

2SJ127

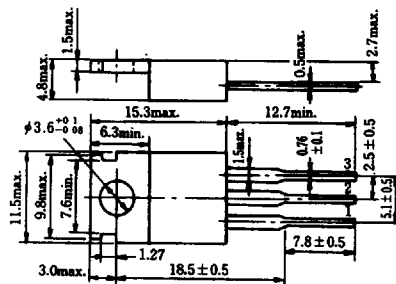
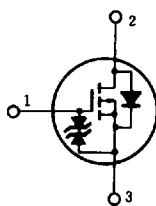
HITACHI/(OPTOELECTRONICS) BLE D

SILICON P 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 and Motor Driver



(JEDEC TO-220AB)

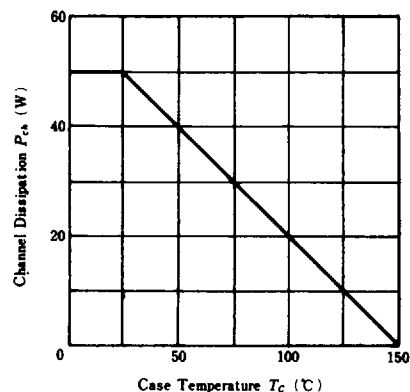
ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-120	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	-10	A
Drain Peak Current	$I_{D(\text{pulse})}^*$	-40	A
Body-Drain Diode Reverse Drain Current	I_{DR}	-10	A
Channel Dissipation	P_{ch}^{**}	50	W
Channel Temperature	T_{ch}	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 ~ +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

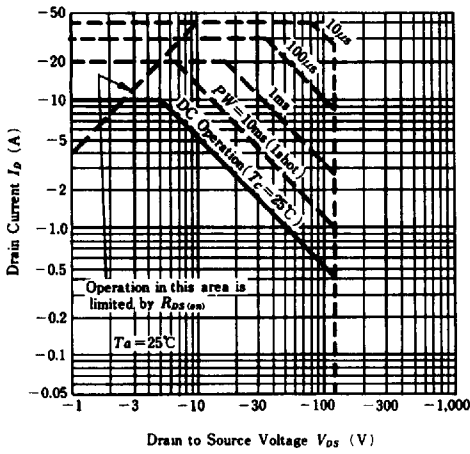


ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$)

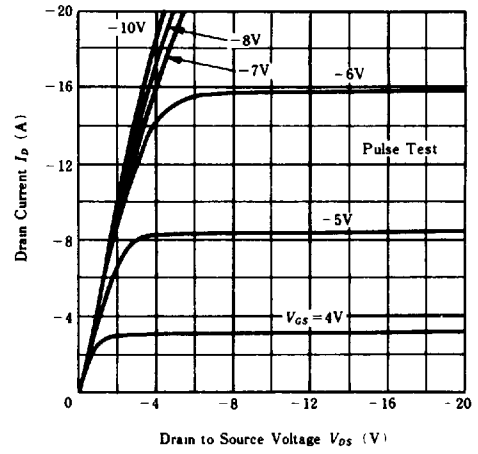
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D = -10\text{mA}$, $V_{GS} = 0$	-120	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GS}$	$I_G = \pm 100\mu\text{A}$, $V_{DS} = 0$	± 20	—	—	V
Gate-Source Leak Current	I_{GSS}	$V_{GS} = \pm 16\text{V}$, $V_{DS} = 0$	—	—	± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -100\text{V}$, $V_{GS} = 0$	—	—	-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 Stage Resistance	$R_{DS(on)}$	$I_D = -5\text{A}$, $V_{GS} = -10\text{V}^*$	—	0.2	0.25	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}	$V_{DS} = -10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	1450	—	pF
Output Capacitance	C_{oss}		—	680	—	pF
Reverse Transfer Capacitance	C_{rss}		—	175	—	pF
Turn-On Delay Time	$t_{d(on)}$	$I_D = -5\text{A}$, $V_{GS} = -10\text{V}$, $R_L = 6\Omega$	—	20	—	ns
Rise Time	t_r		—	120	—	ns
Turn-Off Delay Time	$t_{d(off)}$		—	240	—	ns
Fall Time	t_f		—	140	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F = -10\text{A}$, $V_{GS} = 0$	—	-1.0	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F = -10\text{A}$, $V_{GS} = 0$ $di_F/dt = 50\text{A}/\mu\text{s}$	—	250	—	ns

