

# 2SJ101, 2SJ102

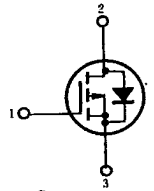
## SILICON P-CHANNEL MOS FET

### HIGH SPEED POWER SWITCHING, HIGH FREQUENCY POWER AMPLIFIER

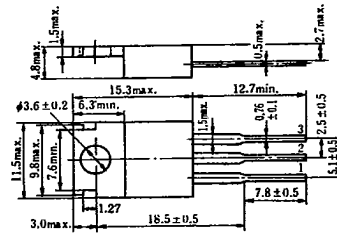
Complementary pair with 2SK345, 2SK346

#### ■ Features

- Low On-Resistance.
- High Speed Switching.
- No Secondary Breakdown.
- Good Complementary Characteristics.
- Suitable for PWM Amplifier, Switching Regulator, and DC-DC Converter.



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

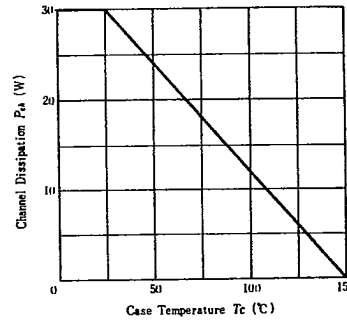


#### ■ ABSOLUTE MAXIMUM RATINGS ( $T_c=25^\circ\text{C}$ )

Item	Symbol	Rating		Unit
		2SJ101	2SJ102	
Drain-Source Voltage	$V_{DS}$	-40	-60	V
Gate-Source Voltage	$V_{GS}$	±20		V
Drain Current	$I_D$	-5		A
Drain Peak Current	$I_{D(pk)}$	-10		A
Body-Drain Diode Reverse Drain Current	$I_{DR}$	-5		A
Channel Dissipation	$P_{ch}^*$	30		W
Channel Temperature	$T_{ch}$	150		$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ +150		$^\circ\text{C}$

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

#### POWER VS. TEMPERATURE DERATING



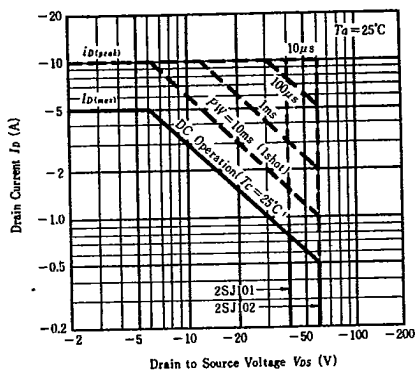
#### ■ ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ\text{C}$ )

Item	Symbol	Test Condition	min.	typ.	max.	Unit	
Drain-Source Breakdown Voltage	2SJ101 2SJ102	$V_{(BR)DS}$	$I_D=-10\text{mA}, V_{GS}=0$	-40	—	—	V
				-60	—	—	V
Gate-Source Leak Current	$I_{GSS}$	$V_{GS}=\pm 20\text{V}, V_{DS}=0$	—	—	±1	$\mu\text{A}$	
Zero Gate Voltage Drain Current	2SJ101 2SJ102	$I_{DSS}$	$V_{DS}=-30\text{V}, V_{GS}=0$	—	—	-1	mA
				$V_{DS}=-50\text{V}, V_{GS}=0$	—	—	—
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	$R_{D(on)}$	$I_D=-3\text{A}, V_{GS}=-15\text{V}^*$	—	0.3	0.4	$\Omega$	
Drain-Source Saturation Voltage	$V_{DS(on)}$	$I_D=-3\text{A}, V_{GS}=-15\text{V}^*$	—	-0.9	-1.2	V	
Forward Transfer Admittance	$ y_f $	$I_D=-3\text{A}, V_{DS}=-10\text{V}^*$	0.5	1.0	—	S	
Input Capacitance	$C_{in}$	$V_{DS}=-10\text{V}, V_{GS}=0, f=1\text{MHz}$	—	660	—	pF	
Output Capacitance	$C_{out}$		—	550	—	pF	
Reverse Transfer Capacitance	$C_{rs}$		—	140	—	pF	
Turn-on Time	$t_{don}$		—	15	—	ns	
Rise Time	$t_r$	$I_D=-2\text{A}, V_{GS}=-15\text{V}$ $R_L=15\Omega$	—	45	—	ns	
Turn-off Time	$t_{doff}$		—	45	—	ns	
Fall Time	$t_f$		—	55	—	ns	
Body-Drain Diode Forward Voltage	$V_{DF}$	$I_F=-3\text{A}, V_{GS}=0$	—	-0.9	—	V	
Body-Drain Diode Reverse Recovery Time	$t_n$	$I_F=-3\text{A}, V_{GS}=0$ $di_f/dt=50\text{A}/\mu\text{s}$	—	140	—	ns	

