2SK556,2SK557

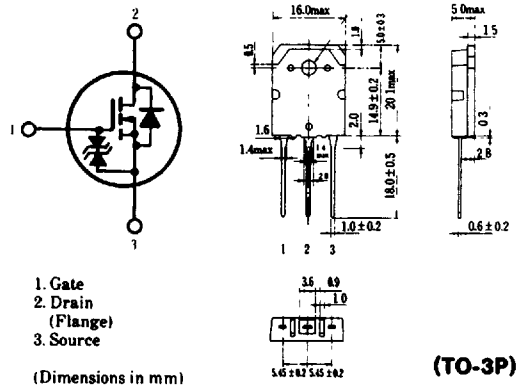
HITACHI/(OPTOELECTRONICS)

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.

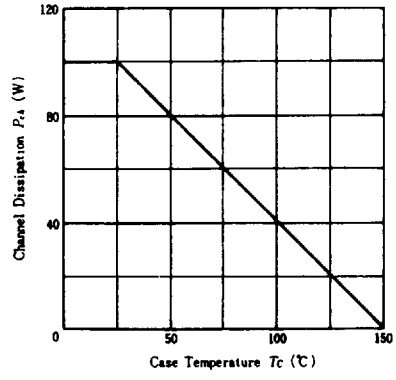


■ ABSOLUTE MAXIMUM RATINGS (T_a=25 °C)

Item	Symbol	2SK556	2SK557	Unit
Drain-Source Voltage	V_{DSS}	450	500	V
Gate-Source Voltage	V_{GSS}	±20		V
Drain Current	I_D	12		A
Drain Peak Current	$I_{D(pulse)}$*	48		A
Body-Drain Diode Reverse Drain Current	I_{DR}	12		A
Channel Dissipation	P_{ch}*	100		W
Channel Temperature	T_{ch}	150		°C
Storage Temperature	T_{stg}	−55 ~ +150		°C

*PW≤10μs, duty cycle≤1%
**Value at T_c=25 °C

POWER VS. TEMPERATURE DERATING

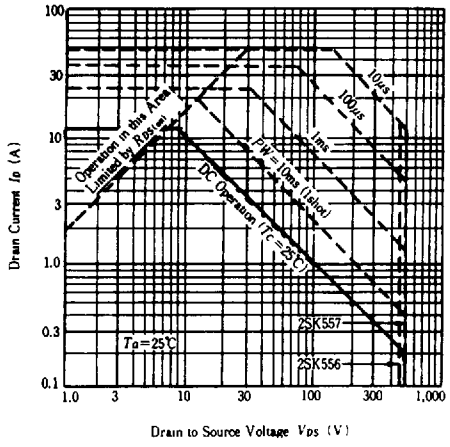


■ ELECTRICAL CHARACTERISTICS (T_a=25 °C)

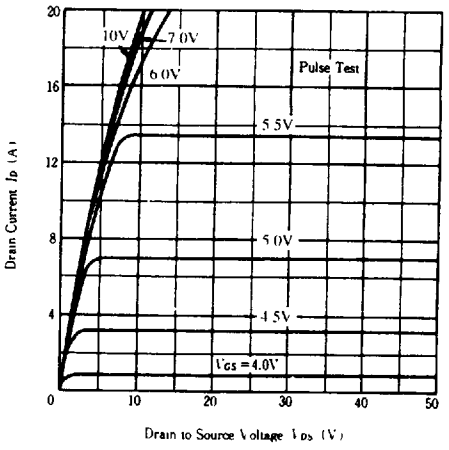
Item		Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	2SK556	$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0	450	—	—	V
	2SK557			500	—	—	
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	I_G=±100μA, V_{DS}=0	±20	—	—	V
Gate-Source Leak Current		I_{GSS}	V_{GS}=±16V, V_{DS}=0	—	—	±10	μA
Zero Gate Voltage Drain Current	2SK556	I_{DSS}	V_{DS}=360V, V_{GS}=0	—	—	250	μA
	2SK557		V_{DS}=400V, V_{GS}=0				
Gate-Source Cutoff Voltage		$V_{GS(off)}$	I_D=1mA, V_{DS}=10V	2.0	—	4.0	V
Static Drain-Source On State Resistance	2SK556	$R_{DS(on)}$	I_D=6A, V_{GS}=10V*	—	0.4	0.55	Ω
	2SK557			—	0.45	0.60	
Forward Transfer Admittance		$\|y_{fs}\|$	I_D=6A, V_{DS}=10V*	6	10	—	S
Input Capacitance		C_{iss}	V_{DS}=10V, V_{GS}=0, f=1MHz	—	2050	—	pF
Output Capacitance		C_{oss}		—	720	—	pF
Reverse Transfer Capacitance		C_{rss}		—	80	—	pF
Turn-on Delay Time		$t_{d(on)}$	I_D=6A, V_{GS}=10V, R_L=5Ω	—	25	—	ns
Rise Time		t_r		—	85	—	ns
Turn-off Delay Time		$t_{d(off)}$		—	145	—	ns
Fall Time		t_f		—	85	—	ns
Body-Drain Diode Forward Voltage		V_{DF}	I_F=12A, V_{GS}=0	—	1.0	—	V
Body-Drain Diode Reverse Recovery Time		t_{rr}	I_F=12A, V_{GS}=0, di_F/dt=100A/μs	—	450	—	ns

