

2SK384(L), 2SK384(S)

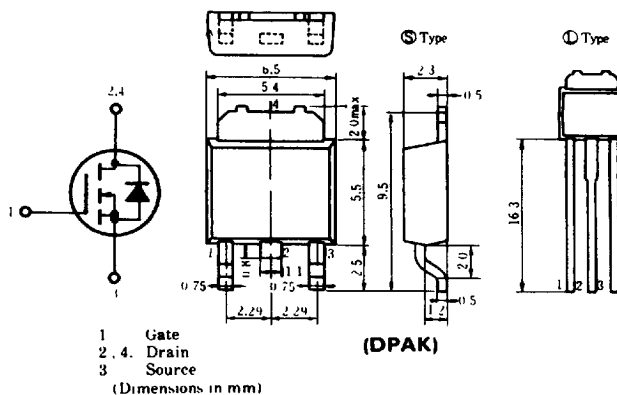
HITACHI/(OPTOELECTRONICS)

SILICON N-CHANNEL MOS FET

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

■ FEATURES

- Small Package.
- High Speed Switching.
- High Cutoff Frequency.
- No Secondary Breakdown.
- Suitable for Switching Regulator, DC-DC Converter, RF Amplifiers, and Ultrasonic Power Oscillators

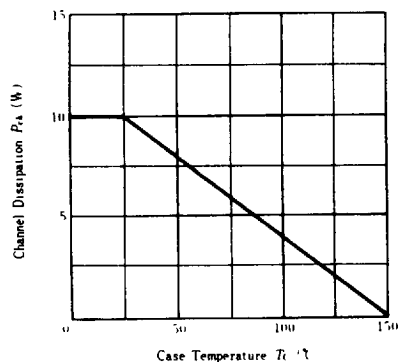


■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	0.3	A
Drain Peak Current	$I_{D(\text{peak})}$	0.6	A
Body-Drain Diode Reverse Drain Current	I_{DR}	0.3	A
Channel Dissipation	P_{ch}^*	10	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$

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

POWER VS. TEMPERATURE DERATING

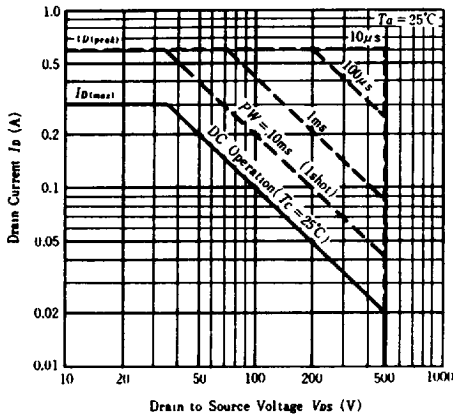


■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

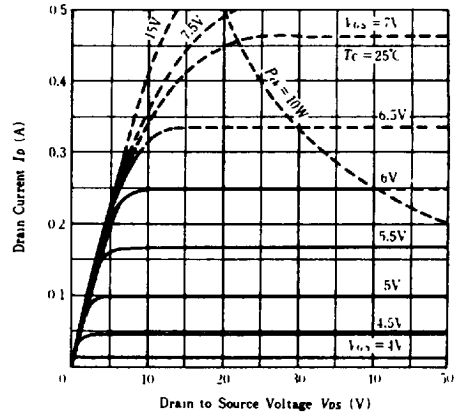
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{DS(\text{BR})}$	$I_D=10\text{mA}$, $V_{GS}=0$	500	—	—	V
Gate-Source Leak Current	I_{GSS}	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0$	—	—	± 1	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=400\text{V}$, $V_{GS}=0$	—	—	1	mA
Gate-Source Cutoff Voltage	$V_{GS(\text{off})}$	$I_D=1\text{mA}$, $V_{DS}=10\text{V}$	1.0	—	5.0	V
Static Drain-Source On State Resistance	$R_{DS(\text{on})}$	$I_D=0.2\text{A}$, $V_{GS}=15\text{V}^*$	—	25	50	Ω
Drain-Source Saturation Voltage	$V_{DS(\text{sat})}$	$I_D=0.2\text{A}$, $V_{GS}=15\text{V}^*$	—	5.0	10	V
Forward Transfer Admittance	$ y_{fs} $	$I_D=0.2\text{A}$, $V_{DS}=10\text{V}^*$	60	100	—	mS
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $V_{GS}=0$ $f=1\text{MHz}$	—	70	—	pF
Output Capacitance	C_{oss}		—	15	—	pF
Reverse Transfer Capacitance	C_{rss}		—	5	—	pF
Turn-on Delay Time	$t_{d(\text{on})}$	$I_D=0.2\text{A}$, $V_{GS}=15\text{V}$ $R_L=150\Omega$	—	7	—	ns
Rise Time	t_r		—	13	—	ns
Turn-off Delay Time	$t_{d(\text{off})}$		—	11	—	ns
Fall Time	t_f		—	9	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F=0.2\text{A}$, $V_{GS}=0$	—	0.8	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F=0.2\text{A}$, $V_{GS}=0$ $di_F/dt=100\text{A}/\mu\text{s}$	—	280	—	ns

