

2SJ120(L), 2SJ120(S)

SILICON P-CHANNEL MOS FET

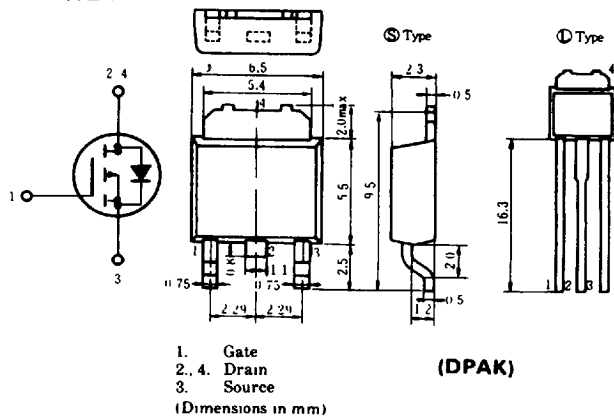
HITACHI/(OPTOELECTRONICS)

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

Complementary pair with 2SK416

■ FEATURES

- Low On-Resistance.
- High Speed Switching.
- High Cutoff Frequency.
- No Secondary Breakdown.
- Suitable for Switching Regulator, DC-DC Converter, and Bubble Memory Driver.

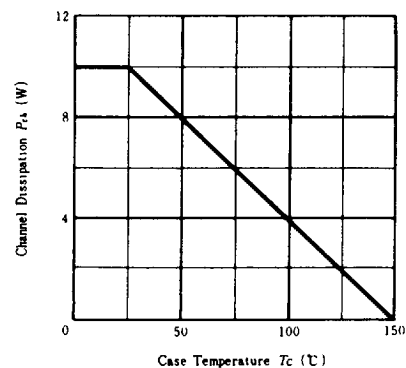


■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	I_D	-2	A
Drain Peak Current	$I_{D(\text{peak})}$	-4	A
Body-Drain Diode Reverse Drain Current	I_{DR}	-2	A
Channel Dissipation	P_{ch} *	10	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 ~ +150	$^\circ\text{C}$

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

POWER VS. TEMPERATURE DERATING



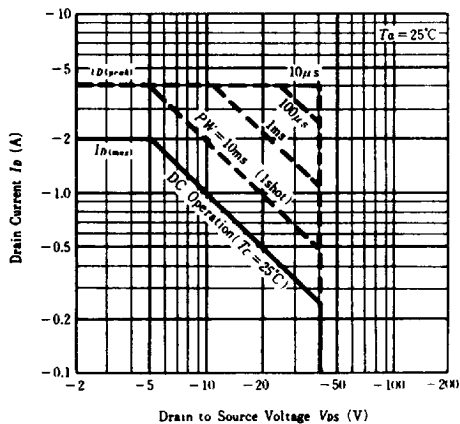
■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{BR(DSS)}$	$I_D=-10\text{mA}, V_{GS}=0$	-40	—	—	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}	$V_{DS}=-35\text{V}, V_{GS}=0$	—	—	-1	mA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$I_D=-1\text{mA}, V_{DS}=-10\text{V}$	-1.0	—	-4.0	V
Static Drain-Source On State Resistance	$R_{DS(on)}$	$I_D=-1\text{A}, V_{GS}=-15\text{V}$ *	—	1.2	1.5	Ω
Drain-Source Saturation Voltage	$V_{DS(on)}$	$I_D=-1\text{A}, V_{GS}=-15\text{V}$ *	—	-1.2	-1.5	V
Forward Transfer Admittance	$ y_{fs} $	$I_D=-1\text{A}, V_{DS}=-10\text{V}$ *	0.1	0.25	—	S
Input Capacitance	C_{iss}	$V_{DS}=-10\text{V}, V_{GS}=0, f=1\text{MHz}$	—	150	—	pF
Output Capacitance	C_{oss}		—	150	—	pF
Reverse Transfer Capacitance	C_{ris}		—	25	—	pF
Turn-on Delay Time	t_{don}	$I_D=-1\text{A}, V_{GS}=-15\text{V}, R_L=30\Omega$	—	9	—	ns
Rise Time	t_r		—	25	—	ns
Turn-off Delay Time	t_{doff}		—	17	—	ns
Fall Time	t_f		—	23	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F=-1\text{A}, V_{GS}=0$	—	-0.8	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F=-1\text{A}, V_{GS}=0, di_F/dt=50\text{A}/\mu\text{s}$	—	70	—	ns