*Pulse Test

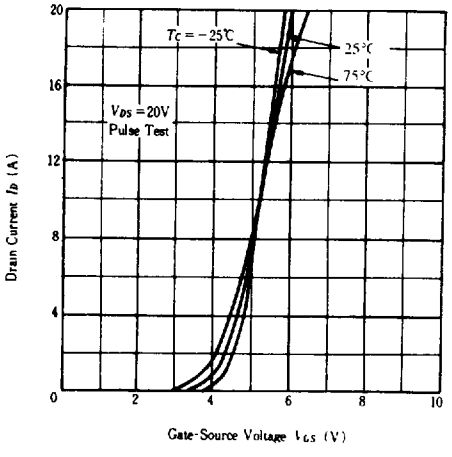
MAXIMUM SAFE OPERATION AREA



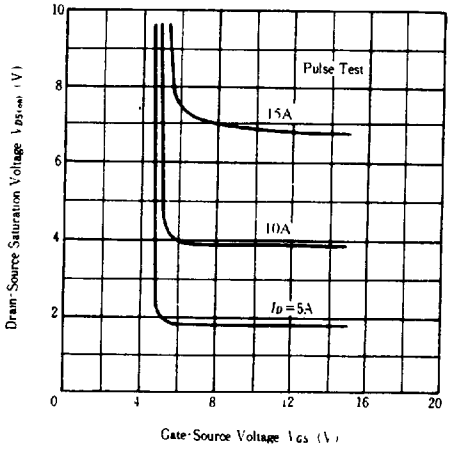
TYPICAL OUTPUT CHARACTERISTICS



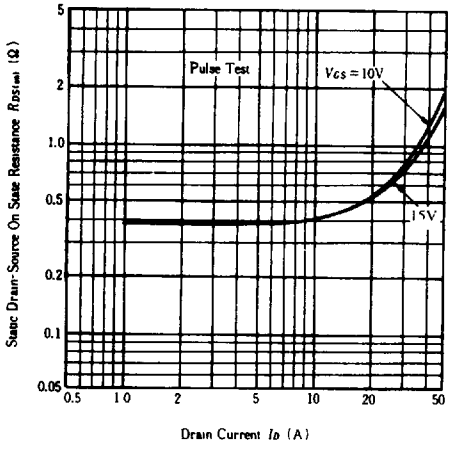
TYPICAL TRANSFER CHARACTERISTICS



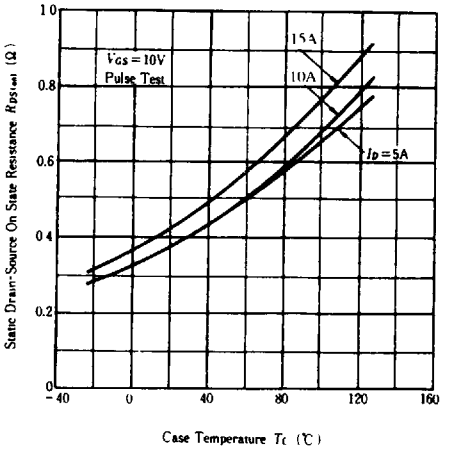
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



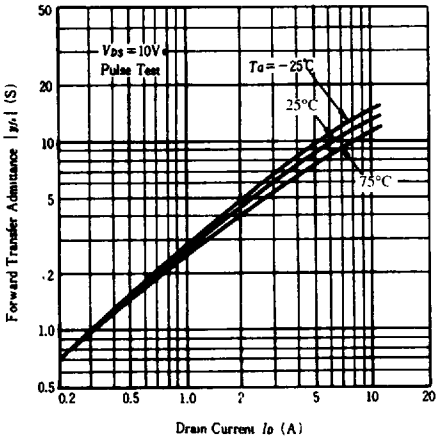
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



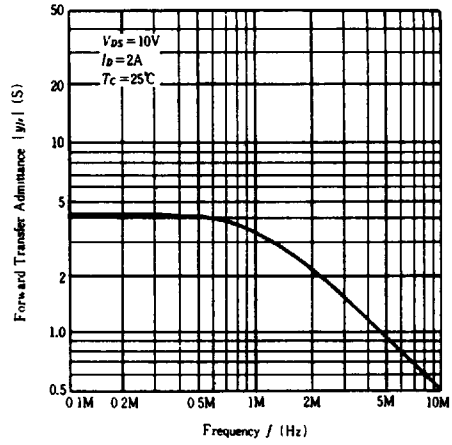
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



