

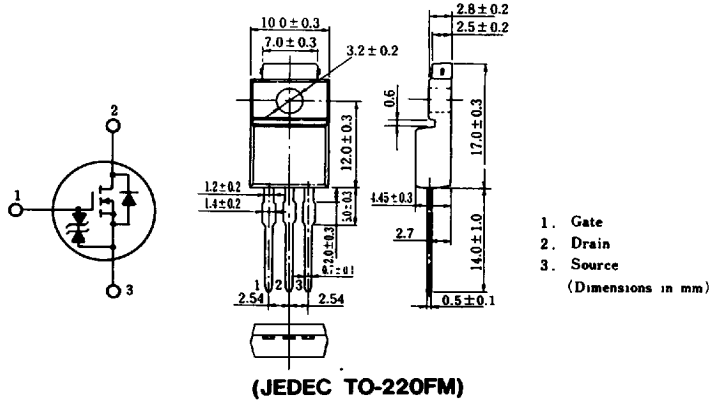
2SK1230

4496205 0013261 179 HITACHI
HITACHI/(OPTOELECTRONICS) BLE D-

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 and DC-DC Converter



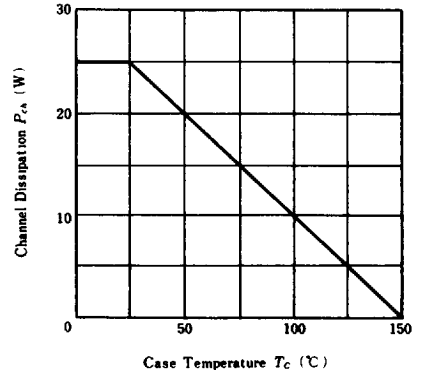
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DSS}	120	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	I_D	10	A
Drain Peak Current	$I_{D(pulse)}$ *	40	A
Body-Drain Diode Reverse Drain Current	I_{DR}	10	A
Channel Dissipation	P_{ch} **	25	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-55 \sim +150$	$^\circ\text{C}$

*PW $\leq 10\mu\text{s}$, duty cycle $\leq 1\%$

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

POWER VS. TEMPERATURE DERATING

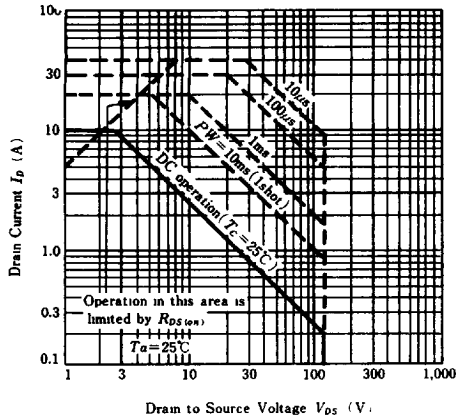


ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

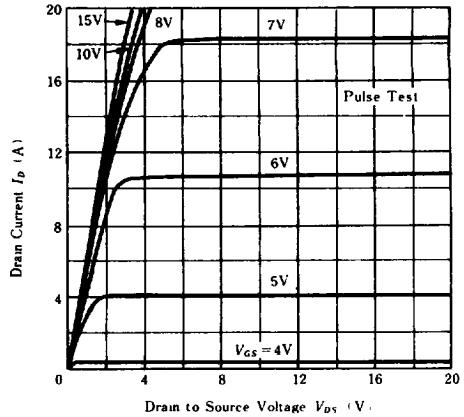
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10\text{mA}$, $V_{GS}=0$	120	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G=\pm 100\mu\text{A}$, $V_{DS}=0$	± 20	—	—	V
Gate-Source Leak Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0$	—	—	± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100\text{V}$, $V_{GS}=0$	—	—	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	$R_{DS(on)}$	$I_D=5\text{A}$, $V_{GS}=10\text{V}^*$	—	0.15	0.20	Ω
Forward Transfer Admittance	$ y_{fs} $	$I_D=5\text{A}$, $V_{DS}=10\text{V}^*$	3.0	5.0	—	S
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$	—	730	—	pF
Output Capacitance	C_{oss}		—	330	—	pF
Reverse Transfer Capacitance	C_{rss}		—	40	—	pF
Turn-on Delay Time	$t_{d(on)}$	$I_D=5\text{A}$, $V_{GS}=10\text{V}$, $R_L=6\Omega$	—	15	—	ns
Rise Time	t_r		—	40	—	ns
Turn-off Delay Time	$t_{d(off)}$		—	70	—	ns
Fall Time	t_f		—	45	—	ns
Body-Drain Diode Forward Voltage	V_{DF}		$I_F=10\text{A}$, $V_{GS}=0$	—	1.2	—
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F=10\text{A}$, $V_{GS}=0$, $di_F/dt=50\text{A}/\mu\text{s}$	—	200	—	ns

