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2SK220(H), 2SK221(H)

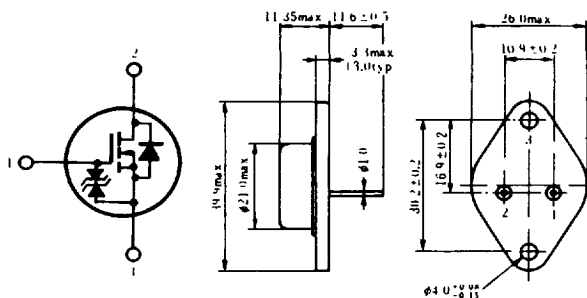
SILICON N-CHANNEL MOS FET

HITACHI/(OPTOELECTRONICS)

**HIGH SPEED POWER SWITCHING,
HIGH FREQUENCY POWER AMPLIFIER**

■ FEATURES

- High Speed Switching.
- High Cutoff Frequency.
- Enhancement-Mode.
- Suitable for Switching Regulator, DC-DC Converter, RF Amplifiers, and Ultrasonic Power Oscillators.



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

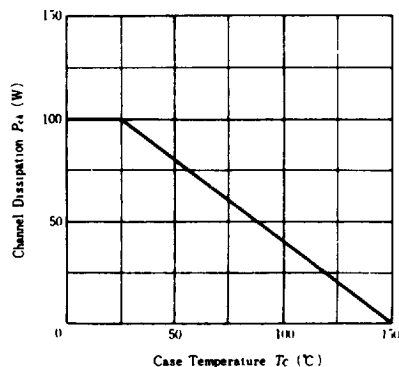
(JEDEC TO-3)

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

Item	Symbol	Rating		Unit
		2SK220②	2SK221②	
Drain-Source Voltage	V_{DS}	160	200	V
Gate-Source Voltage	V_{GS}	± 20		V
Drain Current	I_D	8		A
Body-Drain Diode Reverse Drain Current	I_{DR}	8		A
Channel Dissipation	P_{ch}^*	100		W
Channel Temperature	T_{ch}	150		$^\circ\text{C}$
Storage Temperature	T_{stg}	$-65 \sim +150$		$^\circ\text{C}$

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

POWER VS. TEMPERATURE DERATING

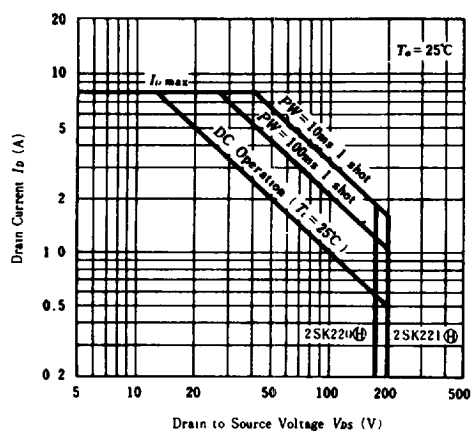


■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

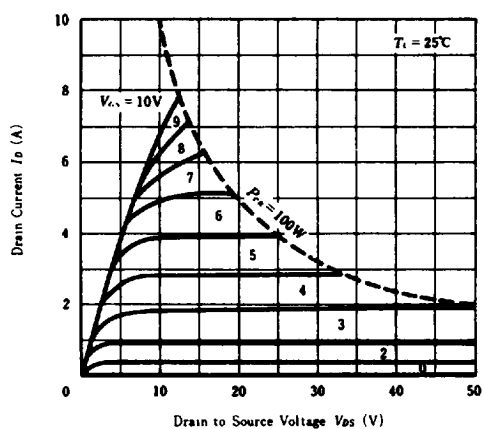
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}, V_{GS}=0$	160	—	—	V
			200	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G=\pm 100\mu\text{A}, V_{DS}=0$	± 20	—	—	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=120\text{V}, V_{GS}=0$	—	—	1.0	mA
		$V_{DS}=160\text{V}, V_{GS}=0$	—	—	—	—
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D=100\text{mA}, V_{DS}=10\text{V}$	0.4	—	3.0	V
Static Drain-Source On State Resistance	$R_{DS(on)}$	$I_D=4\text{A}, V_{GS}=15\text{V}^*$	—	1.0	1.5	Ω
Drain-Source Saturation Voltage	$V_{DS(on)}$	$I_D=4\text{A}, V_{GS}=15\text{V}^*$	—	—	6.0	V
Forward Transfer Admittance	$ y_{fs} $	$I_D=3\text{A}, V_{DS}=10\text{V}^*$	0.6	0.9	—	S
Input Capacitance	C_{iss}	$V_{GS}=-5\text{V}, V_{DS}=10\text{V}, f=1\text{MHz}$	—	600	—	pF
Output Capacitance	C_{oss}		—	300	—	pF
Turn-on Time	t_{on}	$I_D=2\text{A}, V_{GS}=15\text{V}$	—	25	—	ns
Turn-off Time	t_{off}		—	45	—	ns

*Pulse Test

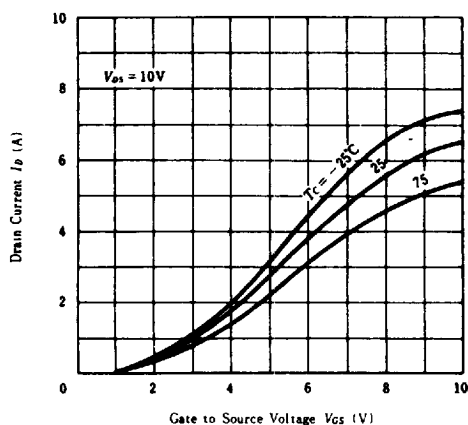
MAXIMUM SAFE OPERATION AREA



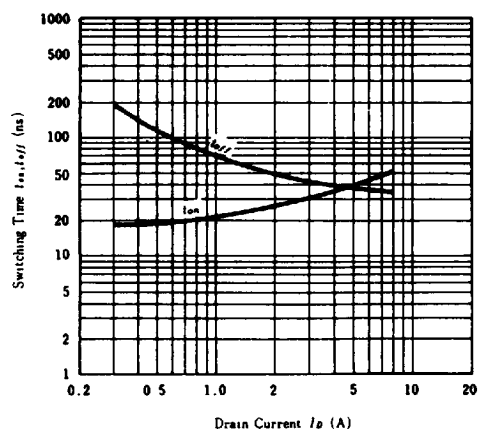
TYPICAL OUTPUT CHARACTERISTICS



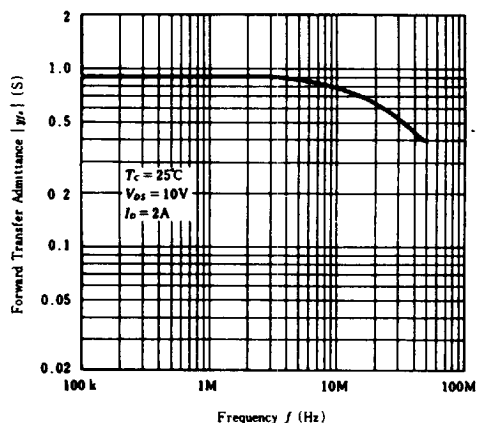
TYPICAL TRANSFER CHARACTERISTICS



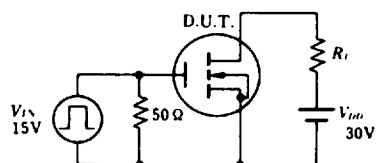
SWITCHING TIME VS. DRAIN CURRENT



FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