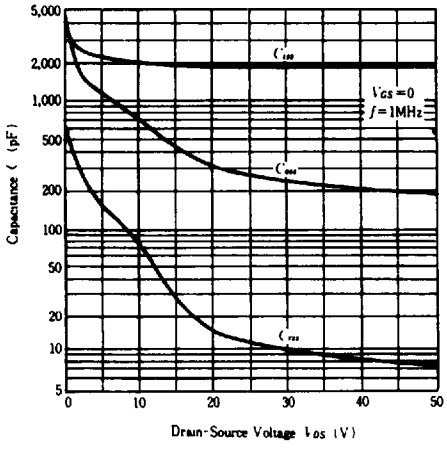
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



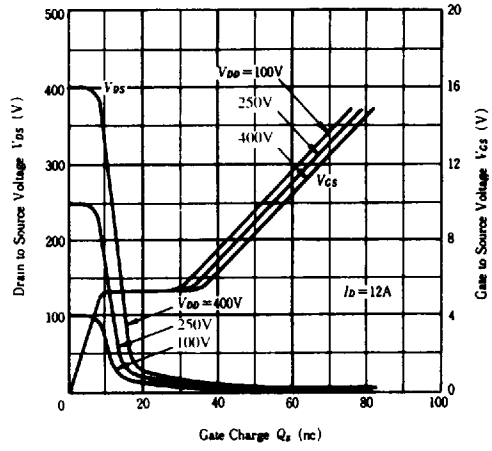
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



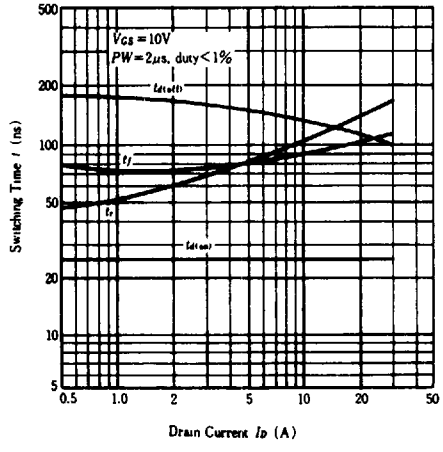
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



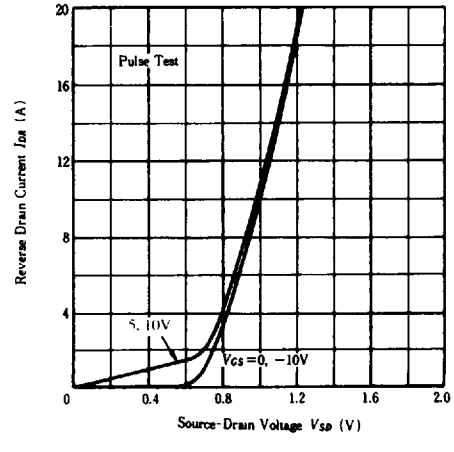
DYNAMIC INPUT CHARACTERISTICS



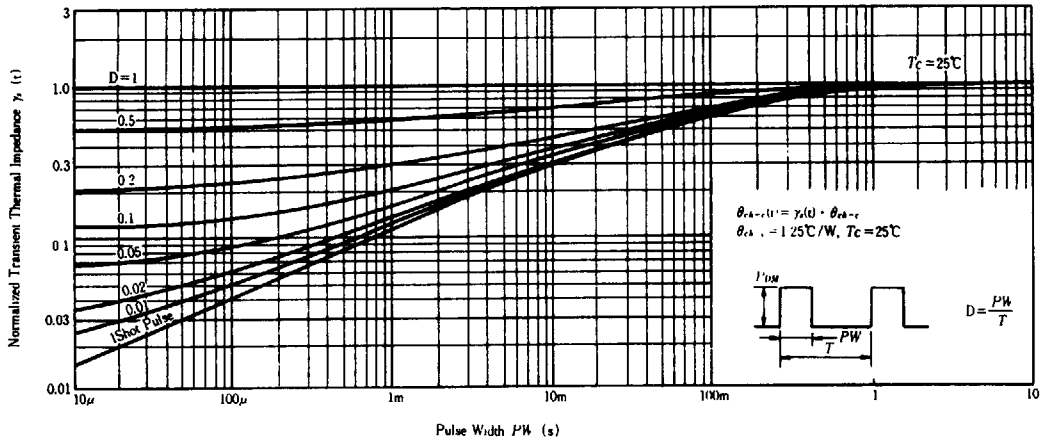
SWITCHING CHARACTERISTICS



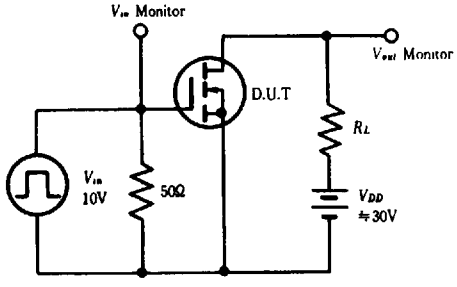
REVERSE DRAIN CURRENT VS. SOURCE - DRAIN VOLTAGE



NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS