

2SK554, 2SK555

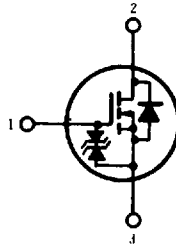
HITACHI/(OPTOELECTRONICS)

SILICON N-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING

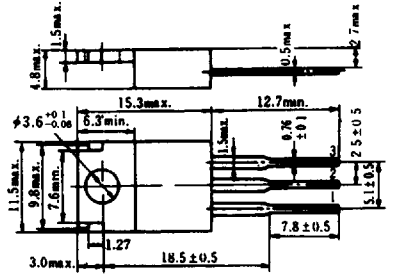
■ FEATURES

- Low On-Resistance.
- High Speed Switching.
- Low Drive Current.
- No Secondary Breakdown.
- Suitable for Switching Regulator, DC-DC Converter, Motor Controls, and Ultrasonic Power Oscillators.



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

(Dimensions in mm)



(JEDEC TO-220AB)

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

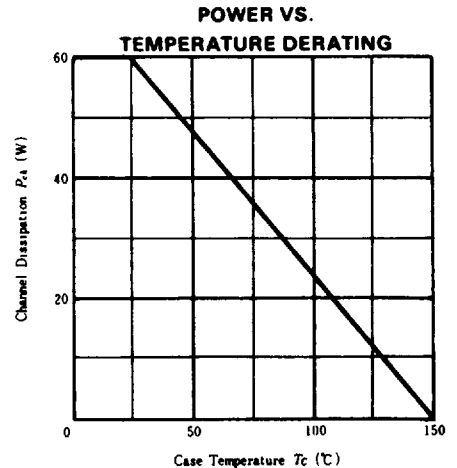
Item	Symbol	2SK554	2SK555	Unit
Drain-Source Voltage	V_{DS}	450	500	V
Gate-Source Voltage	V_{GS}	±20		V
Drain Current	I_D	7		A
Drain Peak Current	$I_{D(\text{pulse})}$ *	28		A
Body-Drain Diode Reverse Drain Current	I_{DR}	7		A
Channel Dissipation	P_{ch} *	60		W
Channel Temperature	T_{ch}	150		°C
Storage Temperature	T_{stg}	-55 ~ +150		°C

* $PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$
 **Value at $T_c=25^\circ\text{C}$

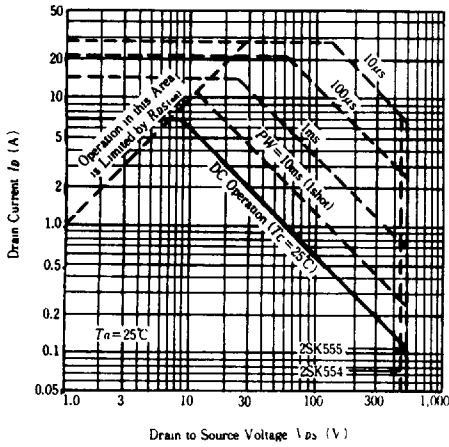
■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

Item	Symbol	Test Condition	Case Temperature T_c (°C)			Unit
			min.	typ.	max.	
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D=10\text{mA}$, $V_{GS}=0$	450	—	—	V
			500	—	—	
Gate-Source Breakdown Voltage	$V_{(BR)GS}$	$I_G=\pm 100\mu\text{A}$, $V_{DS}=0$	±20	—	—	V
Gate-Source Leak Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0$	—	—	±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=360\text{V}$, $V_{GS}=0$	—	—	250	μA
			—	—	—	
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D=1\text{mA}$, $V_{DS}=10\text{V}$	2.0	—	4.0	V
			—	—	—	
Static Drain-Source On State Resistance	$R_{DS(on)}$	$I_D=4\text{A}$, $V_{GS}=10\text{V}$ *	—	0.6	0.85	Ω
			—	0.7	1.0	
Forward Transfer Admittance	$ y_f $	$I_D=4\text{A}$, $V_{DS}=10\text{V}$ *	4.0	6.5	—	S
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$	—	1300	—	pF
Output Capacitance	C_{oss}		—	470	—	pF
Reverse Transfer Capacitance	C_{riss}		—	65	—	pF
Turn-on Delay Time	$t_{(on)}$	$I_D=4\text{A}$, $V_{GS}=10\text{V}$, $R_L=7.5\Omega$	—	15	—	ns
Rise Time	t_r		—	50	—	ns
Turn-off Delay Time	$t_{(off)}$		—	100	—	ns
Fall Time	t_f		—	55	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F=7\text{A}$, $V_{GS}=0$	—	1.0	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F=7\text{A}$, $V_{GS}=0$, $di_F/dt=100\text{A}/\mu\text{s}$	—	400	—	ns

