

# N-Channel MOSFET Transistor

## **2SK312 / K312**

400V / 12A

# DATASHEET

OEM – Hitachi

Source: Hitachi Databook Power Mosfet Data 4/83

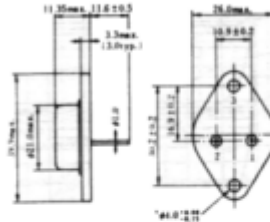
# 2SK312, 2SK313

## SILICON N-CHANNEL MOS FET

HIGH SPEED POWER SWITCHING  
HIGH FREQUENCY POWER AMPLIFIER

Features;

- Low On-Resistance.
- High Speed Switching.
- High Cutoff Frequency.
- No Secondary Breakdown.
- Suitable for Switching Regulator, DC-DC Converter, Motor Control, and Ultrasonic Power Oscillators.



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

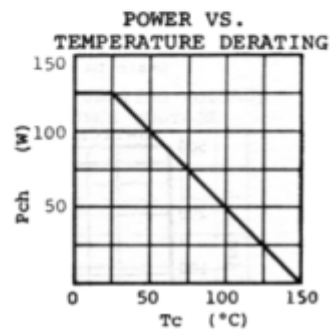
(Dimensions in mm)

(JEDEC TO-3)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	K312	K313	Unit
Drain-Source Voltage	V <sub>DSS</sub>	400	450	V
Gate-Source Voltage	V <sub>GSS</sub>	±20		V
Drain Current	I <sub>D</sub>	12		A
Drain Peak Current	I <sub>D(peak)</sub>	18		A
Body-Drain Diode Reverse Drain Current	I <sub>DR</sub>	12		A
Channel Dissipation	P <sub>ch</sub> *	125		W
Channel Temperature	T <sub>ch</sub>	150		°C
Storage Temperature	T <sub>stg</sub>	-55 ~ +150		°C

\*Value at Tc=25°C

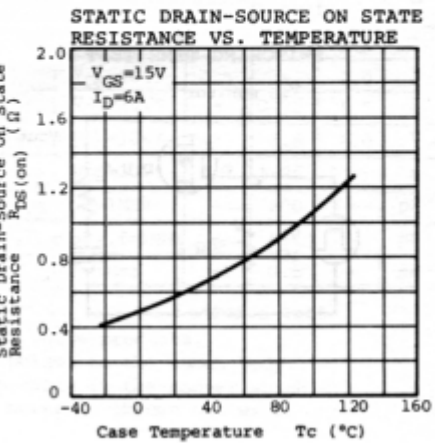
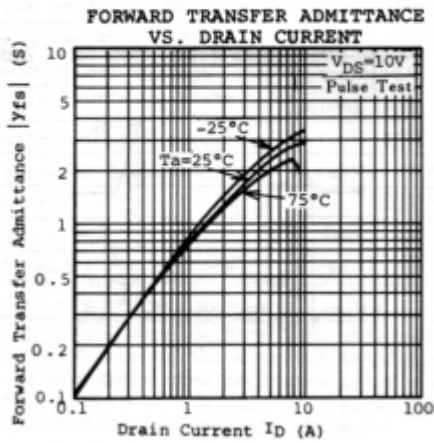
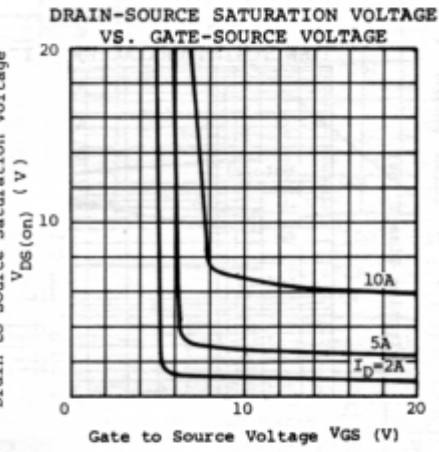
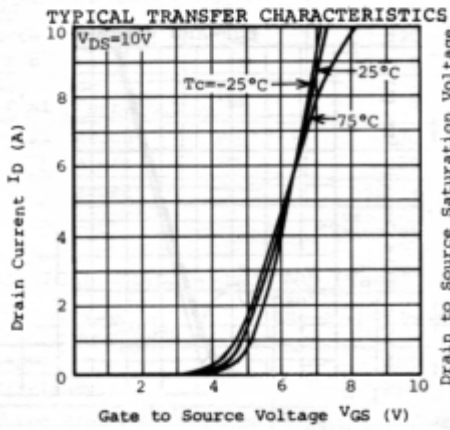
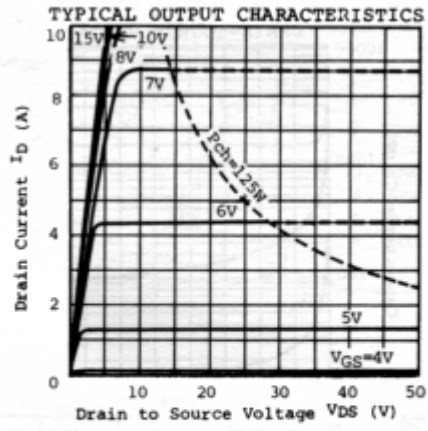
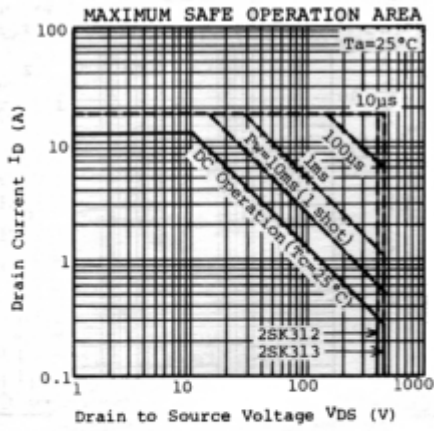


