

# 2SK175, 2SK176

SILICON N-CHANNEL MOS FET

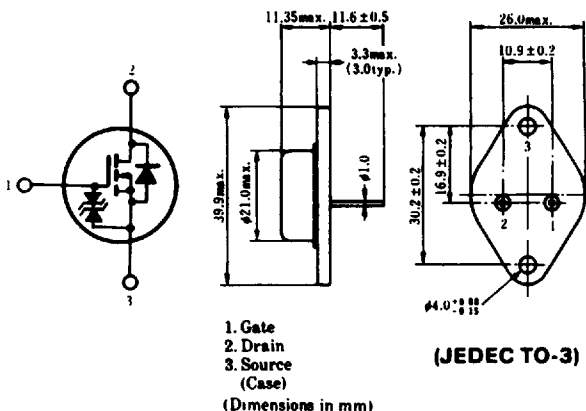
HITACHI/(OPTOELECTRONICS)

## LOW FREQUENCY POWER AMPLIFIER

Complementary pair with 2SJ55, 2SJ56

### ■ 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.

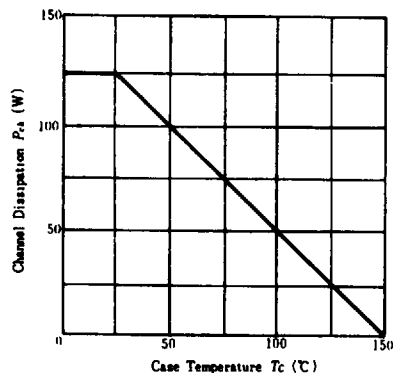


### ■ ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

Item	Symbol	Rating		Unit
		2SK175	2SK176	
Drain-Source Voltage	$V_{DSX}$	180	200	V
Gate-Source Voltage	$V_{GSS}$	±20		V
Drain Current	$I_D$	8		A
Body-Drain Diode Reverse Drain Current	$I_{DR}$	8		A
Channel Dissipation	$P_{ch}^*$	125		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

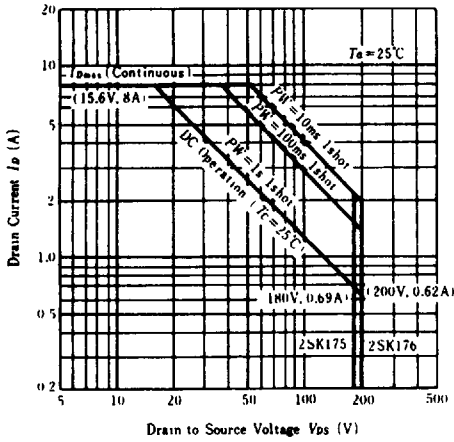


### ■ ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

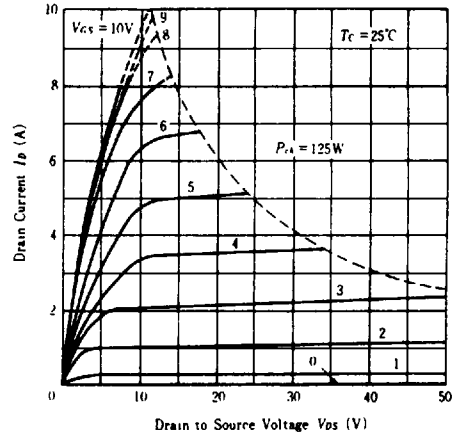
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSX}$	$I_D=10\text{mA}, V_{GS}=-10\text{V}$	180	—	—	V
			200	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G=\pm 100\mu\text{A}, V_{DS}=0$	±20	—	—	V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D=100\text{mA}, V_{DS}=10\text{V}$	0.15	—	1.45	V
Drain-Source Saturation Voltage	$V_{DS(sat)}$	$I_D=8\text{A}, V_{GS}=0^*$	—	—	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	$C_{iss}$	$V_{GS}=-5\text{V}, V_{DS}=10\text{V}, f=1\text{MHz}$	—	700	—	pF
Output Capacitance	$C_{oss}$		—	400	—	pF
Reverse Transfer Capacitance	$C_{ris}$		—	8	—	pF
Turn-on Time	$t_{on}$	$V_{DD}=30\text{V}, I_D=4\text{A}$	—	250	—	ns
Turn-off Time	$t_{off}$		—	90	—	ns