*Pulse Test

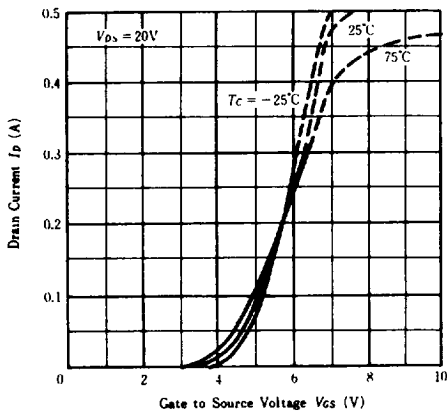
MAXIMUM SAFE OPERATION AREA



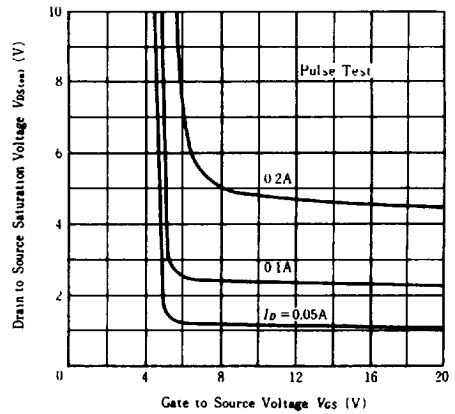
TYPICAL OUTPUT CHARACTERISTICS



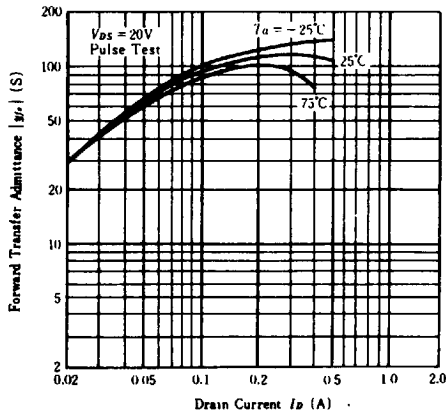
TYPICAL TRANSFER CHARACTERISTICS



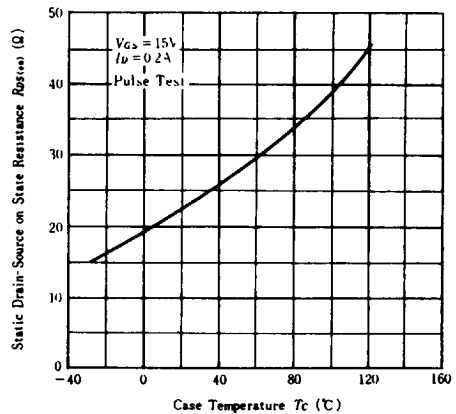
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