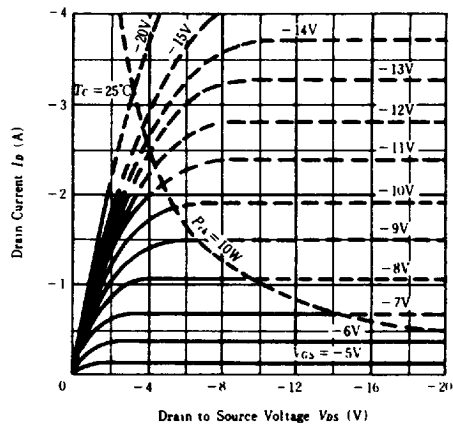
*Pulse Test

HITACHI/(OPTOELECTRONICS)

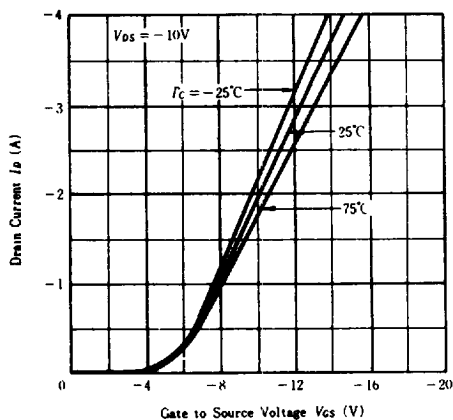
MAXIMUM SAFE OPERATION AREA



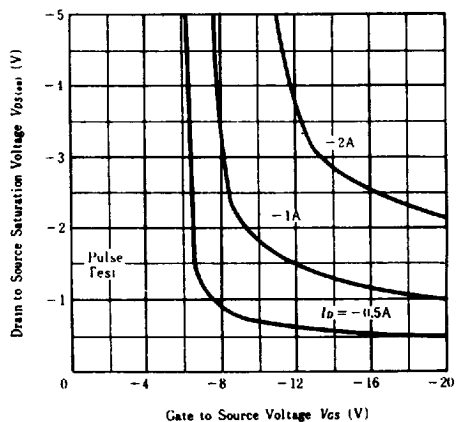
TYPICAL OUTPUT CHARACTERISTICS



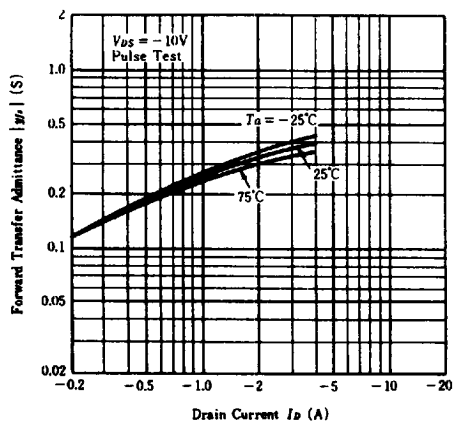
TYPICAL TRANSFER CHARACTERISTICS



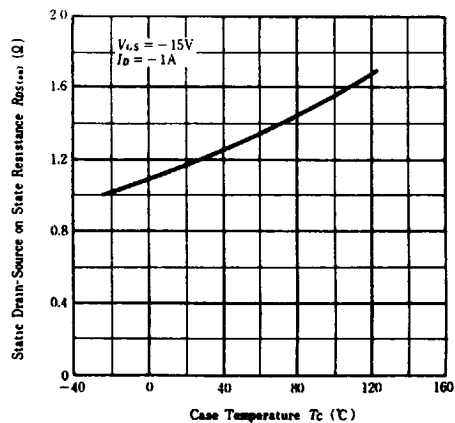
DRAIN TO SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



