

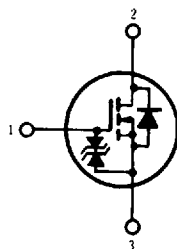
2SK1206, 2SK1225

SILICON N-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING

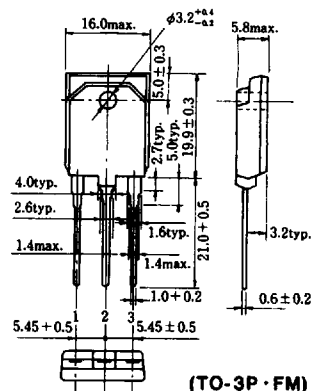
■ FEATURES

- Low On-Resistance
- High Speed Switching
- Low Drive Current
- No Secondary Breakdown
- Suitable for Switching Regulator, DC-DC Converter and Motor Driver



1. Gate
2. Drain
3. Source

(Dimensions in mm)



(TO-3P · FM)

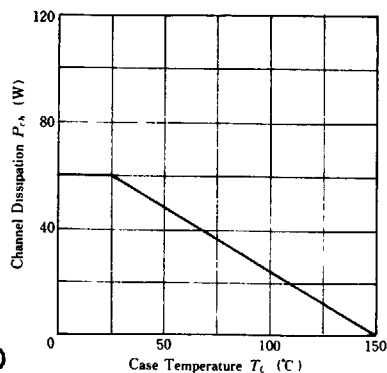
■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Item	Symbol	2SK1225	2SK1206	Unit
Drain-Source Voltage	V_{DS}	450	500	V
Gate-Source Voltage	V_{GS}	± 20		V
Drain Current	I_D	12		A
Drain Peak Current	$I_{D(\text{pulse})}$ *	48		A
Body-Drain Diode Reverse Drain Current	I_{DR}	12		A
Channel Dissipation	P_{ch} *	60		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 $T_a=25^\circ\text{C}$

POWER VS. TEMPERATURE DERATING



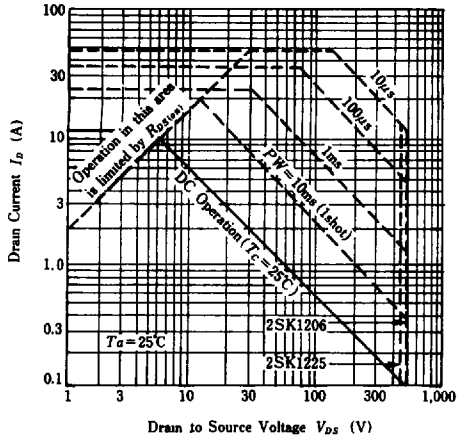
HITACHI/(OPTOELECTRONICS)

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

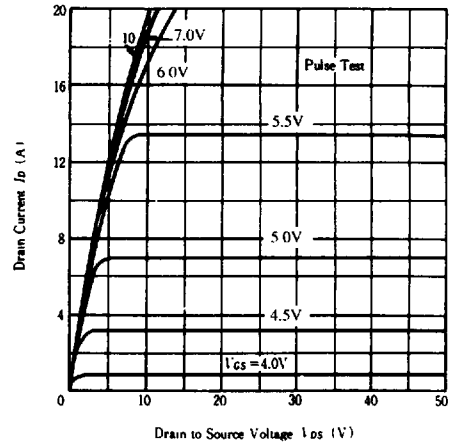
Item		Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	2SK1225	$V_{(BR)DS}$	$I_D=10\text{mA}$, $V_{GS}=0$	450	—	—	V
	2SK1206			500	—	—	
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	$I_G=\pm 100\mu\text{A}$, $V_{DS}=0$	± 20	—	—	V
Gate-Source Leak Current		I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0$	—	—	± 10	μA
Zero Gate Voltage Drain Current	2SK1225	I_{DSS}	$V_{DS}=360\text{V}$, $V_{GS}=0$	—	—	250	μA
	2SK1206		$V_{DS}=400\text{V}$, $V_{GS}=0$	—	—	250	
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	2SK1225	$R_{DS(on)}$	$I_D=6\text{A}$, $V_{GS}=10\text{V}$ *	—	0.4	0.55	Ω
	2SK1206			—	0.45	0.60	
Forward Transfer Admittance		$ y_{fs} $	$I_D=6\text{A}$, $V_{DS}=10\text{V}$ *	6	10	—	S
Input Capacitance		C_{iss}	$V_{DS}=10\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$	—	2050	—	pF
Output Capacitance		C_{oss}		—	720	—	pF
Reverse Transfer Capacitance		C_{rss}		—	80	—	pF
Turn-on Delay Time		t_{don}	$I_D=6\text{A}$, $V_{GS}=10\text{V}$, $R_L=5\Omega$	—	25	—	ns
Rise Time		t_r		—	85	—	ns
Turn-off Delay Time		t_{doff}		—	145	—	ns
Fall Time		t_f		—	85	—	ns
Body-Drain Diode Forward Voltage		V_{DF}	$I_F=12\text{A}$, $V_{GS}=0$	—	1.0	—	V
Body-Drain Diode Reverse Recovery Time		t_{rr}	$I_F=12\text{A}$, $V_{GS}=0$, $di_F/dt=100\text{A}/\mu\text{s}$	—	450	—	ns