\*Pulse Test

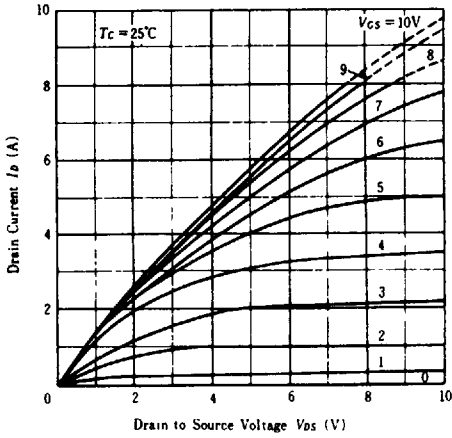
**MAXIMUM SAFE OPERATION AREA**



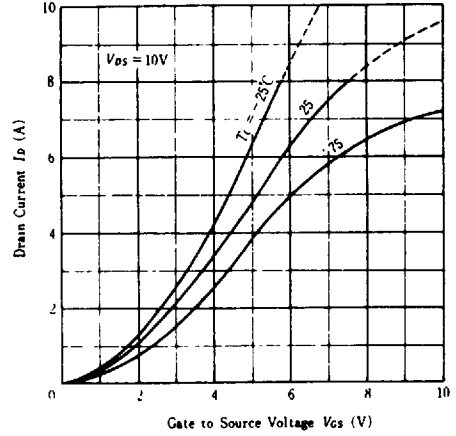
**TYPICAL OUTPUT CHARACTERISTICS**



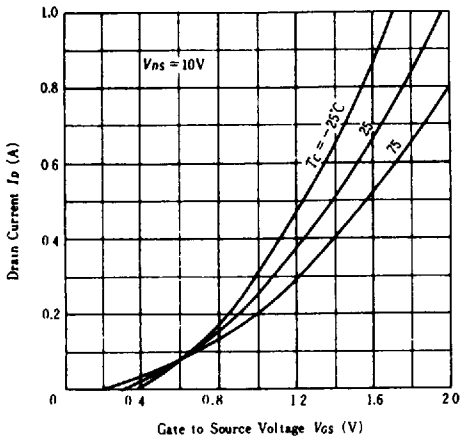
**TYPICAL OUTPUT CHARACTERISTICS**



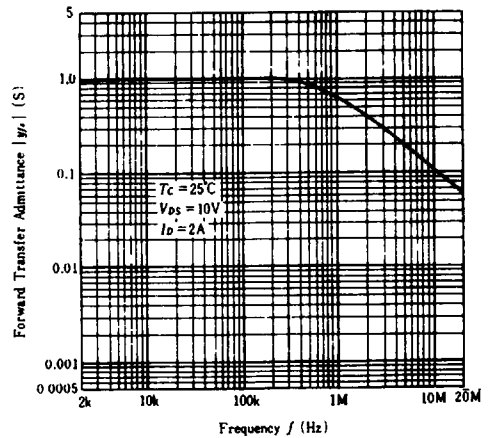
**TYPICAL TRANSFER CHARACTERISTICS**



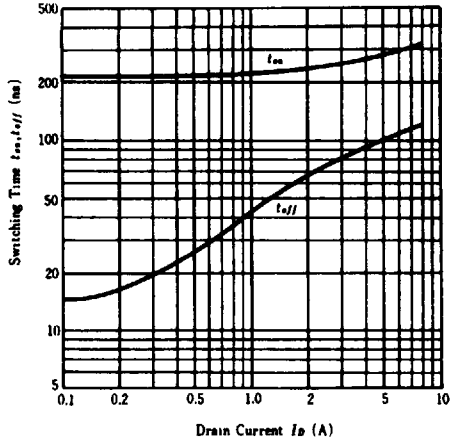
**TYPICAL TRANSFER CHARACTERISTICS**



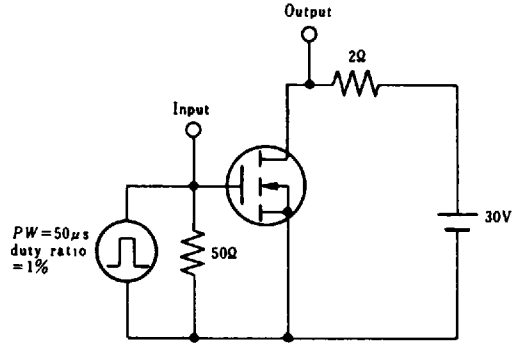
**FORWARD TRANSFER ADMITTANCE VS. FREQUENCY**



**SWITCHING TIME VS. DRAIN CURRENT**



**SWITCHING TIME TEST CIRCUIT**



**WAVEFORMS**