*Pulse Test

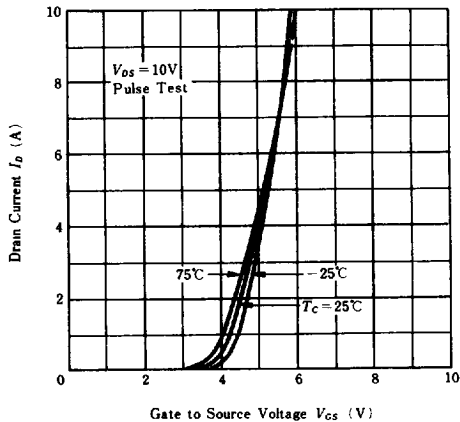
MAXIMUM SAFE OPERATION AREA



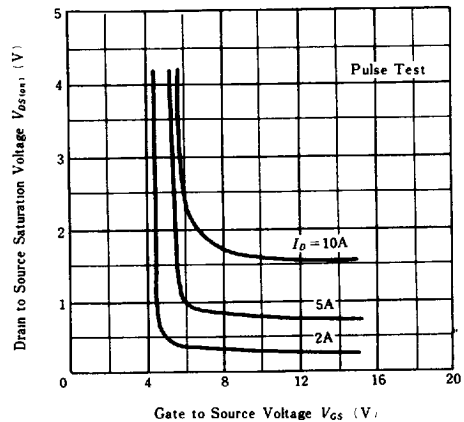
TYPICAL OUTPUT CHARACTERISTICS



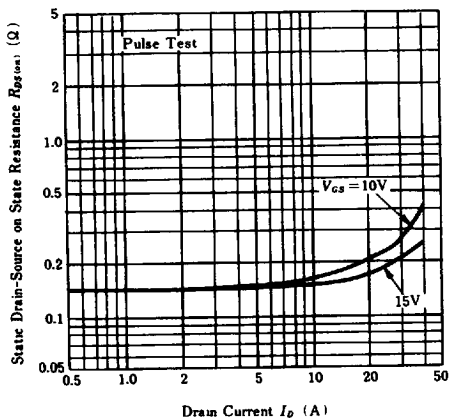
TYPICAL TRANSFER CHARACTERISTICS



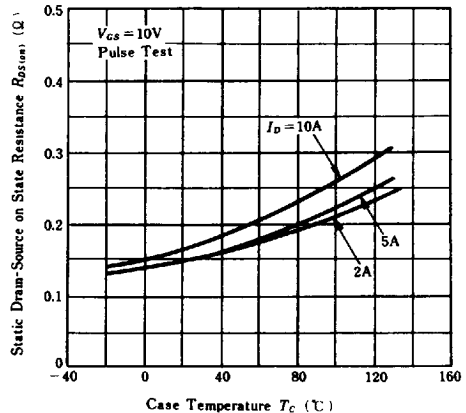
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



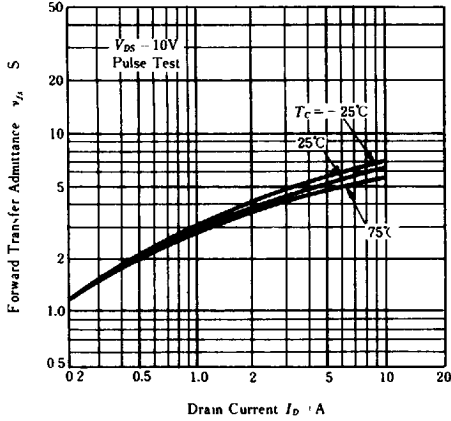
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



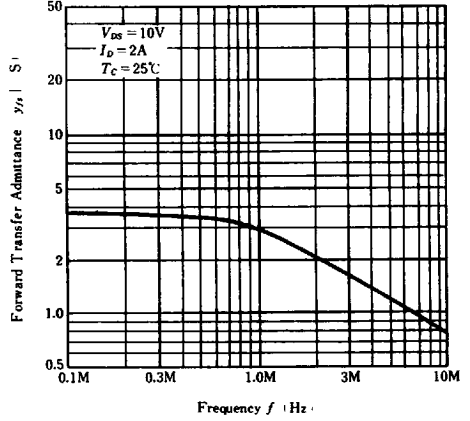
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



