

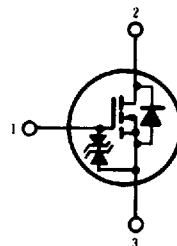
2SK559, 2SK560

SILICON N-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING

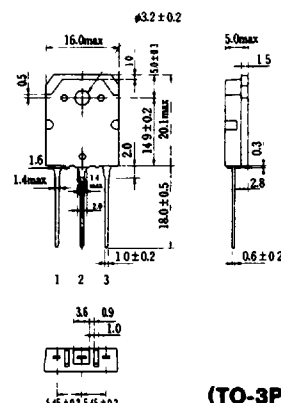
■ FEATURES

- Low On-Resistance.
- High Speed Switching.
- Low Drive Current.
- No Secondary Breakdown.
- Suitable for Switching Regulator, DC-DC Converter, Motor Controls, and Ultrasonic Power Oscillators.



1. Gate
2. Drain (Flange)
3. Source

(Dimensions in mm)



(TO-3P)

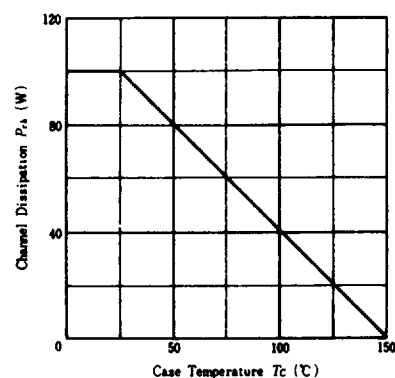
■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Item	Symbol	2SK559	2SK560	Unit
Drain-Source Voltage	V_{DS}	450	500	V
Gate-Source Voltage	V_{GS}	± 20		V
Drain Current	I_D	15		A
Drain Peak Current	$I_{D(pk)}$ *	60		A
Body-Drain Diode Reverse Drain Current	I_{DR}	15		A
Channel Dissipation	P_{ch} *	100		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

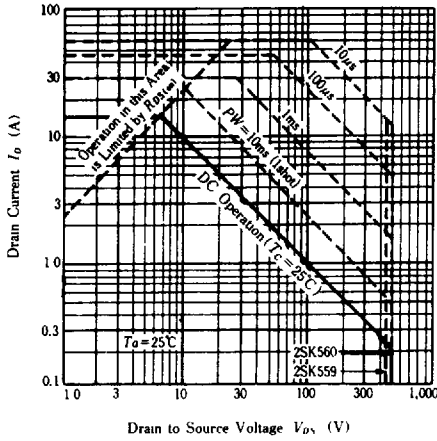


■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

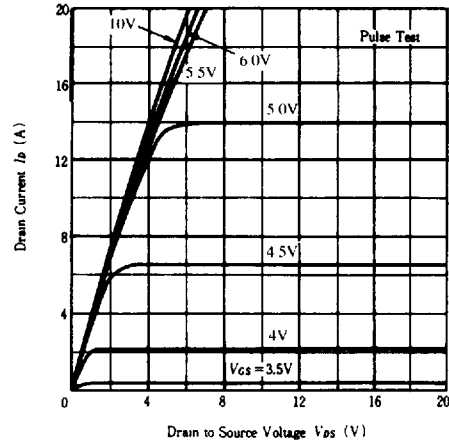
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DS}$	$I_D=10\text{mA}$, $V_{GS}=0$	450	—	—	V
Gate-Source Breakdown Voltage	$V_{(BR)GS}$	$I_G=\pm 100\mu\text{A}$, $V_{DS}=0$	± 20	—	—	V
Gate-Source Leak Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0$	—	—	± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=360\text{V}$, $V_{GS}=0$	—	—	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	$R_{DS(on)}$	$I_D=8\text{A}$, $V_{GS}=10\text{V}$ *	—	0.25	0.36	Ω
Forward Transfer Admittance	$ y_{fs} $	$I_D=8\text{A}$, $V_{DS}=10\text{V}$ *	8	13	—	S
Input Capacitance	C_{in}	$V_{DS}=10\text{V}$, $V_{GS}=0$, $f=1\text{MHz}$	—	2950	—	pF
Output Capacitance	C_{out}		—	1100	—	pF
Reverse Transfer Capacitance	C_{rcs}		—	140	—	pF
Turn-on Delay Time	$t_{d(on)}$	$I_D=8\text{A}$, $V_{GS}=10\text{V}$, $R_L=3.75\Omega$	—	30	—	ns
Rise Time	t_r		—	115	—	ns
Turn-off Delay Time	$t_{d(off)}$		—	200	—	ns
Fall Time	t_f		—	120	—	ns
Body-Drain Diode Forward Voltage	V_{DF}	$I_F=15\text{A}$, $V_{GS}=0$	—	1.2	—	V
Body-Drain Diode Reverse Recovery Time	t_{rr}	$I_F=15\text{A}$, $V_{GS}=0$, $di_F/dt=100\text{A}/\mu\text{s}$	—	500	—	ns

