

# 2SJ48, 2SJ49, 2SJ50

T-39-23

## SILICON P-CHANNEL MOS FET

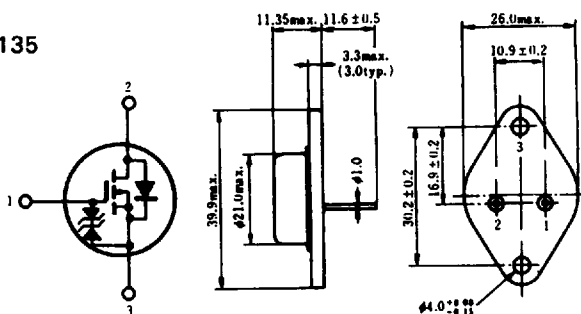
HITACHI/(OPTOELECTRONICS)

### LOW FREQUENCY POWER AMPLIFIER

Complementary Pair with 2SK133, 2SK134, 2SK135

#### ■ FEATURES

- High Power Gain.
- Excellent Frequency Response.
- High Speed Switching.
- Wide Area of Safe Operation.
- Enhancement-Mode.
- Good Complementary Characteristics.
- Equipped with Gate Protection Diodes.



1. Gate  
2. Drain  
3. Source  
(Case)

(JEDEC TO-3)

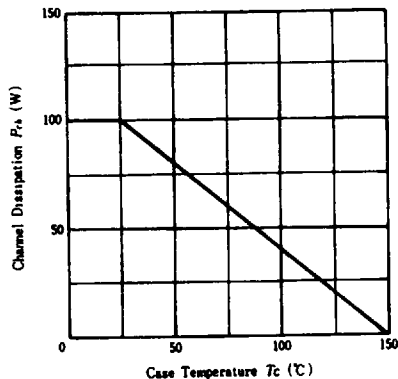
(Dimensions in mm)

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

Item	Symbol	Rating			Unit
		2SJ48	2SJ49	2SJ50	
Drain-Source Voltage	$V_{DS}$	-120	-140	-160	V
Gate-Source Voltage	$V_{GS}$	±14			V
Drain Current	$I_D$	-7			A
Body-Drain Diode Reverse Drain Current	$I_{DR}$	-7			A
Channel Dissipation	$P_{ch}$ *	100			W
Channel Temperature	$T_{ch}$	150			°C
Storage Temperature	$T_{stg}$	-55 ~ +150			°C

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

#### POWER VS. TEMPERATURE DERATING

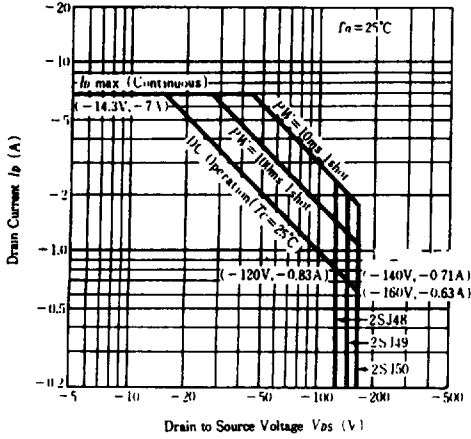


#### ■ ELECTRICAL CHARACTERISTICS ( $T_c=25^\circ\text{C}$ )

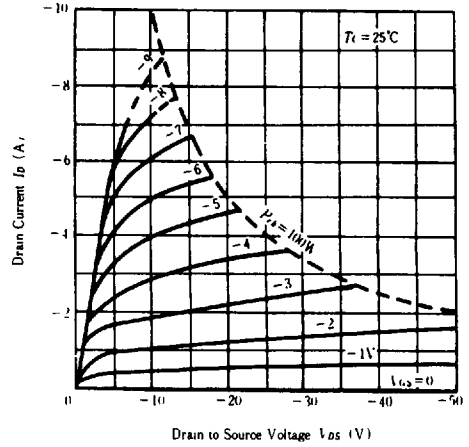
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D=-10\text{mA}, V_{GS}=10\text{V}$	-120	—	—	V
			-140	—	—	V
			-160	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GS}$	$I_G=\pm 100\mu\text{A}, V_{DS}=0$	±14	—	—	V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D=-100\text{mA}, V_{DS}=-10\text{V}$	-0.15	—	-1.45	V
Drain-Source Saturation Voltage	$V_{DS(sat)}$	$I_D=-7\text{A}, V_{GS}=0^*$	—	—	-12	V
Forward Transfer Admittance	$ y_f $	$I_D=-3\text{A}, V_{DS}=-10\text{V}^*$	0.7	1.0	1.4	S
Input Capacitance	$C_{iss}$	$V_{GS}=5\text{V}, V_{DS}=-10\text{V}, f=1\text{MHz}$	—	900	—	pF
Output Capacitance	$C_{oss}$		—	400	—	pF
Reverse Transfer Capacitance	$C_{rss}$		—	40	—	pF
Turn-on Time	$t_{on}$	$V_{DS}=-20\text{V}, I_D=-4\text{A}$	—	230	—	ns
Turn-off Time	$t_{off}$		—	110	—	ns