*pulse Test

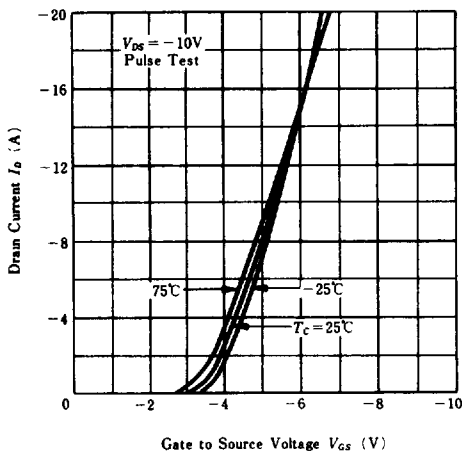
MAXIMUM SAFE OPERATION AREA



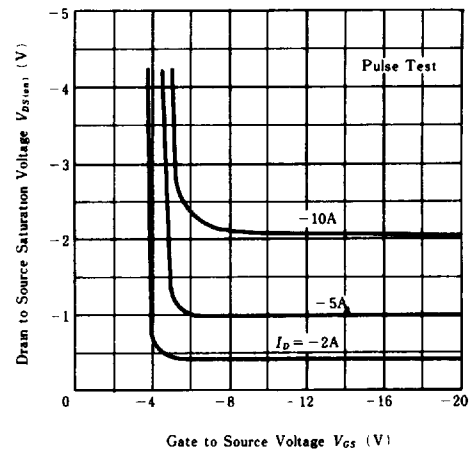
TYPICAL OUTPUT CHARACTERISTICS



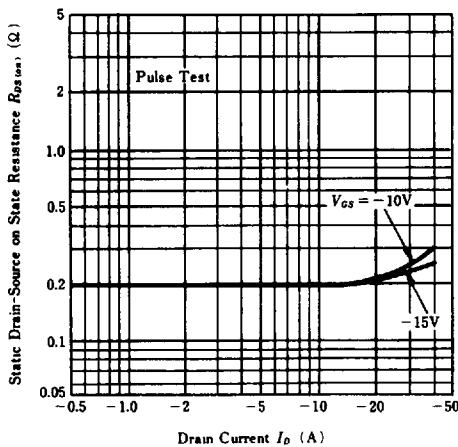
TYPICAL TRANSFER CHARACTERISTICS



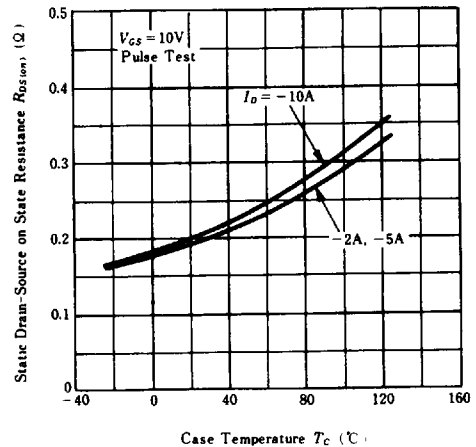
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT

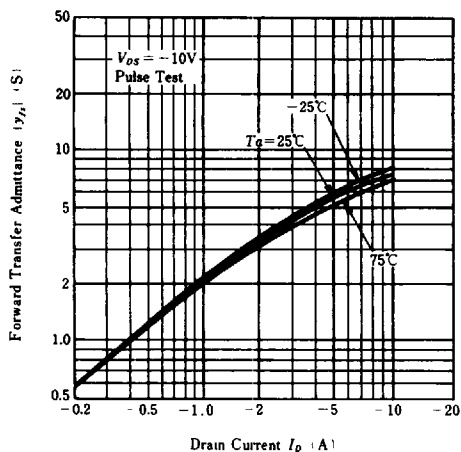


STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE

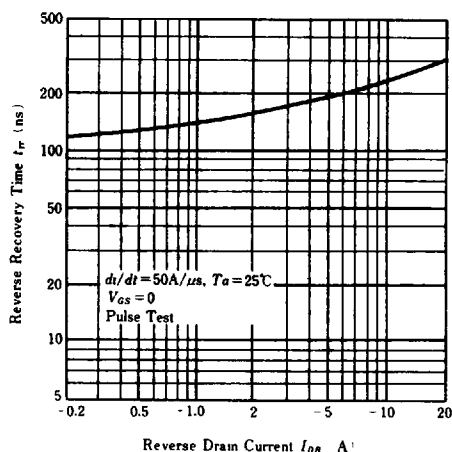


HITACHI/(OPTOELECTRONICS)

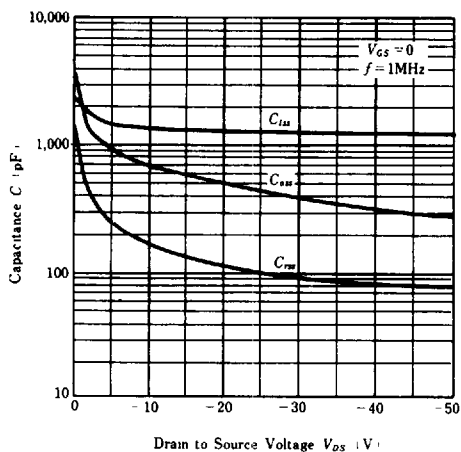
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