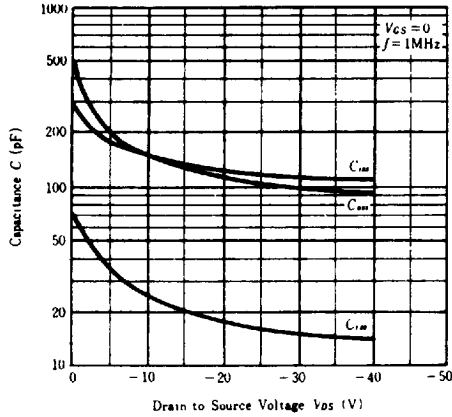
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



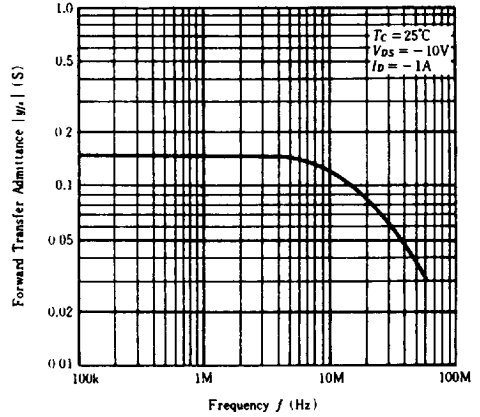
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



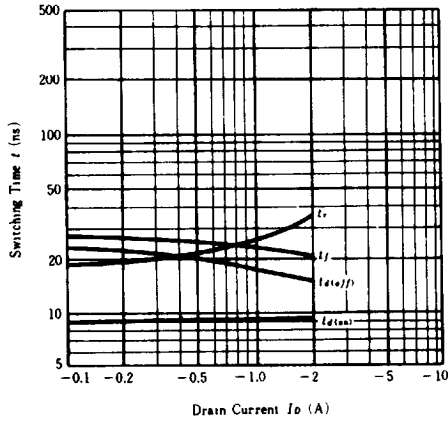
TYPICAL CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE



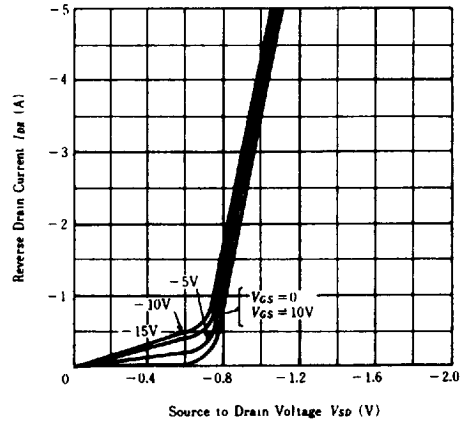
FORWARD TRANSFER ADMITTANCE
VS. FREQUENCY



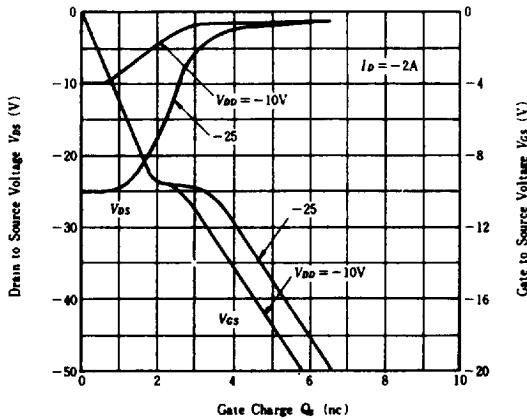
SWITCHING CHARACTERISTICS



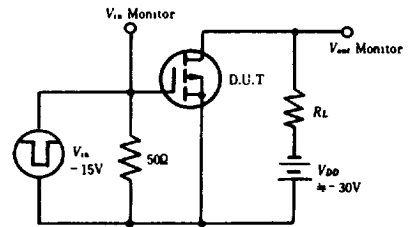
MAXIMUM BODY-DRAIN DIODE
FORWARD VOLTAGE



DYNAMIC INPUT CHARACTERISTICS



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