\*Pulse Test

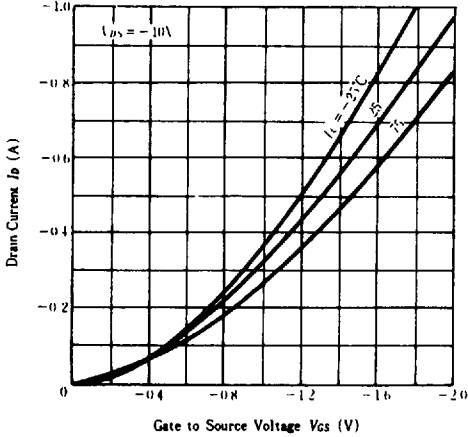
**MAXIMUM SAFE OPERATION AREA**



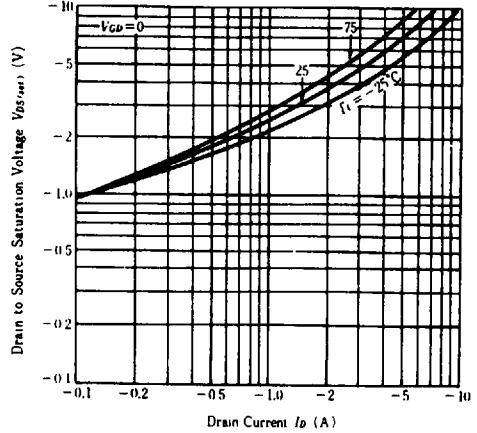
**TYPICAL OUTPUT CHARACTERISTICS**



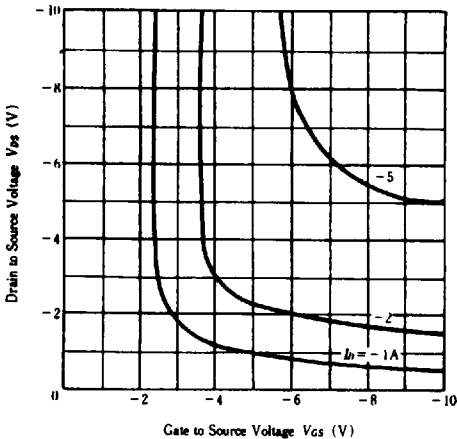
**TYPICAL TRANSFER CHARACTERISTICS**



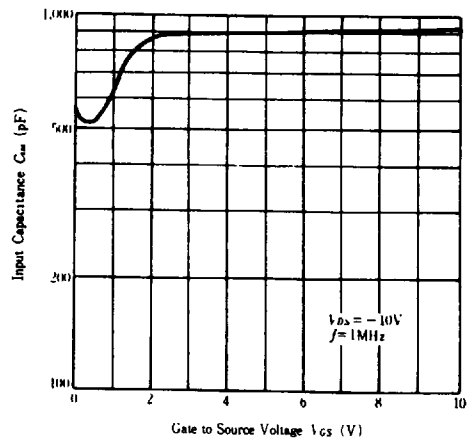
**DRAIN TO SOURCE SATURATION VOLTAGE VS. DRAIN CURRENT**



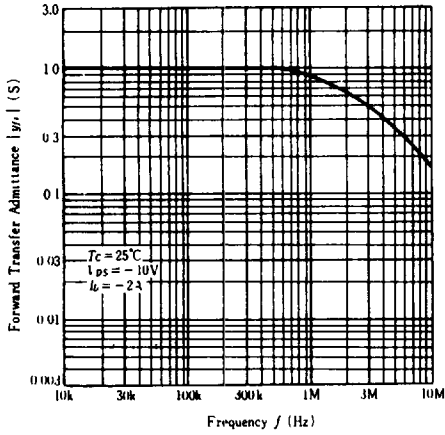
**DRAIN TO SOURCE VOLTAGE VS. GATE TO SOURCE VOLTAGE**



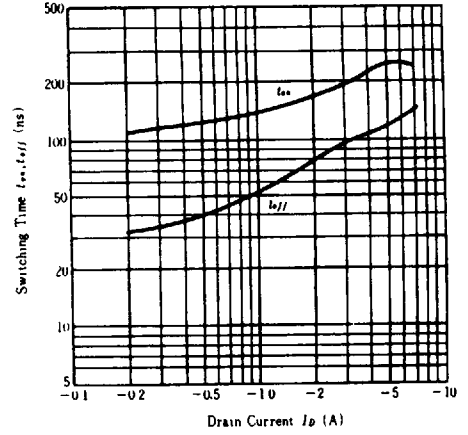
**INPUT CAPACITANCE VS. GATE TO SOURCE VOLTAGE**



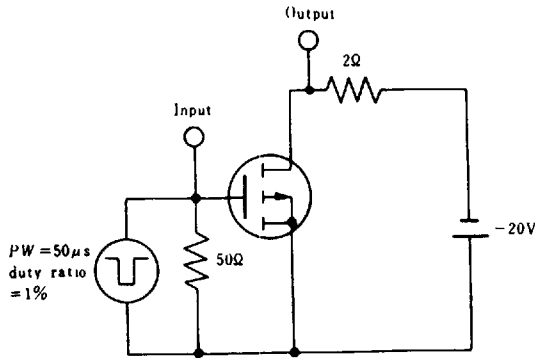
**FORWARD TRANSFER ADMITTANCE  
VS. FREQUENCY**



**SWITCHING TIME  
VS. DRAIN CURRENT**



**SWITCHING TIME TEST CIRCUIT**



**WAVEFORMS**

