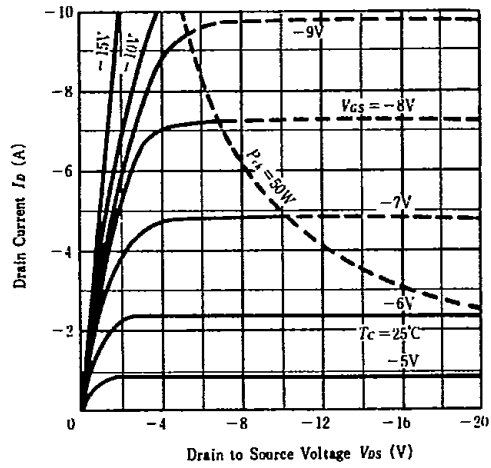
### POWER VS. TEMPERATURE DERATING



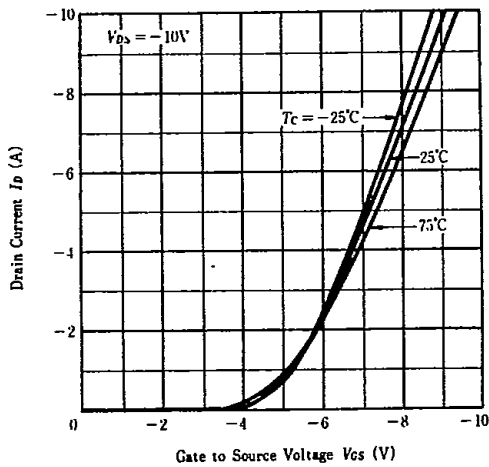
MAXIMUM SAFE OPERATION AREA



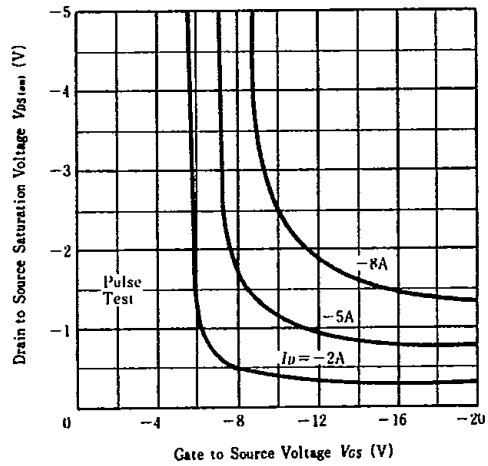
TYPICAL OUTPUT CHARACTERISTICS



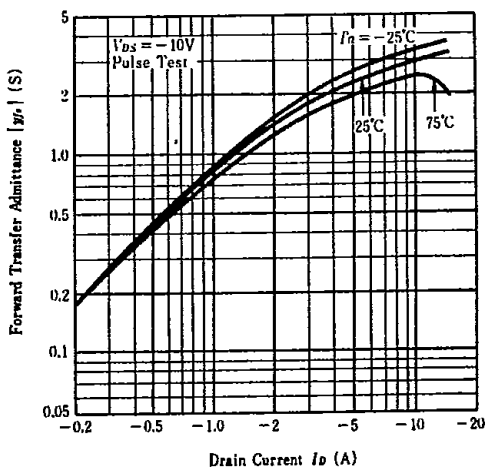
TYPICAL TRANSFER CHARACTERISTICS



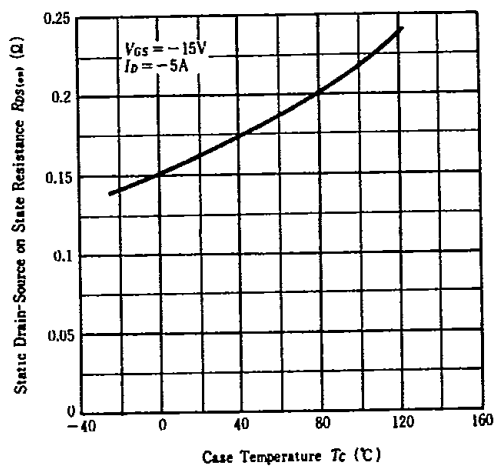
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



