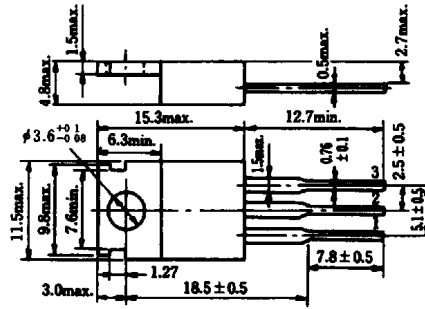
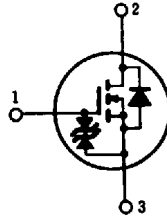


SILICON N-CANNEL MOS FET

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



1. Gate
2. Drain (Flange)
3. Source
(Dimensions in mm)

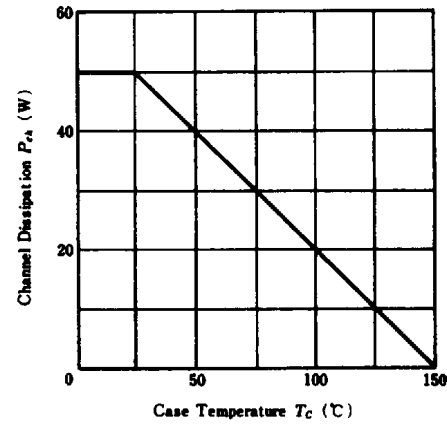
(JEDEC TO-220AB)

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

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	900	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	2	A
Drain Peak Current	$I_{D(pk)}$ *	6	A
Body-Drain Diode Reverse Current	I_{DR}	2	A
Channel Dissipation	P_{ch} **	50	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



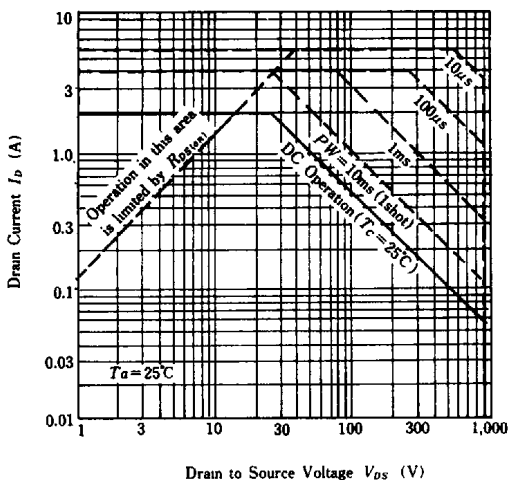
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D=10\text{mA}$, $V_{GS}=0$	900	—	—	V
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}	$V_{DS}=720\text{V}$, $V_{GS}=0$	—	—	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	$R_{DS(on)}$	$I_D=1\text{A}$, $V_{GS}=10\text{V}$ *	—	5.0	7.0	Ω
Forward Transfer Admittance	$ y_{fs} $	$I_D=1\text{A}$, $V_{DS}=20\text{V}$ *	0.6	1.0	—	S
Input Capacitance	C_{iss}	$V_{DS}=10\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$	—	490	—	pF
Output Capacitance	C_{oss}		—	260	—	pF
Reverse Transfer Capacitance	C_{rss}		—	190	—	pF
Turn-On Delay Time	$t_{d(on)}$		$I_D=1\text{A}$, $V_{GS}=10\text{V}$, $R_L=30\Omega$	—	10	—
Rise Time	t_r	—		60	—	ns
Turn-Off Delay Time	$t_{d(off)}$	—		65	—	ns
Fall Time	t_f	—		60	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F=2\text{A}$, $V_{GS}=0$	—	0.9	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F=2\text{A}$, $V_{GS}=0$, $di_F/dt=100\text{A}/\mu\text{s}$	—	800	—	ns