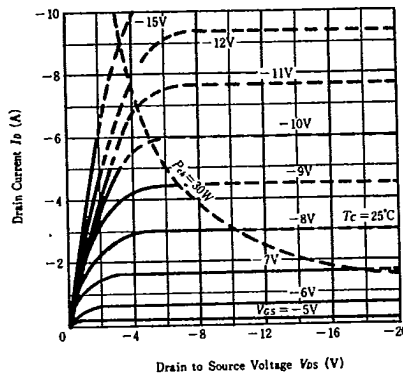
\*Pulse Test

2SJ101, 2SJ102

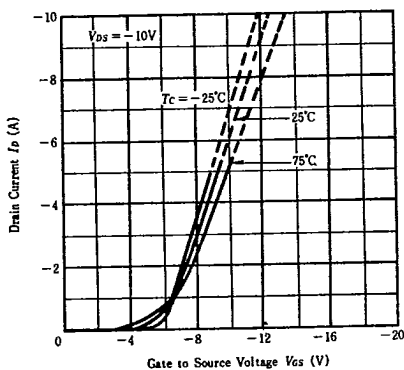
MAXIMUM SAFE OPERATION AREA



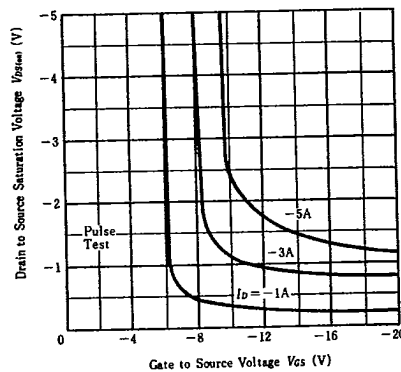
TYPICAL OUTPUT CHARACTERISTICS



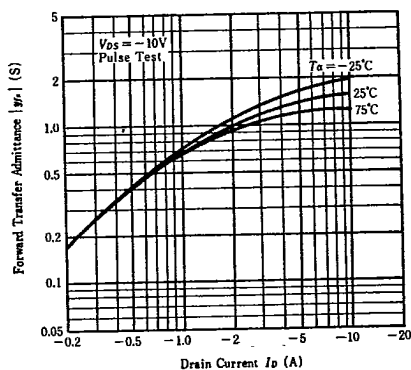
TYPICAL TRANSFER CHARACTERISTICS



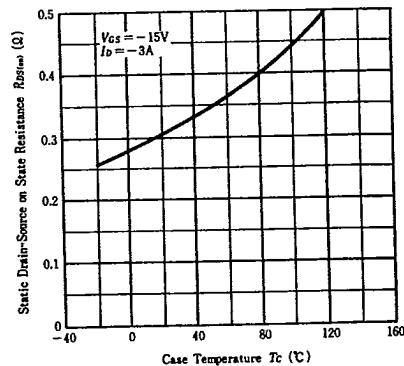
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



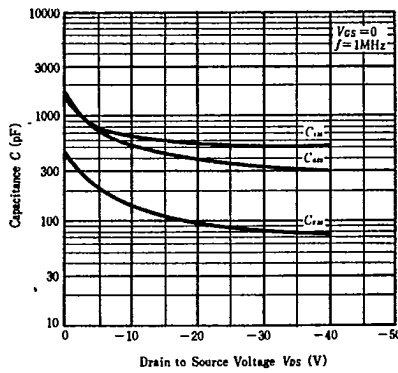
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



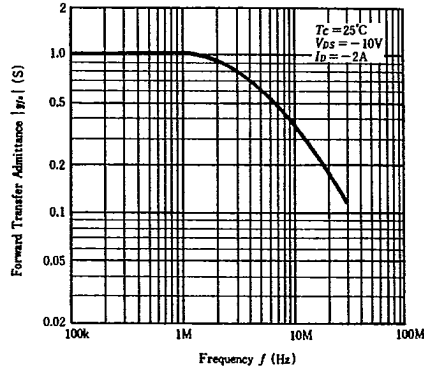
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



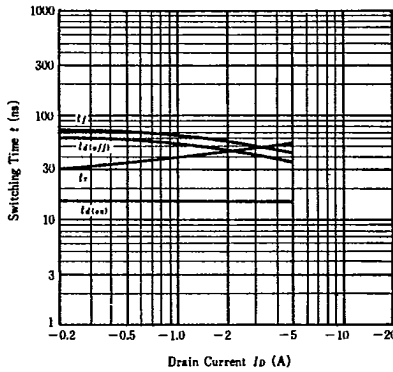
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



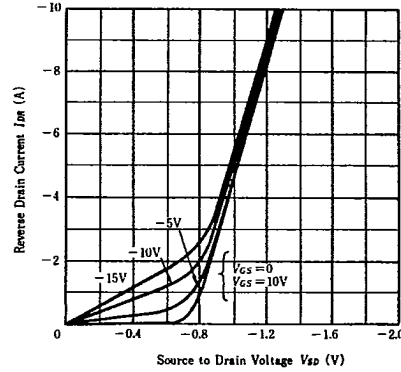
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



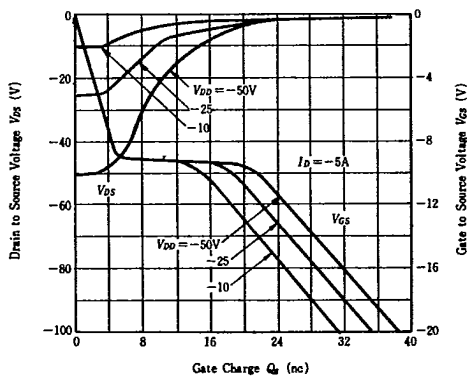
SWITCHING CHARACTERISTICS



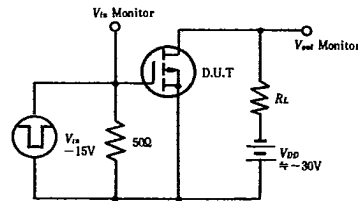
MAXIMUM BODY-DRAIN DIODE FORWARD VOLTAGE



DYNAMIC INPUT CHARACTERISTICS



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

