2SK381

FOR LOW FREQUENCY AMPLIFY APPLICATION
N CHANNEL JUNCTION TYPE

DESCRIPTION

Mitsubishi 2SK381 is a small type resin sealed N channel junction type FET. It is especially designed for low frequency voltage amplify,analog switch application.

Complementary with 2SJ40(P Channel).

FEATURE

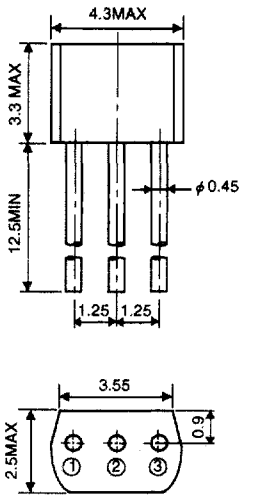
- Small type for mounting
- High | yfs | | yfs | =3mS(typ)
- Low $R_{DS(ON)}$ $R_{DS(ON)}$=250Ω typ

APPLICATION

General purpose voltage amplify,analog switch circuit for stereo,cassette deck,VCR.

OUTLINE DRAWING

Unit:mm



TERMINAL CONNECTOR

① : SOURCE
② : GATE
③ : DRAIN

EIAJ : —
JEDEC : —

Note)
The dimension without tolerance represent central value.

MAXIMUM RATINGS (Ta=25℃)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to Drain voltage	-50	V
I_G	Gate current	10	mA
P_T	Total allowable dissipation(Ta=25℃)	300	mW
T_{ch}	Channel temperature	+125	℃
T_{stg}	Storage temperature	-55 to +125	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$V_{(BR)GDO}$	G to D break down voltage	I_G=-10μA,I_S=0	-50			V
I_{GSS}	Gate leakage current	V_{GS}=-30V,V_{DS}=0			-1	nA
I_{DSS} *	Drain current	V_{DS}=10V,V_{GS}=0	0.3		12	mA
$V_{GS(off)}$	Cut off voltage	V_{DS}=10V,I_D=10μA	-0.3	-1.5	-6.0	V
| yfs |	Forward transfer admittance	V_{DS}=10V,V_{GS}=0,f=1kHz	1.0	3.0		mS
| yos |	Output admittance	V_{DS}=10V,V_{GS}=0,f=1kHz		10		μS
C_{iss}	Input capacitance	V_{DS}=10V,V_{GS}=0,f=1MHz		8		pF
C_{rss}	Feed back capacitance	V_{DS}=10V,V_{GS}=0,f=1MHz		1.5		pF
$R_{DS(ON)}$	Drain to source resistor	V_{DS}=10mVrms(1kHz),V_{GS}=0,I_{DSS}=5mA		250		Ω

* : It shows I_{DSS} classification in right table.

Item	A	B	C	D	E
I_{DSS}	0.3 to 0.8	0.6 to 1.5	1.0 to 3.0	2.5 to 6.0	5.0 to 12

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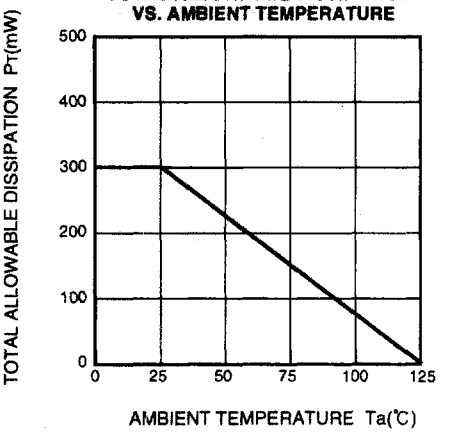
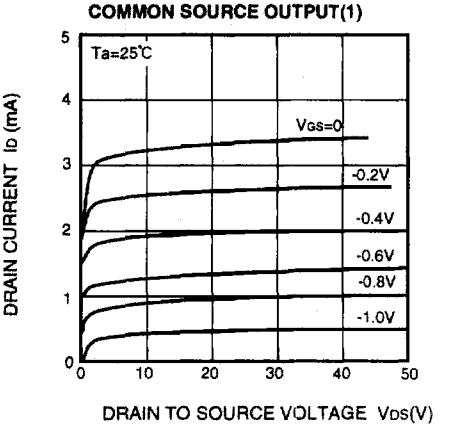
TYPICAL CHARACTERISTICS