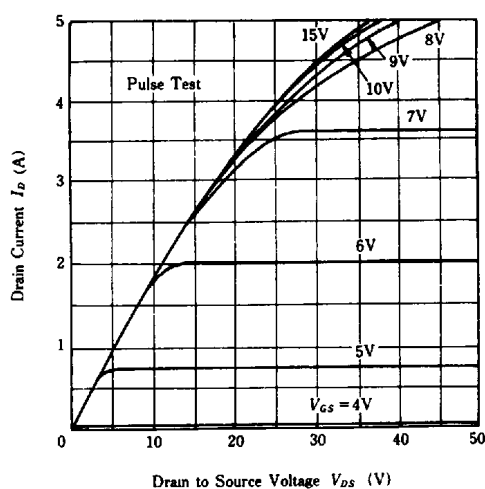
* Pulse Test

HITACHI/(OPTOELECTRONICS)

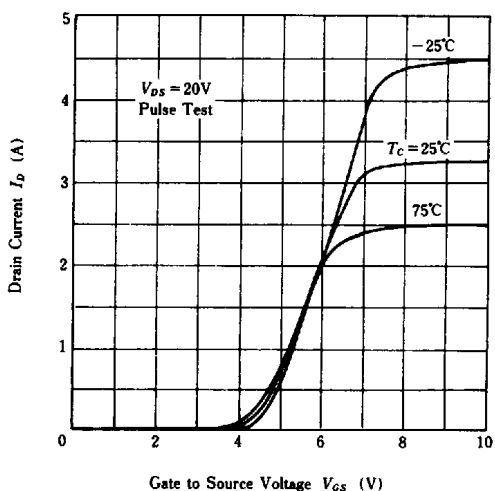
MAXIMUM SAFE OPERATION AREA



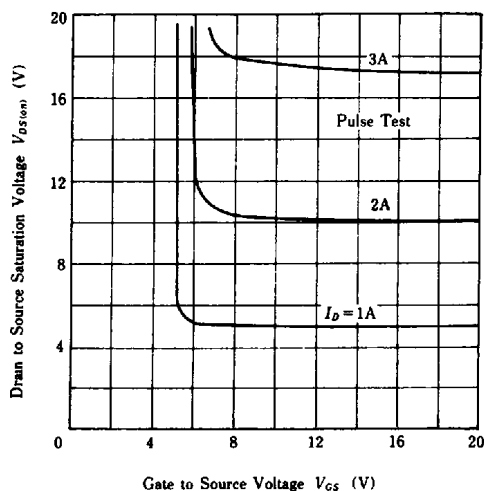
TYPICAL OUTPUT CHARACTERISTICS



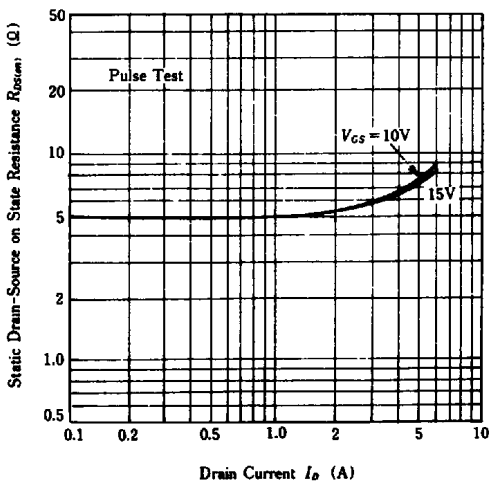
TYPICAL TRANSFER CHARACTERISTICS



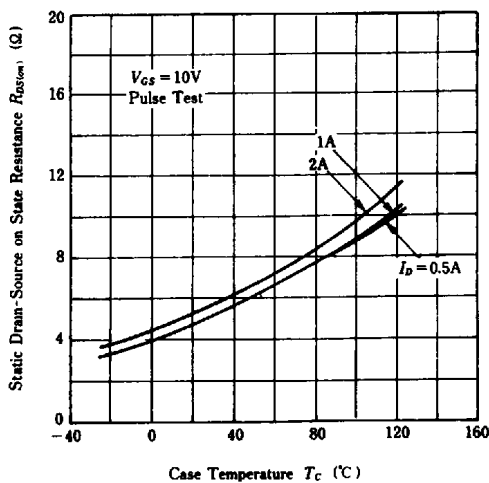
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT