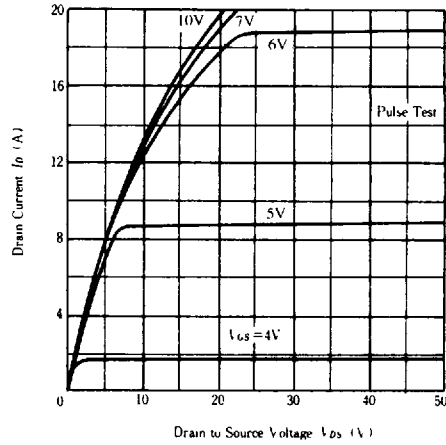
*Pulse Test



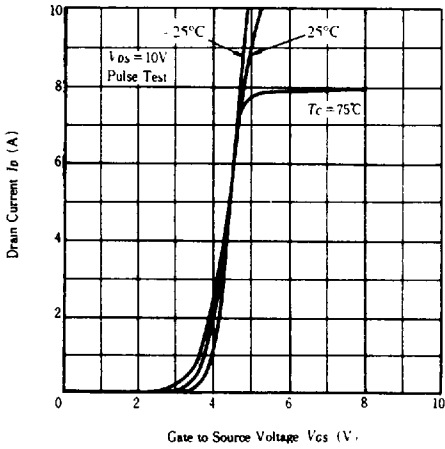
MAXIMUM SAFE OPERATION AREA



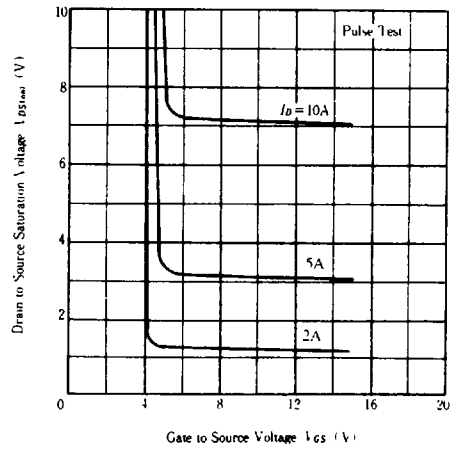
TYPICAL OUTPUT CHARACTERISTICS



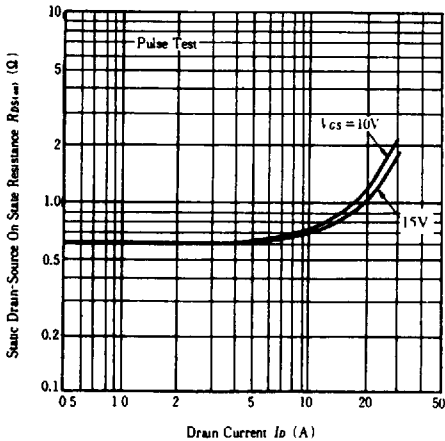
TYPICAL TRANSFER CHARACTERISTICS



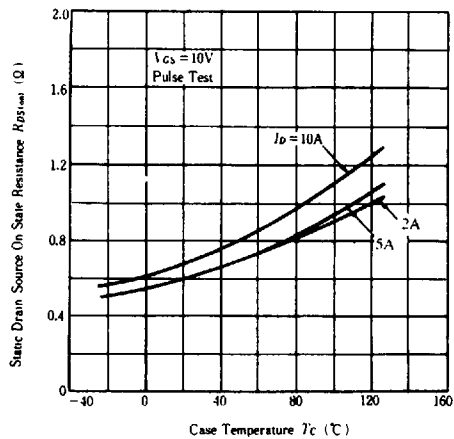
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



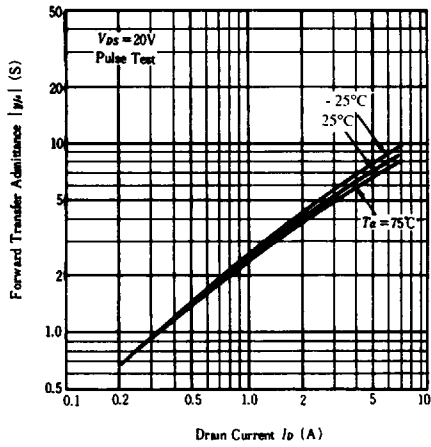
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



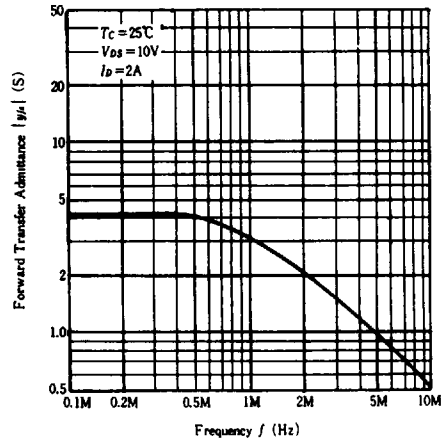
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