*Pulse Test

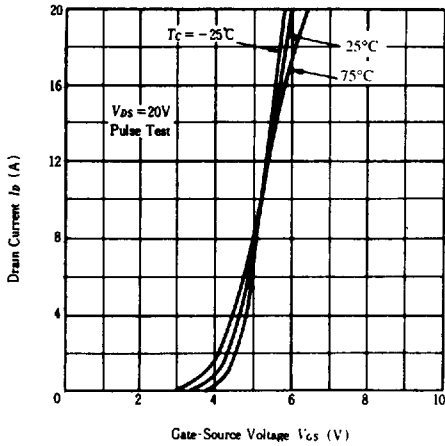
MAXIMUM SAFE OPERATION AREA



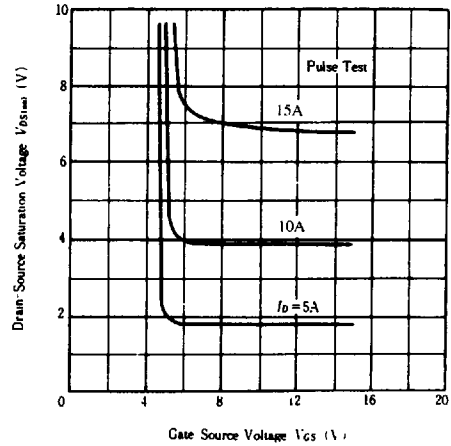
TYPICAL OUTPUT CHARACTERISTICS



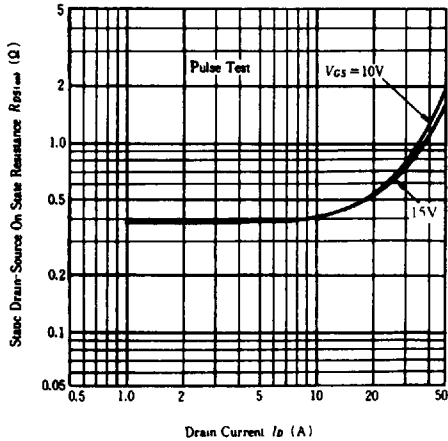
TYPICAL TRANSFER CHARACTERISTICS



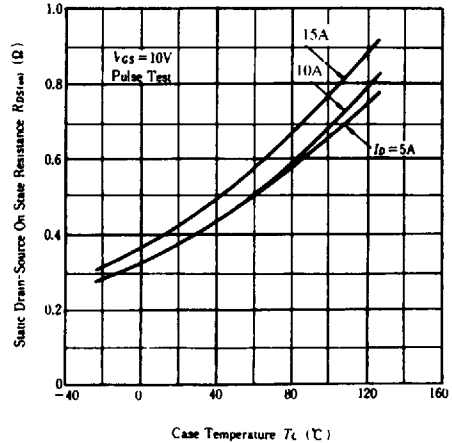
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



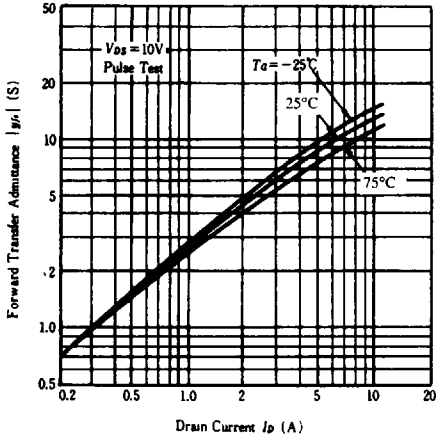
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



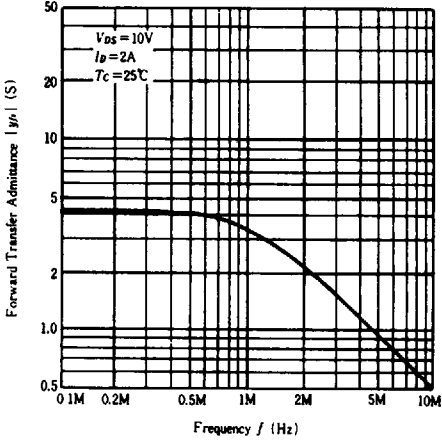
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT

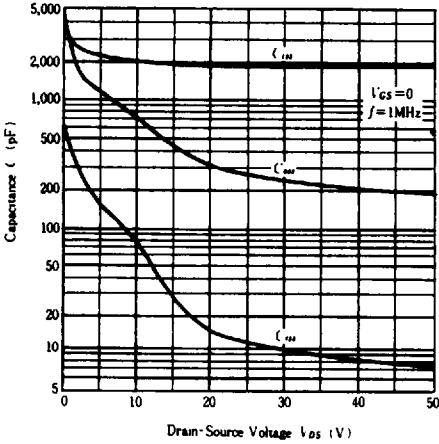


FORWARD TRANSFER ADMITTANCE
VS. FREQUENCY

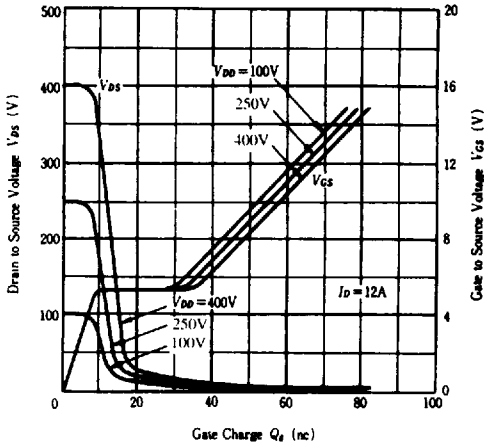


HITACHI/(OPTOELECTRONICS)

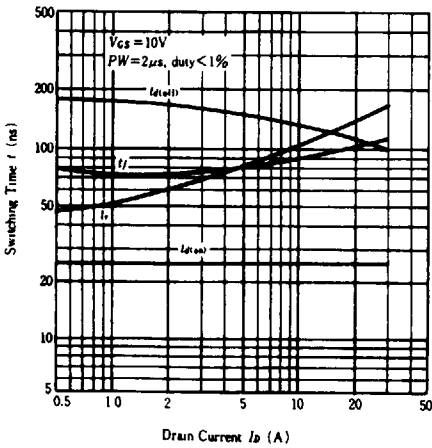
TYPICAL CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE



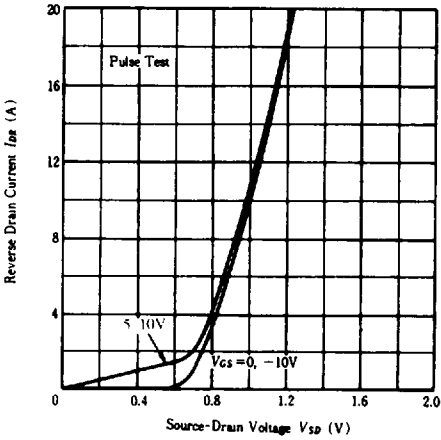
DYNAMIC INPUT CHARACTERISTICS



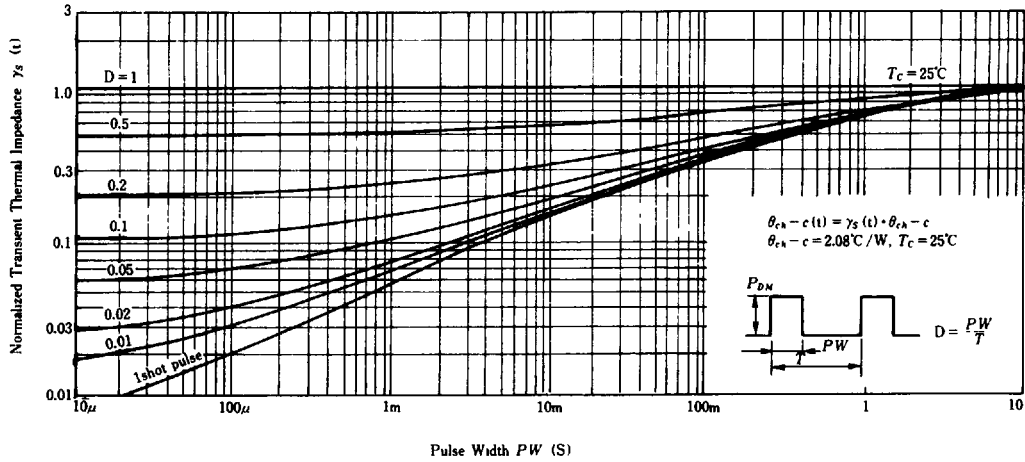
SWITCHING CHARACTERISTICS



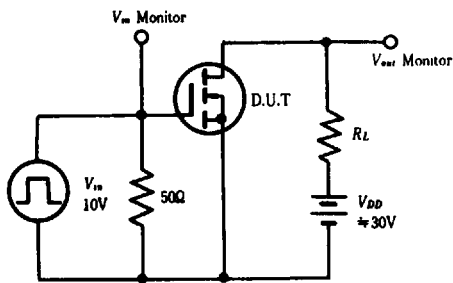
REVERSE DRAIN CURRENT VS.
SOURCE DRAIN VOLTAGE



NORMALIZED TRANSIENT THERMAL IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS