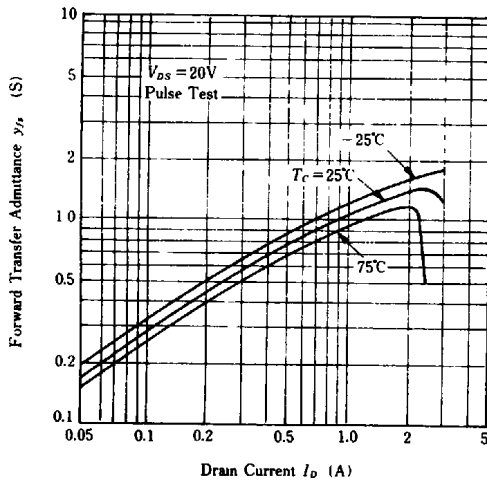


STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE

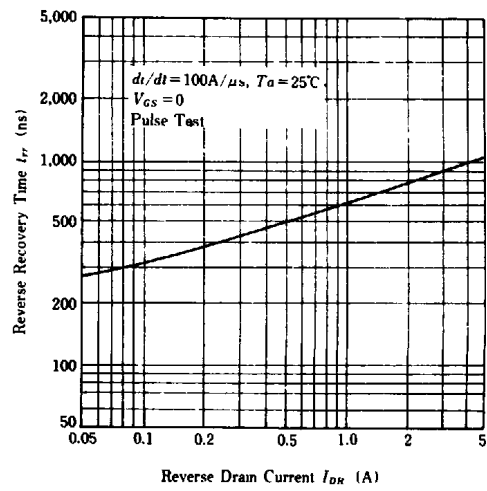


HITACHI/(OPTOELECTRONICS)

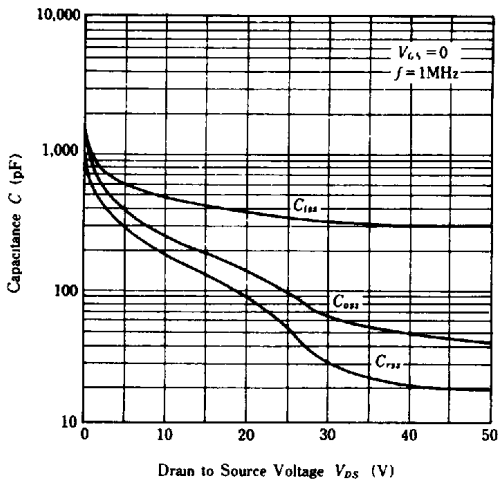
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



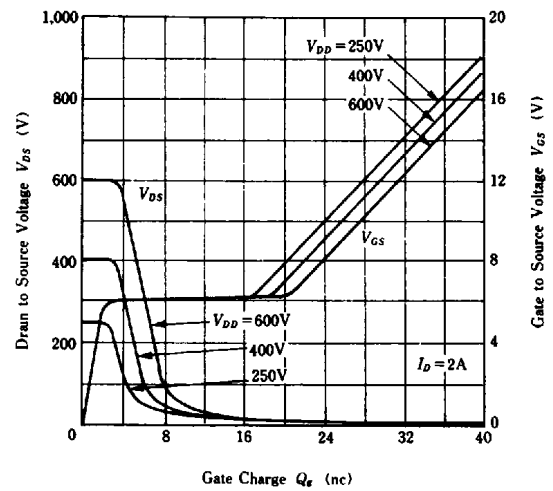
BODY-DRAIN DIODE REVERSE RECOVERY TIME



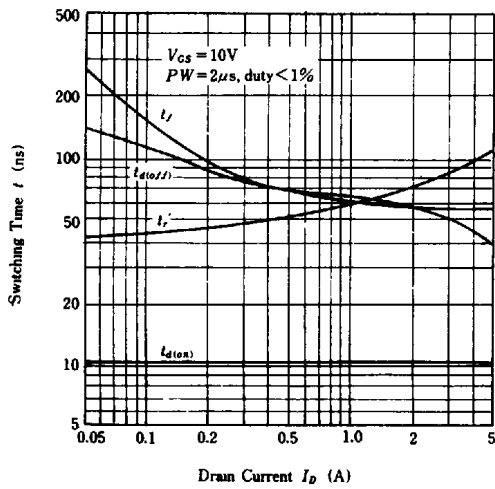
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