■ ELECTRICAL CHARACTERISTICS (Ta=25°C)

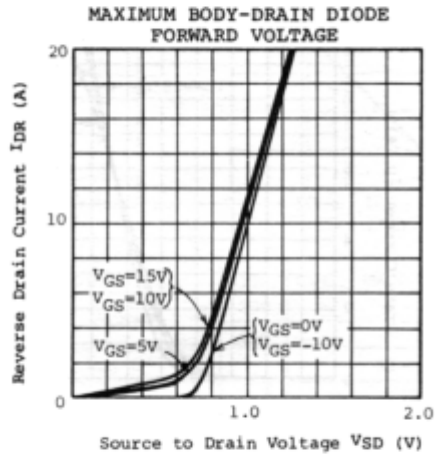
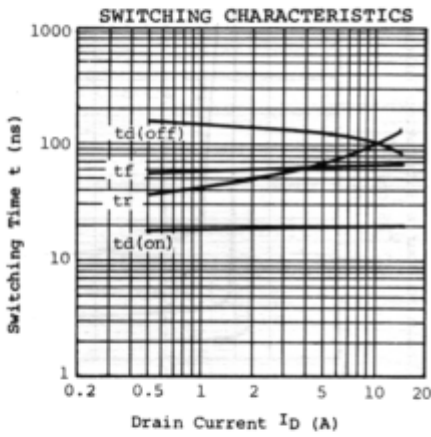
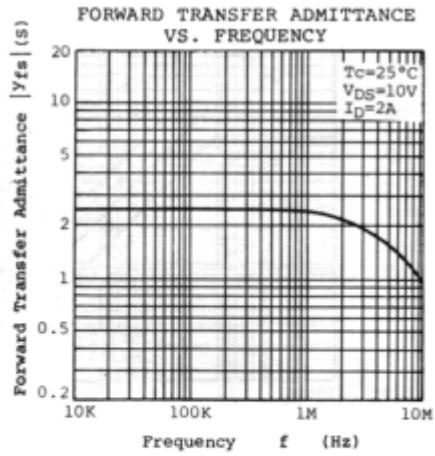
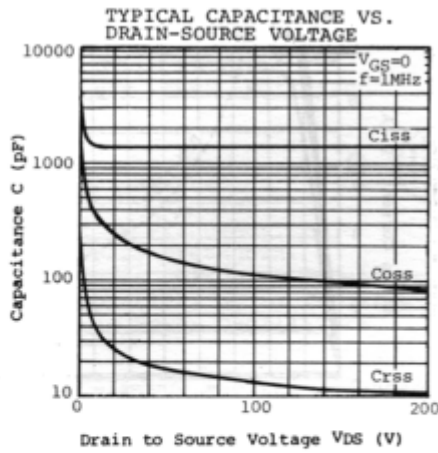
Item	Symbol	Test Condition	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	K312	I <sub>D</sub> =10mA, V <sub>GS</sub> =0	400	-	-	V
	K313		450	-	-	V
Gate-Source Leak Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0	-	-	±1	µA
Zero Gate Voltage Drain Current	K312	V <sub>DS</sub> =320V, V <sub>GS</sub> =0	-	-	1	mA
	K313		V <sub>DS</sub> =360V, V <sub>GS</sub> =0	-	-	1
Gate-Source Cutoff Voltage	V <sub>GS(off)</sub>	I <sub>D</sub> =1mA, V <sub>DS</sub> =10V	1.0	-	5.0	V
Static Drain-Source On State Resistance	R <sub>DS(on)</sub>	I <sub>D</sub> =6A, V <sub>GS</sub> =15V *	-	0.67	0.9	Ω
Drain-Source Saturation Voltage	V <sub>DS(on)</sub>	I <sub>D</sub> =6A, V <sub>GS</sub> =15V *	-	4.0	5.4	V
Forward Transfer Admittance	y <sub>fs</sub>	I <sub>D</sub> =6A, V <sub>DS</sub> =10V *	1.5	2.5	-	S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10 V, V <sub>GS</sub> =0 f=1MHz	-	1500	-	pF
Output Capacitance	C <sub>oss</sub>		-	330	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	35	-	pF
Turn-On Delay Time	t <sub>d(on)</sub>	I <sub>D</sub> =2A, V <sub>GS</sub> =15V R <sub>L</sub> =15Ω	-	20	-	ns
Rise Time	t <sub>r</sub>		-	50	-	ns
Turn-Off Delay Time	t <sub>d(off)</sub>		-	140	-	ns
Fall Time	t <sub>f</sub>		-	60	-	ns
Body-Drain Diode Forward Voltage	V <sub>DF</sub>	I <sub>F</sub> =6A, V <sub>GS</sub> =0	-	0.9	-	V
Body-Drain Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =6A, V <sub>GS</sub> =0	-	800	-	ns

\*Pulse Test

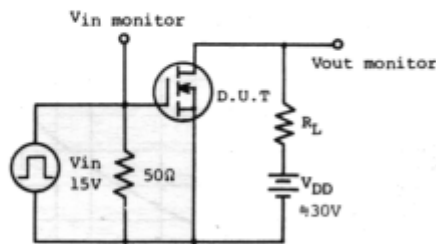
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SWITCHING TIME TEST CIRCUIT



SWITCHING TIME TEST WAVEFORMS

