3SK38A

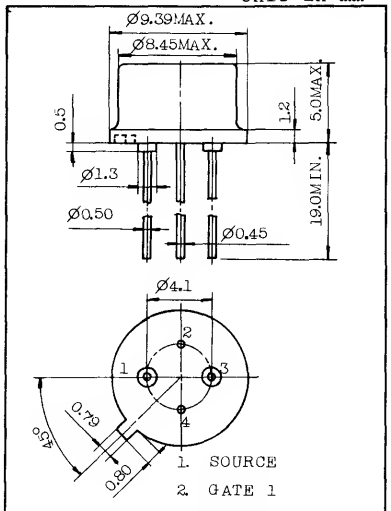
SILICON N CHANNEL MOS TYPE (INDUSTRIAL APPLICATIONS)

CHOPPER CIRCUIT APPLICATIONS.
SWITCHING CIRCUIT APPLICATIONS.
IMPEDANCE CONVERTER APPLICATIONS.

FEATURES :

- Ultra Small Drain-Source Thermoelectromotive Force
  : Vemf = 1.3 μV/°C (Typ.)
- High Resistance Ratio
  : r_{DS}(ON) = 500Ω (Max.) at. V_{G1S}=3V
  : r_{DS}(OFF)= 100MΩ (Min.) at. V_{G1S}=0V
- Low Gate Capacitance and Offset
  : C_D = 2.5pF(Max.), ΔC_G=0.3pF(Max.)
- Contains Gates Protection Diode.

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2 − 8E1A

Weight : 1.1g

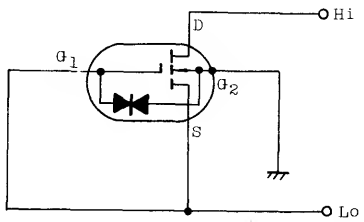
MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	20	V
Gate 1-Source Voltage	V_{G1SS}	±12	V
Gate 2-Source Voltage	V_{G2SS}	-20	V
Drain-Source Current	I_{DS}	10	mA
Drain Power Dissipation	P_D	200	mW
Channel Temperature	T_{ch}	125	°C
Storage Temperature Range	T_{stg}	-65 ∼ 125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{G1SS}	V_{G1S}=12V, V_{G2S}=0, V_{DS}=0	-	-	25	nA
		I_{G1SS}	V_{G1S}=12V, V_{G2S}=0, V_{DS}=0	-	-	-25	nA
Drain Current		I_{DSS}	V_{G1S}=0, V_{G2S}=0, V_{DS}=6V	-	-	50	nA
Gate-Source Cut-off Voltage		$V_{GS(OFF)}$	V_{G2S}=0, V_{DS}=6V, I_D=50nA	0	-	3	V
Forward Transfer Admittance		$\|y_{fs}\|$	V_{G1S}=3V, V_{G2S}=0, V_{DS}=6V, f=1kHz	0.35	-	-	mS
Gate-Drain Capacitance		C_{G1D}	Fig. 1	-	-	2.5	pF
Gate-Source Capacitance		C_{G1S}	Fig. 2	-	-	2.5	pF
Differential Gate Capacitance		C_D	$\|C_{G1D}-C_{G1S}\|$	-	-	0.3	pF
Drain-Source ON Resistance		$r_{DS(ON)}$	V_{G1S}=3V, V_{G2S}=0, V_{DS}=10mV	-	-	500	Ω
Drain-Source OFF Resistance		$r_{DS(OFF)}$	V_{G1S}=0, V_{G2S}=0, V_{DS}=±10mV	100	-	-	MΩ
Drain-Source Thermoelectromotive Force		V_{emf}	V_{G1S}=3V, V_{G2S}=0, Ta=0∼55°C	-	1.3	2	μv/°C
Switching Time	Turn-on Time	t_{on}	Fig. 3	-	50	-	ns
	Turn-off Time	t_{off}		-	900	-	