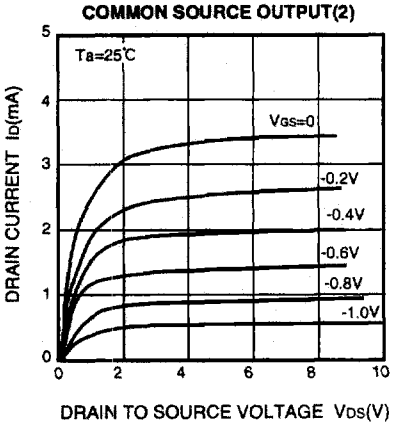
TOTAL ALLOWABLE DISSIPATION VS. AMBIENT TEMPERATURE



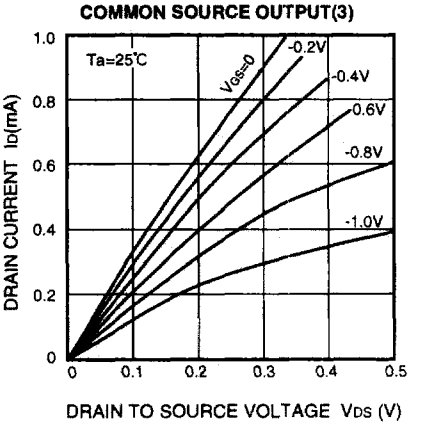
COMMON SOURCE OUTPUT(1)



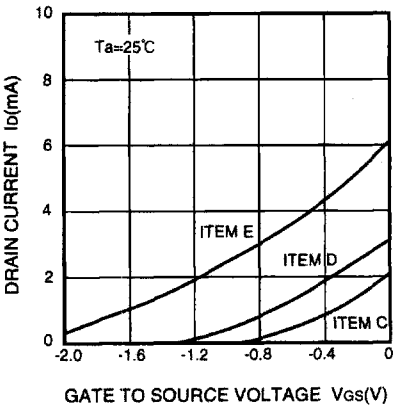
COMMON SOURCE OUTPUT(2)



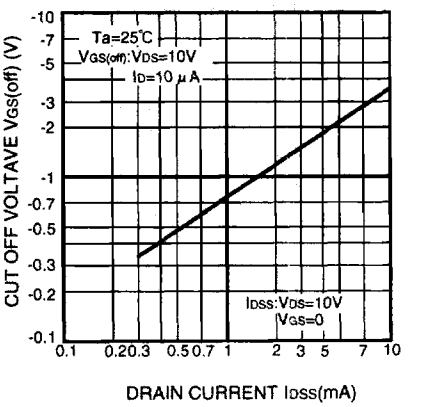
COMMON SOURCE OUTPUT(3)



COMMON SOURCE TRANSFER



CUT OFF VOLTAGE VS. DRAIN CURRENT



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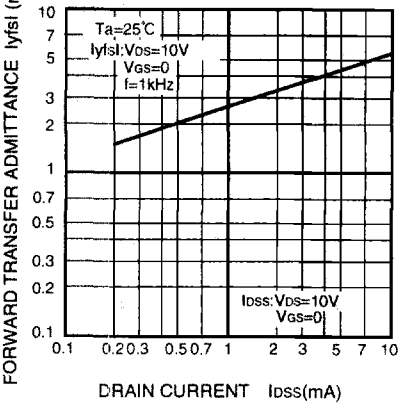
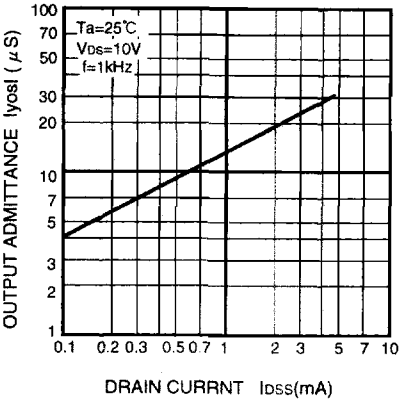
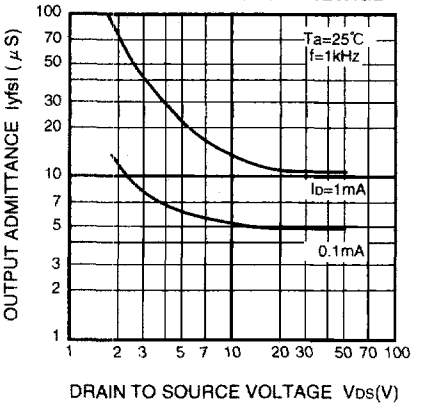
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT