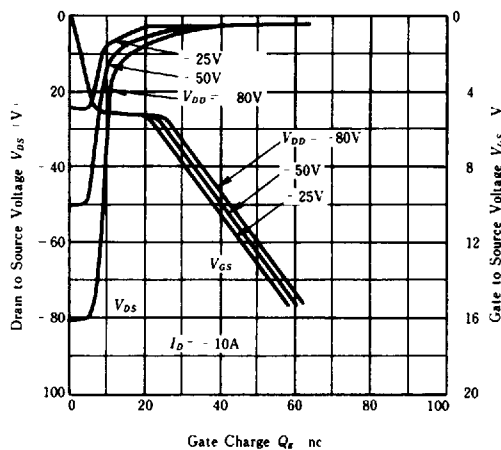
BODY DRAIN DIODE REVERSE RECOVERY TIME



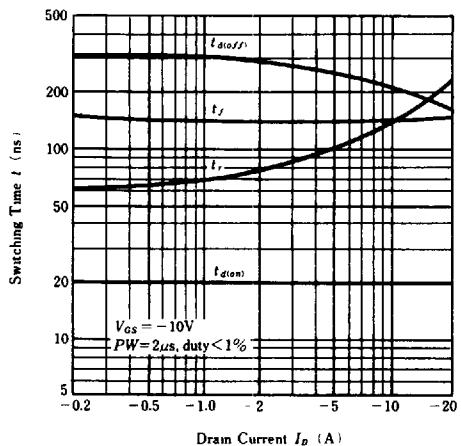
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



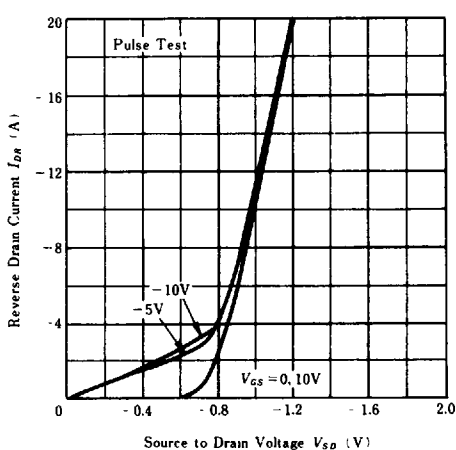
DYNAMIC INPUT CHARACTERISTICS



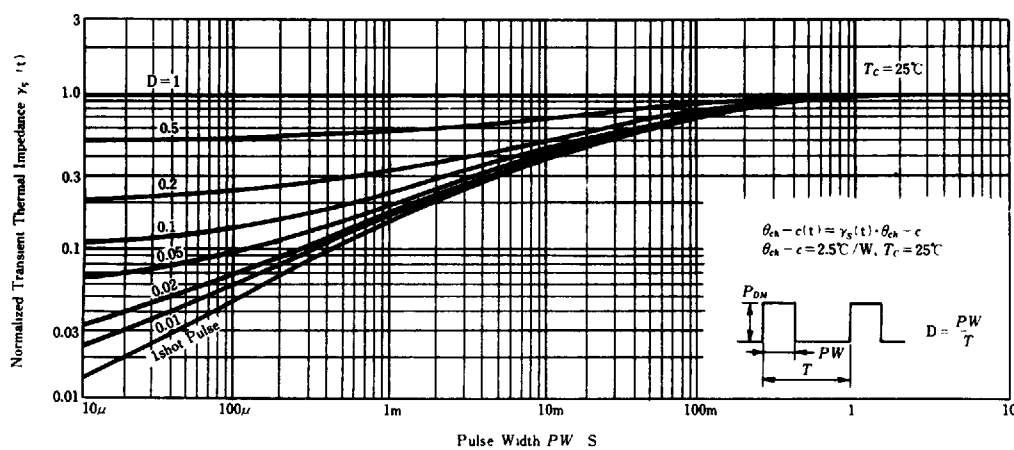
SWITCHING CHARACTERISTICS



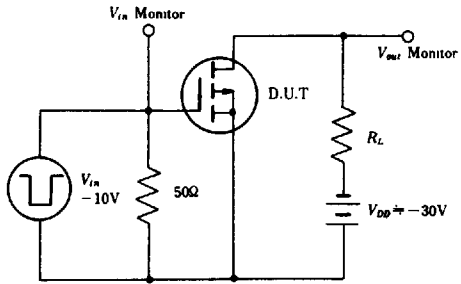
REVERSE DRAIN CURRENT VS. SOURCE TO DRAIN VOLTAGE



NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

