2SK220Ⓗ, 2SK221Ⓗ

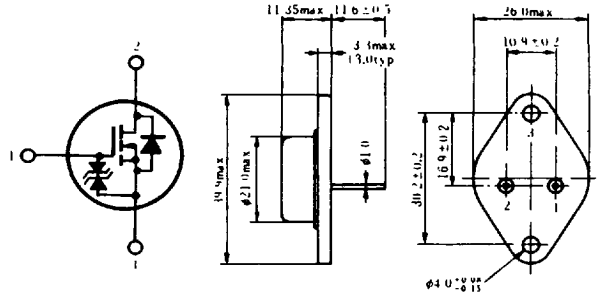
SILICON N-CHANNEL MOS FET

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)

(Dimensions in mm)

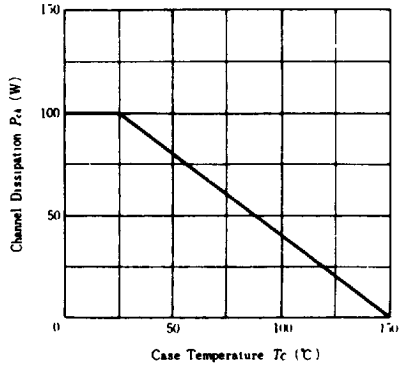
(JEDEC TO-3)

■ ABSOLUTE MAXIMUM RATINGS (T_a=25 °C)

Item	Symbol	Rating		Unit
		2SK220Ⓗ	2SK221Ⓗ	
Drain-Source Voltage	V_{DSS}	160	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}*	100		W
Channel Temperature	T_{ch}	150		°C
Storage Temperature	T_{stg}	−65 ~ +150		°C

*Value at T_c=25 °C

POWER VS. TEMPERATURE DERATING

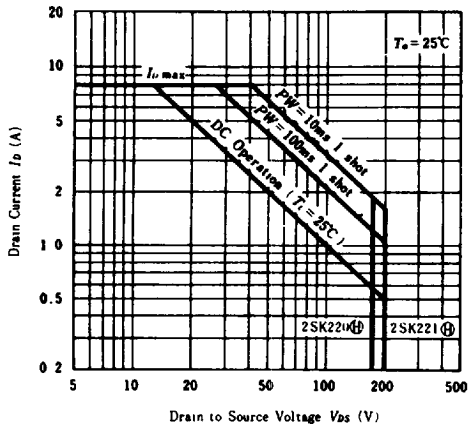


■ ELECTRICAL CHARACTERISTICS (T_a=25 °C)

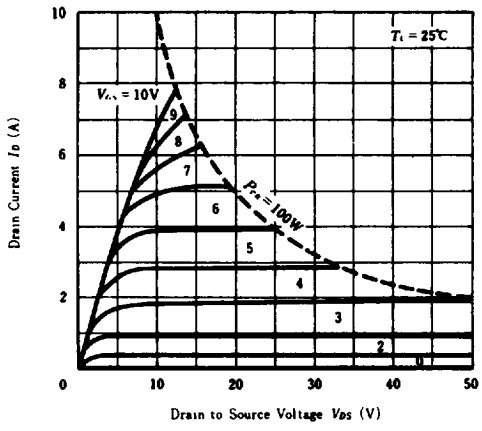
Item		Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	2SK220Ⓗ	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0	160	—	—	V
	2SK221Ⓗ			200	—	—	V
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	I_G=±100μA, V_{DS}=0	±20	—	—	V
Zero Gate Voltage Drain Current	2SK220Ⓗ	I_{DSS}	V_{DS}=120V, V_{GS}=0	—	—	1.0	mA
	2SK221Ⓗ		V_{DS}=160V V_{GS}=0				
Gate-Source Cutoff Voltage		$V_{GS(off)}$	I_D=100mA, V_{DS}=10V	0.4	—	3.0	V
Static Drain-Source On State Resistance		$R_{DS(on)}$	I_D=4A, V_{GS}=15V*	—	1.0	1.5	Ω
Drain-Source Saturation Voltage		$V_{DS(on)}$	I_D=4A, V_{GS}=15V*	—	—	6.0	V
Forward Transfer Admittance		$\|y_{fs}\|$	I_D=3A, V_{DS}=10V*	0.6	0.9	—	S
Input Capacitance		C_{iss}	V_{GS}=−5V, V_{DS}=10V, f=1MHz	—	600	—	pF
Output Capacitance		C_{oss}		—	300	—	pF
Turn-on Time		t_{on}	I_D=2A, V_{GS}=15V	—	25	—	ns
Turn-off Time		t_{off}		—	45	—	ns

*Pulse Test

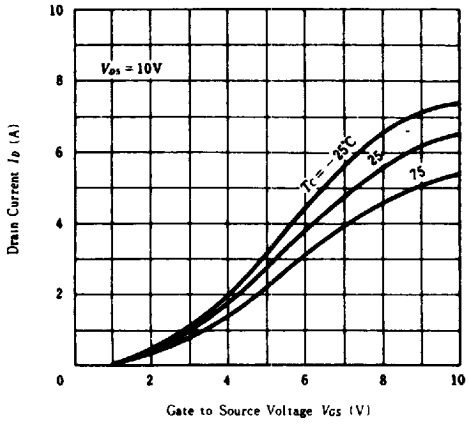
MAXIMUM SAFE OPERATION AREA



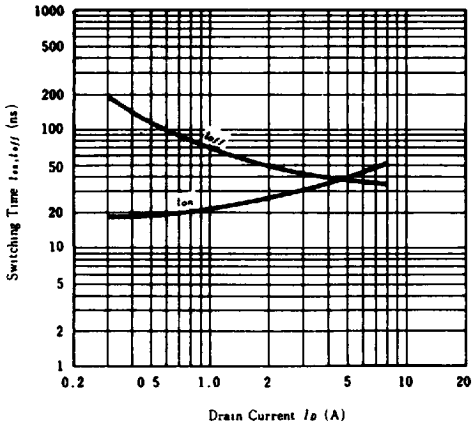
TYPICAL OUTPUT CHARACTERISTICS



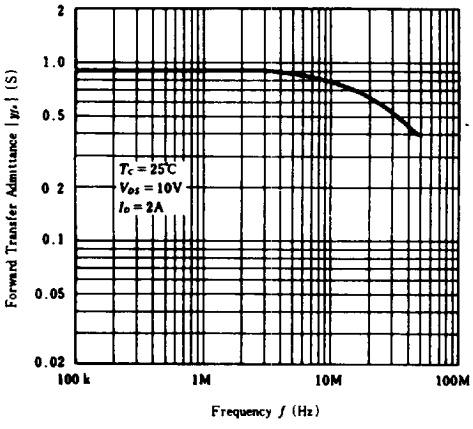
TYPICAL TRANSFER CHARACTERISTICS



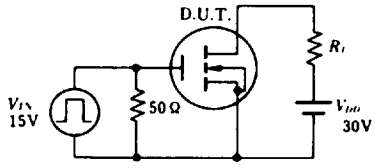
SWITCHING TIME VS. DRAIN CURRENT



FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



SWITCHING TIME TEST CIRCUIT



WAVEFORMS