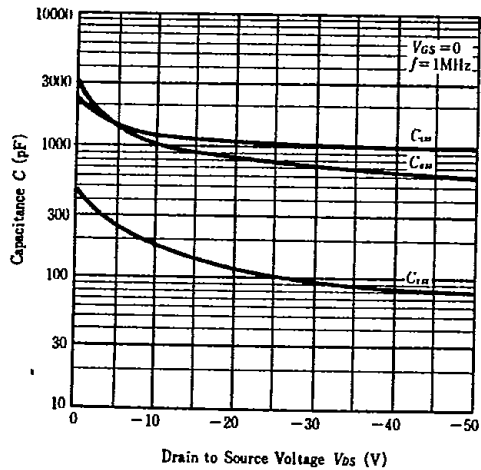
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



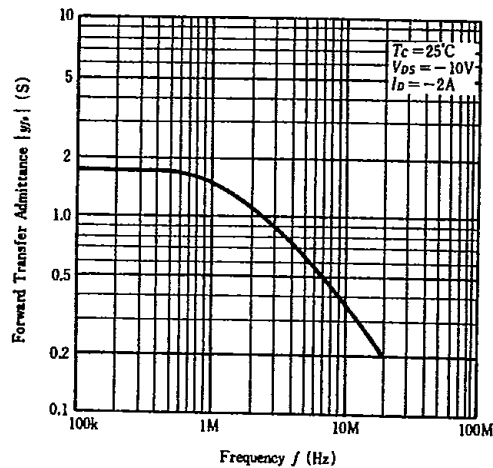
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



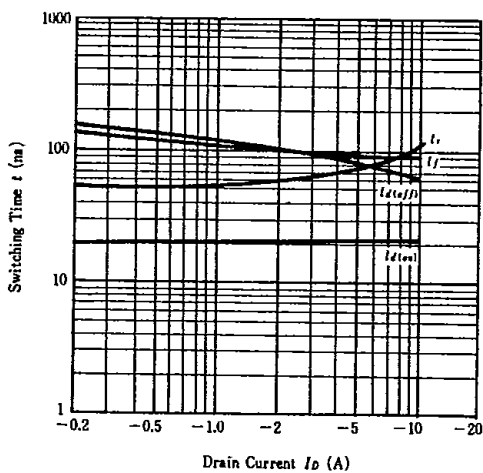
**TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE**



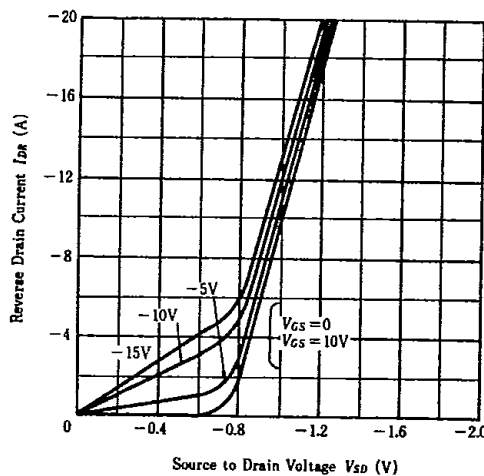
**FORWARD TRANSFER ADMITTANCE VS. FREQUENCY**



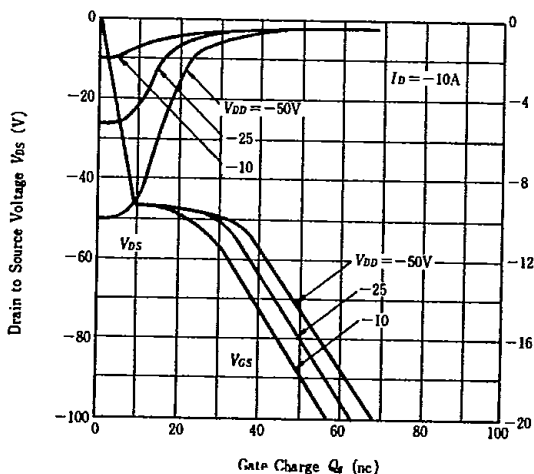
**SWITCHING CHARACTERISTICS**



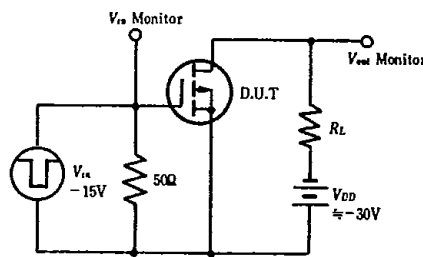
**MAXIMUM BODY-DRAIN DIODE FORWARD VOLTAGE**



**DYNAMIC INPUT CHARACTERISTICS**



**SWITCHING TIME TEST CIRCUIT**



**WAVEFORMS**