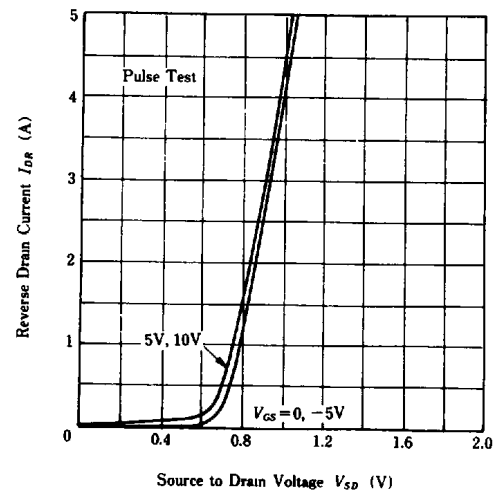
DYNAMIC INPUT CHARACTERISTICS



SWITCHING CHARACTERISTICS

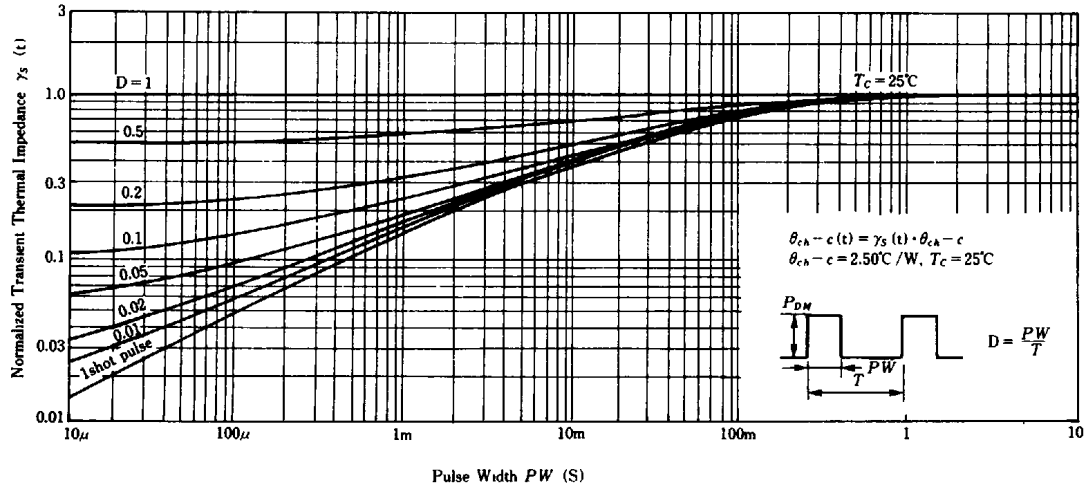


REVERSE DRAIN CURRENT VS. SOURCE TO DRAIN VOLTAGE

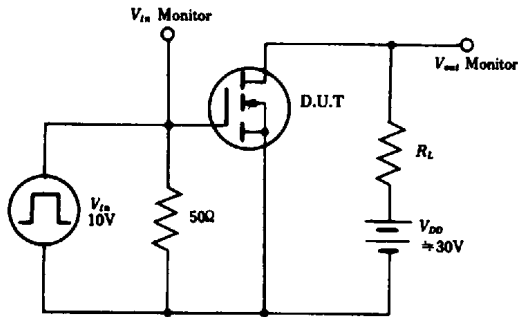


HITACHI/(OPTOELECTRONICS)

NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