*Pulse Test

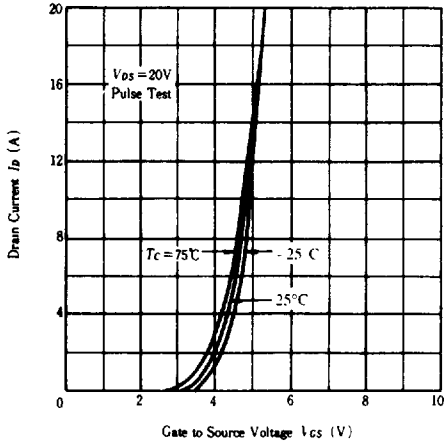
AREA OF SAFE OPERATION



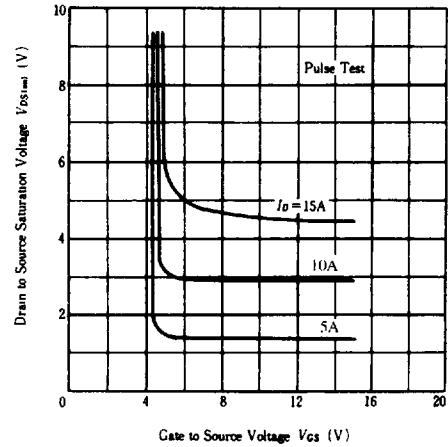
TYPICAL OUTPUT CHARACTERISTICS



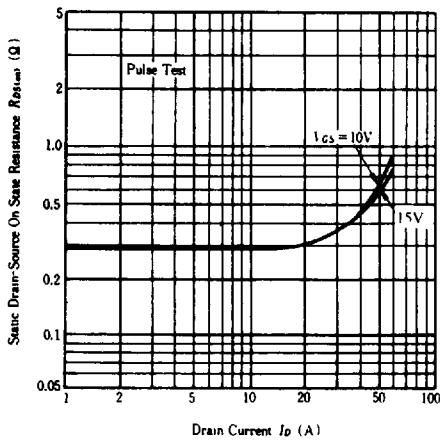
TYPICAL TRANSFER CHARACTERISTICS



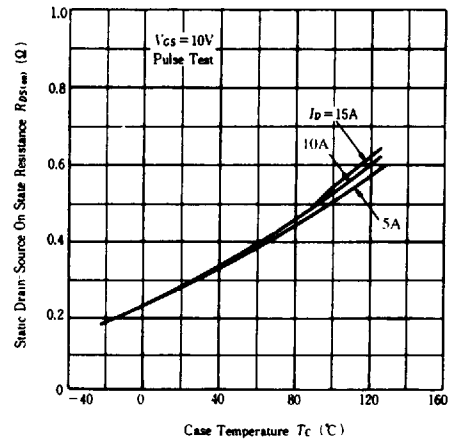
DRAIN-SOURCE SATURATION VOLTAGE VS. GATE-SOURCE VOLTAGE



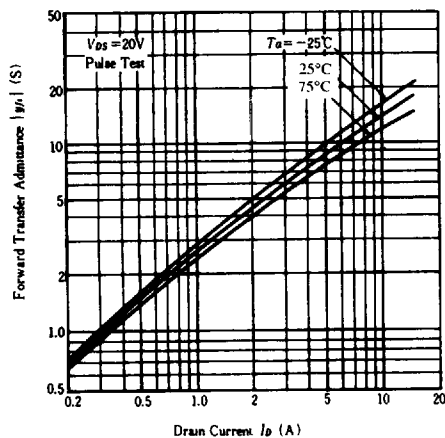
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. DRAIN CURRENT



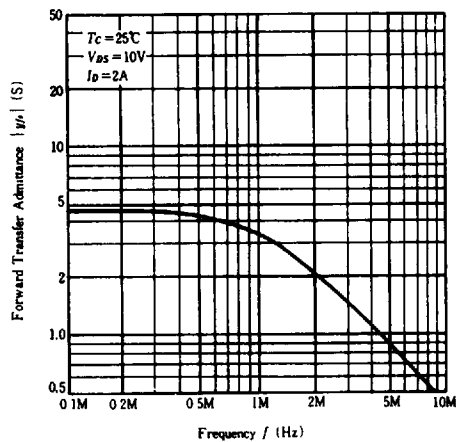
STATIC DRAIN-SOURCE ON STATE RESISTANCE VS. TEMPERATURE



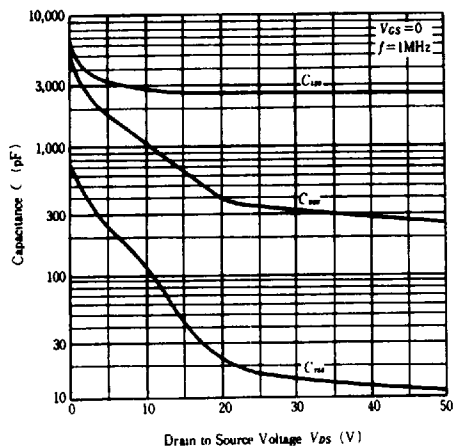
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