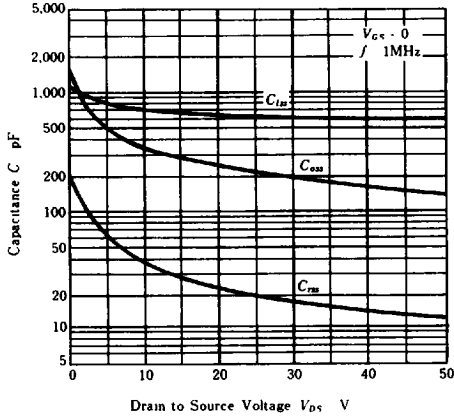
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



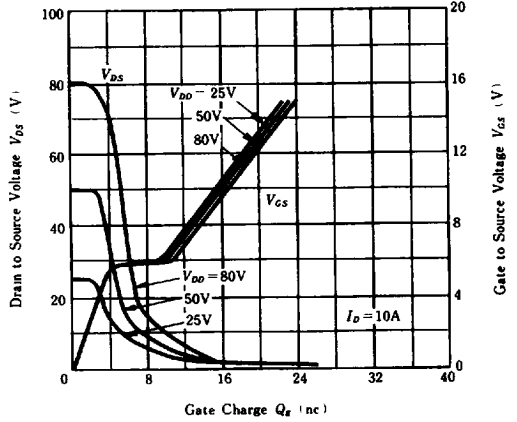
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



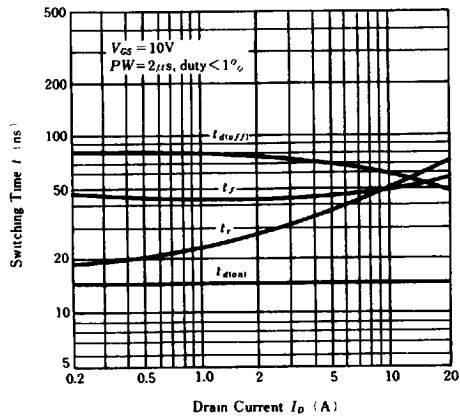
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



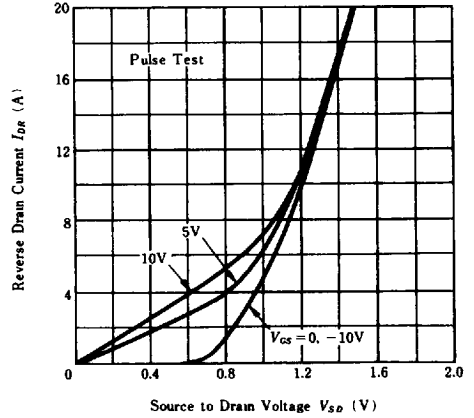
DYNAMIC INPUT CHARACTERISTICS



SWITCHING CHARACTERISTICS

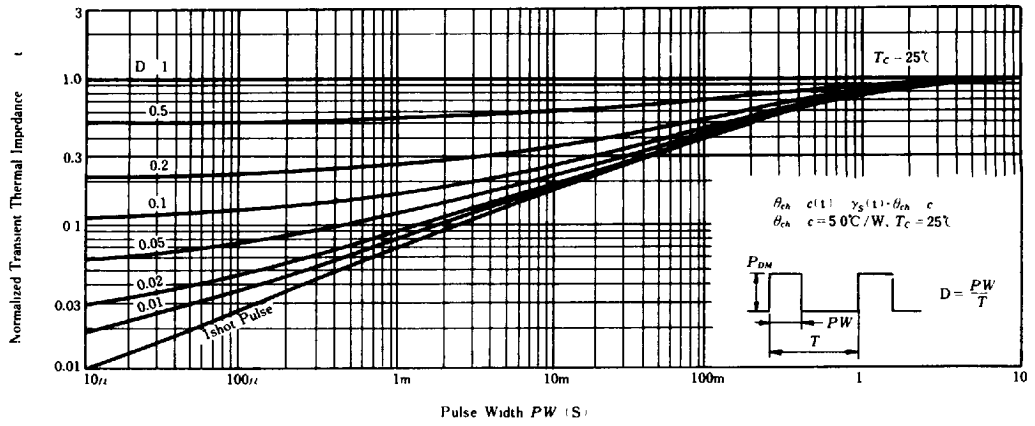


REVERSE DRAIN CURRENT VS. SOURCE TO DRAIN VOLTAGE

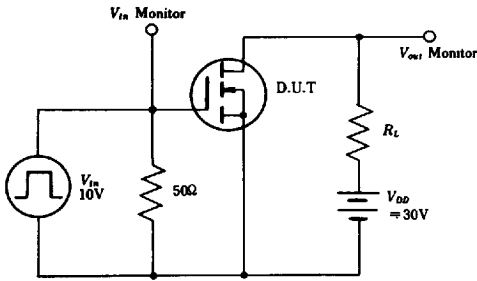


HITACHI/(OPTOELECTRONICS)

NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