Fig.1 C_{G1D} TEST CIRCUIT

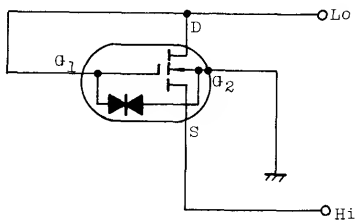


CAPACITANCE BRIDGE

f = 1MHz

V_{G1S} = 0

Fig.2 C_{G1S} TEST CIRCUIT

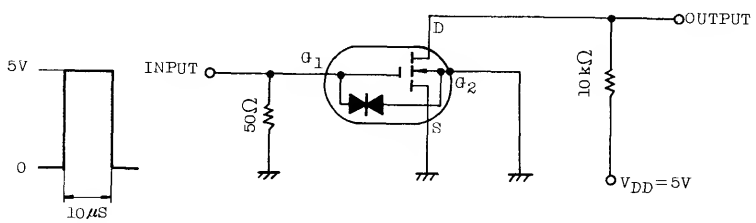


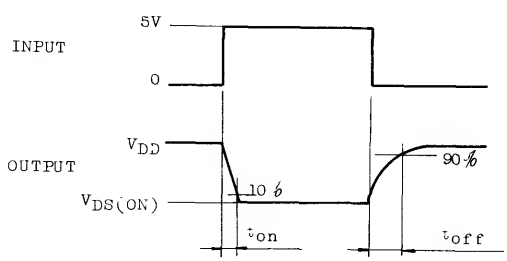
CAPACITANCE BRIDGE

f = 1MHz

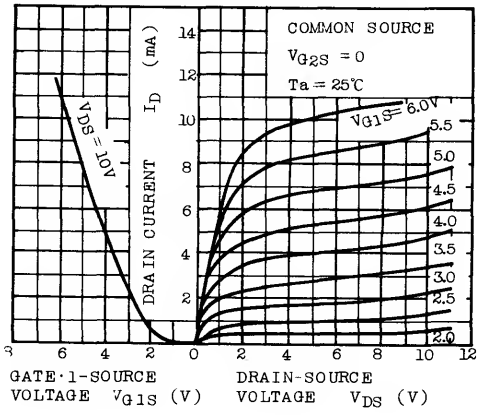
V_{G1D} = 0

Fig.3 SWITCHING TIME TEST CIRCUIT

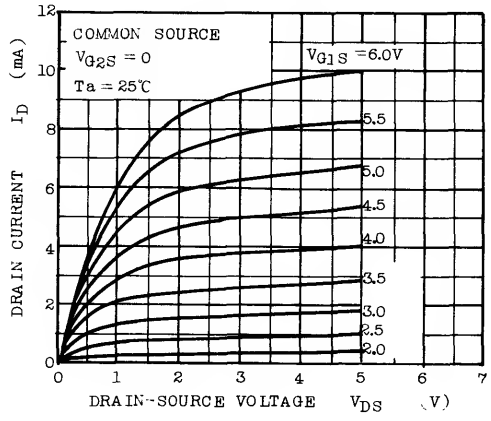




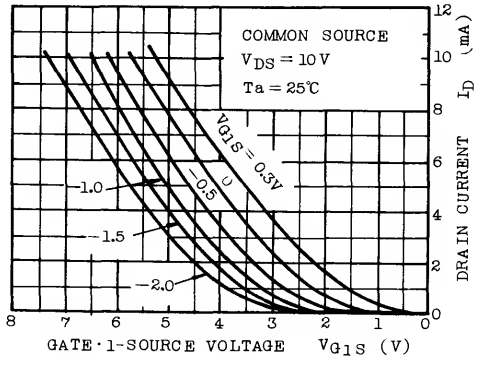
STATIC CHARACTERISTICS



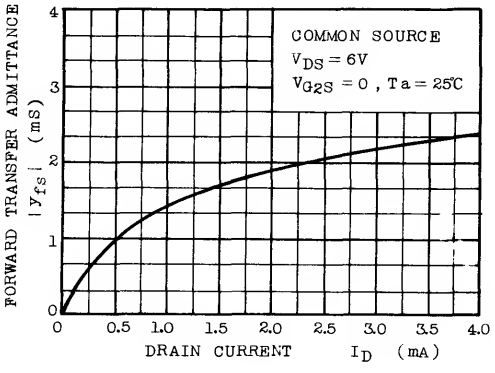
$I_D - V_{DS}$



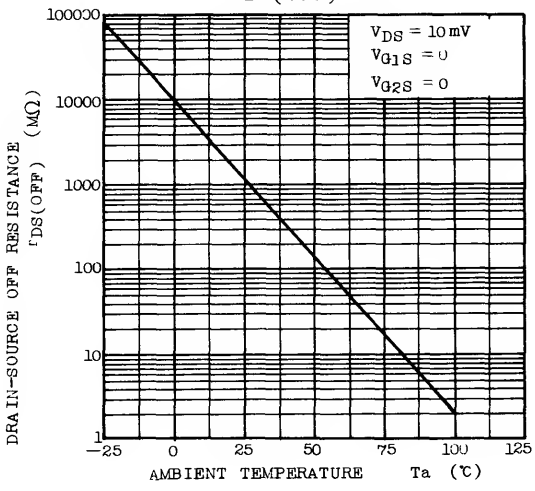
$I_D - V_{G1S}$



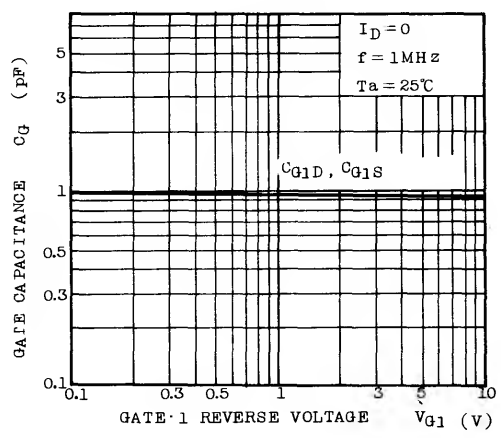
$|y_{fs}| - I_D$



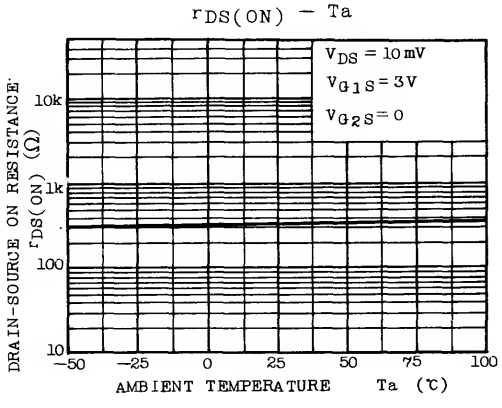
$r_{DS(OFF)}$ — Ta



C_G — V_{G1}



$r_{DS(ON)}$ — Ta



P_D — Ta