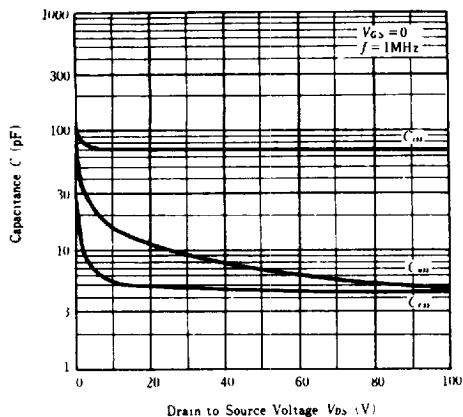
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



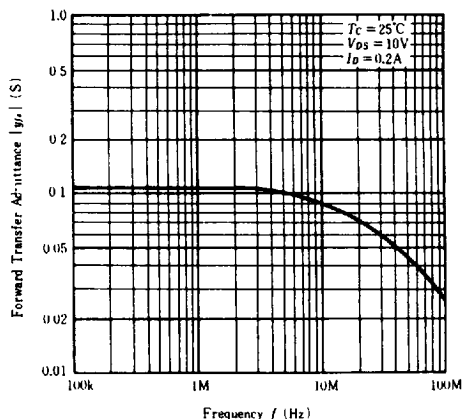
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



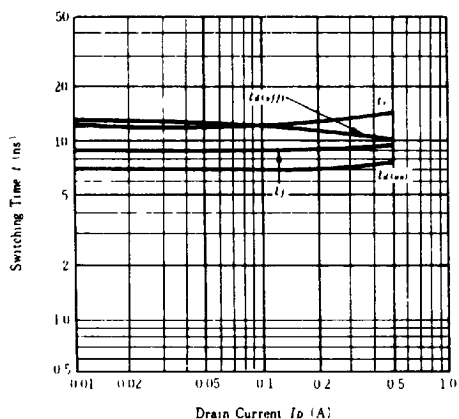
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



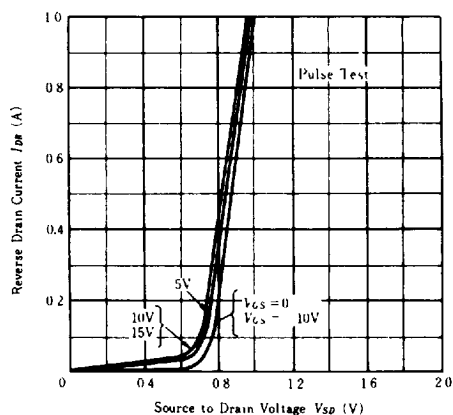
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



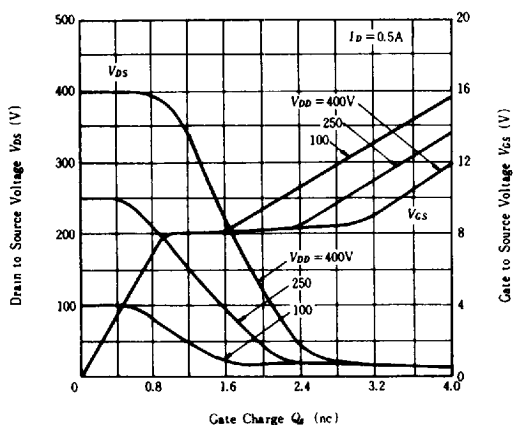
SWITCHING CHARACTERISTICS



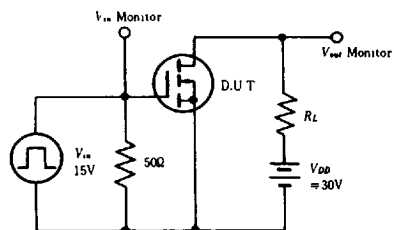
MAXIMUM BODY-DRAIN DIODE FORWARD VOLTAGE



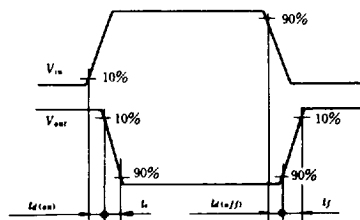
DYNAMIC INPUT CHARACTERISTICS



SWITCHING TIME TEST CIRCUIT



WAVEFORMS



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