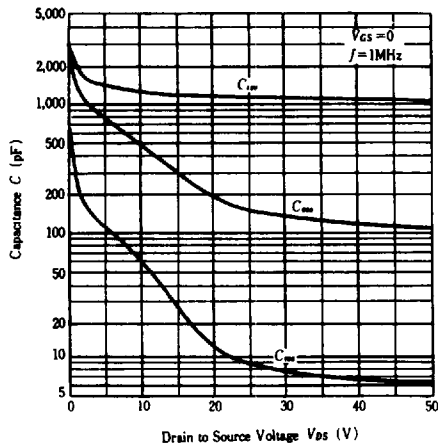
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



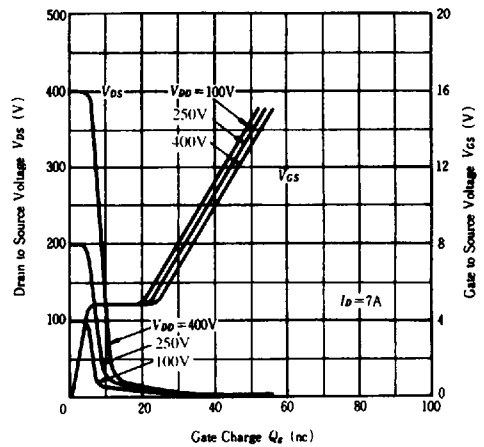
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



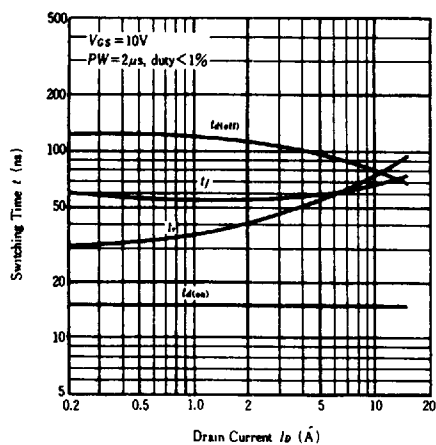
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



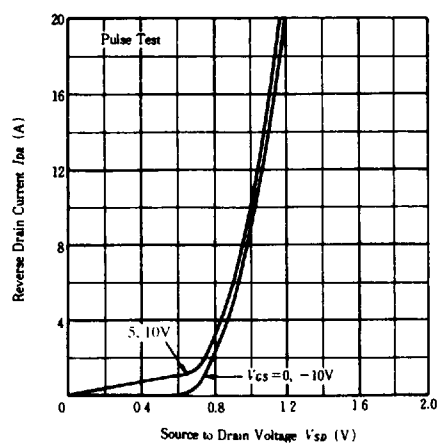
DYNAMIC INPUT CHARACTERISTICS



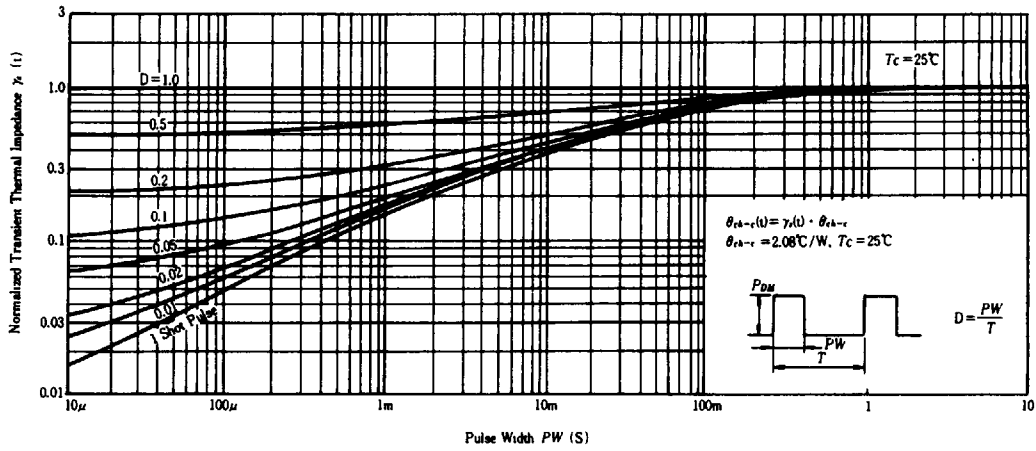
SWITCHING CHARACTERISTICS



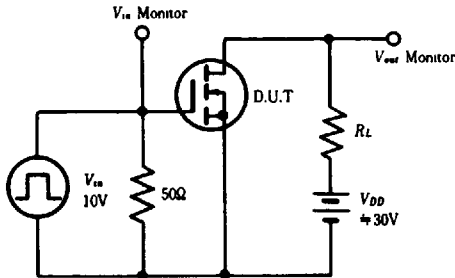
REVERSE DRAIN CURRENT VS. SOURCE - DRAIN VOLTAGE



NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