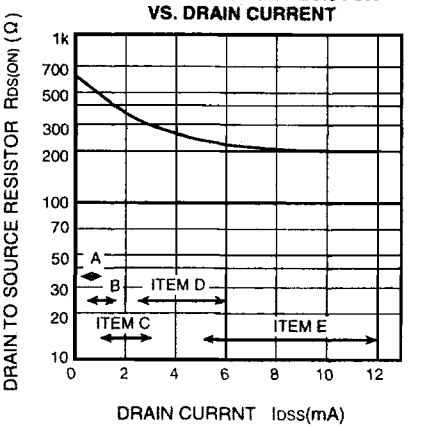
OUTPUT ADMITTANCE VS. DRAIN CURRENT



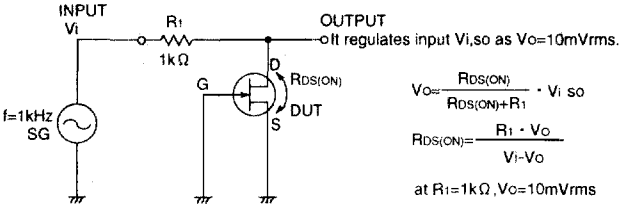
OUTPUT ADMITTANCE VS. DRAIN TO SOURCE VOLTAGE



DRAIN TO SOURCE RESISTOR VS. DRAIN CURRENT



DRAIN TO SOURCE RESISTOR RDS(ON) TEST CIRCUIT



$$V_O = \frac{R_{DS(ON)}}{R_{DS(ON)}+R_1} \cdot V_i \text{ so}$$

$$R_{DS(ON)} = \frac{R_1 \cdot V_O}{V_i - V_O}$$

at R_1=1kΩ, V_O=10mVrms

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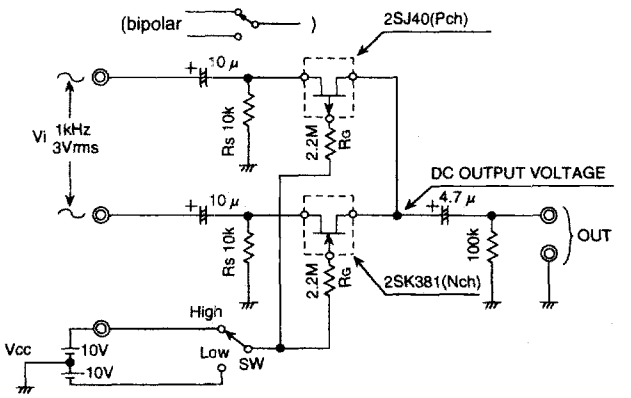
ANALOG SWITCH APPLICATION CIRCUIT

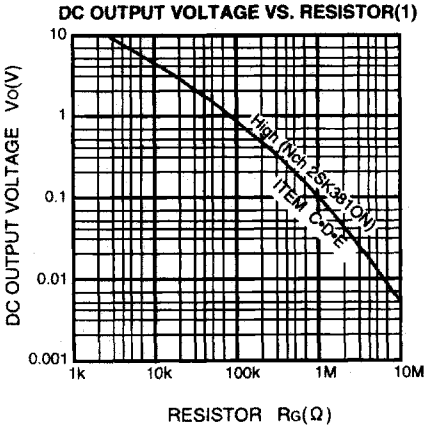


	Attenuation value	DC Output voltage
High	-92.4(dB)	42.59(mV)
Low	-88.4(dB)	-43.06(mV)

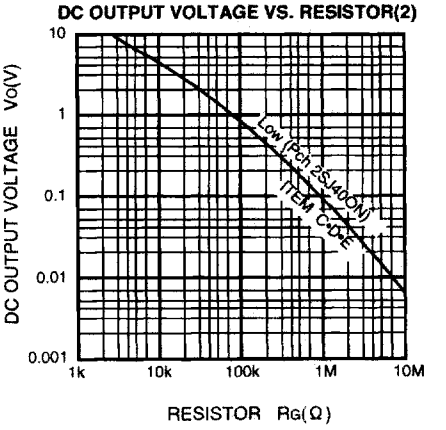
f=1kHz
Vi=3Vrms

Unit Resistor:Ω
Capacitor:F

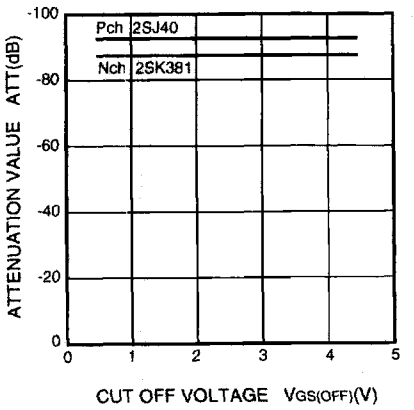
DC OUTPUT VOLTAGE VS. RESISTOR(1)



DC OUTPUT VOLTAGE VS. RESISTOR(2)



ATTENUATION VALUE CUT OFF VOLTAGE



DRAIN CURRENT VS. AMBIENT TEMPERATURE