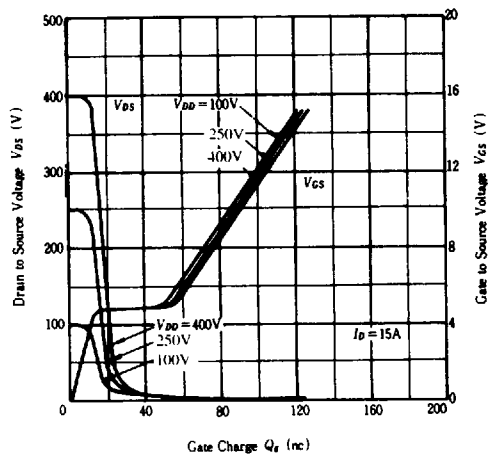
FORWARD TRANSFER ADMITTANCE VS. FREQUENCY



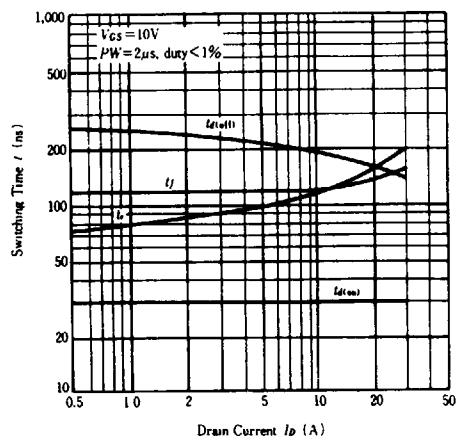
TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



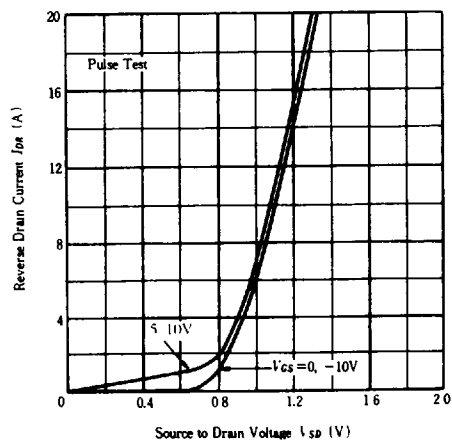
DYNAMIC INPUT CHARACTERISTICS



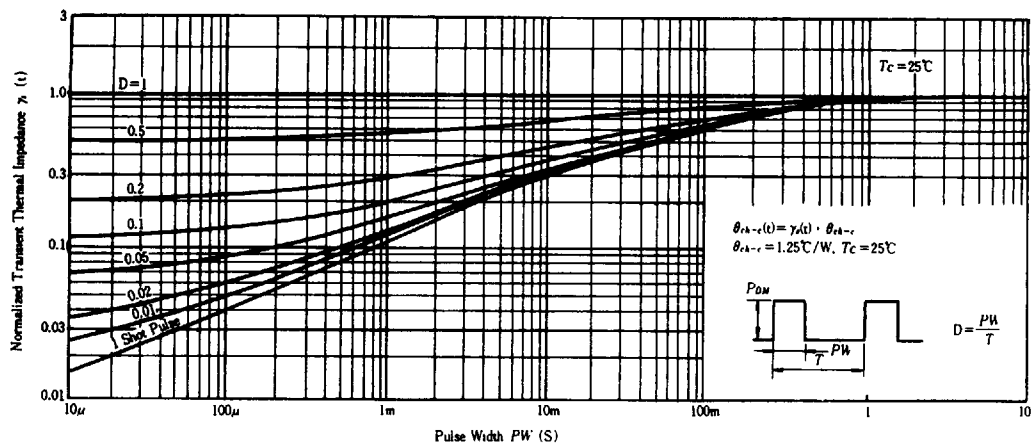
SWITCHING CHARACTERISTICS



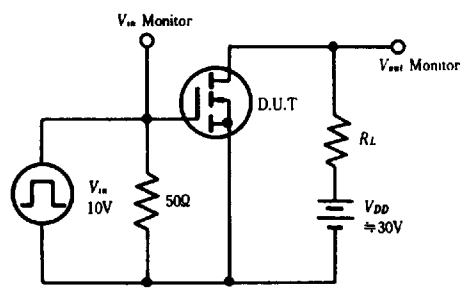
REVERSE DRAIN CURRENT VS. SOURCE - DRAIN VOLTAGE



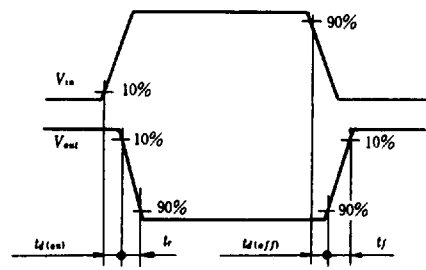
NORMALIZED TRANSIENT THERMAL
IMPEDANCE VS. PULSE WIDTH



SWITCHING TIME TEST CIRCUIT



WAVEFORMS



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