SILICON N CHANNEL JUNCTION TYPE
(INDUSTRIAL APPLICATIONS)

2SK11
2SK12
2SK15

LOW FREQUENCY AMPLIFIER, HIGH INPUT IMPEDANCE CIRCUIT, CHOPPER AMPLIFIER, DIFFERENTIAL AMPLIFIER AND SWITCHING CIRCUIT APPLICATIONS.

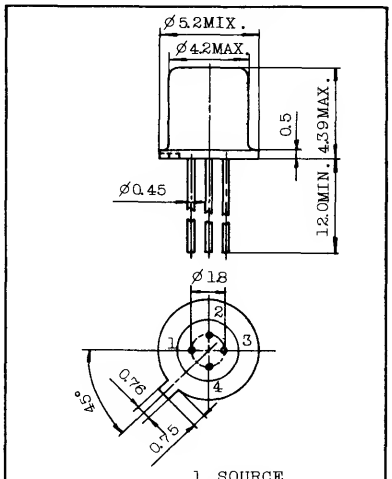
LOW NOISE AMPLIFIER APPLICATIONS (2SK15).

FEATURES:

- Low Gate Leakage Current
  - : I_{GSS}=-1.0nA (Max.) (2SK11)
  - : I_{GSS}=-0.1nA (Max.) (2SK12, 2SK15)
- High Gain
  - : $|y_{fs}|$=700 ∿ 3200 μS (2SK11)
  - : $|y_{fs}|$=800 ∿ 3200 μS (2SK12, 2SK15)
- Low Noise
  - : NF=3dB (Max.) at f=1kHz, R_g=1MΩ (2SK12)
  - : NF=3dB (Max.) at f=1kHz, Rg=10kΩ (2SK15)
  - : NF=10dB (Max.) at f=120Hz, R_g=10kΩ (2SK15)

Well Matched Pairs are Available. (Refer to page 3)

Unit in mm



JEDEC	TO-17
EIAJ	TC-4, TB-6C
TOSHIBA	2-4A1A

Weight : 0.30g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V_{GDS}	-20	V
Gate Current	I_G	10	mA
Drain Power Dissipation	P_D	100	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-65 ∿ 150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	2SK11	I_{GSS}	V_{GS}=-10V, V_{DS}=0	-	-	-1.0	nA
	2SK12 2SK15			-	-	-0.1	
Gate-Drain Breakdown Voltage		$V_{(BR)GDS}$	V_{DS}=0, I_G=0.1mA	-20	-	-	V
Drain Current	(Note 1) 2SK11	I_{DSS}	V_{DS}=10V, V_{GS}=0	0.3	-	6.5	mA
	(Note 2) 2SK12 (Note 3) 2SK15			0.45	-	5.0	
Gate-Source Cutoff Voltage	(Note 1) 2SK11	$V_{GS(OFF)}$	V_{DS}=10V, I_D=0.1μA	-0.5	-	-6.0	V
	(Note 2) 2SK12			-0.65	-	-4.5	
	(Note 3) 2SK15			-0.65	-	-5.0	
Forward Transfer Admittance	(Note 1) 2SK11	$\|y_{fs}\|$	V_{GS}=-10V, V_{DS}=0, f=1kHz	700	-	3200	μS
	(Note 2) 2SK12 (Note 3) 2SK15			800	-	3200	
Gate Capacitance		C_G	V_{GS}=-10V, V_{DS}=0, f=1MHz	-	3.0	5.0	pF
Noise Voltage	2SK12	V_N	V_{DS}=10V, I_D=0.45mA Rg=1MΩ, Δf=10Hz∿10kHz	-	-	16	μV
	2SK15	$V_{N(P-P)}$	V_{DS}=5V, I_D=0.45mA, Rg=10kΩ, Δf=5Hz∿50Hz	-	-	4	
Noise Figure	2SK12	NF	V_{DS}=10V, I_D=0.45mA, Rg=1MΩ, f=1kHz	-	-	3	dB
	2SK15	NF(1)	V_{DS}=10V, I_D=0.45mA, Rg=10kΩ, f=1kHz	-	-	3	
		NF(2)	V_{DS}=10V, I_D=0.45mA Rg=10kΩ, f=120Hz	-	-	10	

: According to the value of I_{DSS}, $V_{GS(OFF)}$ and $|y_{fs}|$, the 2SK11 is classified as follows.

CLASSIFICATION	SYMBOL	I_{DSS} (mA)		$V_{GS(OFF)}$ (V)		$\|y_{fs}\|$ (μS)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
2SK11-R	R	0.3	1.0	-0.5	-2.0	700	2300
2SK11-O	O	0.8	2.5	-0.8	-3.5	1000	3000
2SK11-Y	Y	2.0	6.5	-1.4	-6.0	1300	3200

Note 2 : According to the value of I_{DSS}, $V_{GS(OFF)}$ and $|y_{fs}|$, the 2SK12 is classified as follows.

CLASSIFICATION	SYMBOL	I_{DSS} (mA)		$V_{GS(OFF)}$ (V)		$\|y_{fs}\|$ (μS)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
2SK12-R	R	0.45	0.9	-0.65	-1.6	800	1900
2SK12-O	O	0.8	1.6	-0.9	-2.2	1000	2300
2SK12-Y	Y	1.4	2.8	-1.2	-3.0	1300	3000
2SK12-GR	GR	2.5	5.0	-1.7	-4.5	1600	3200

Note 3 : According to the value of I_{DSS}, $V_{GS(OFF)}$ and $|y_{fs}|$, the 2SK15 is classified as follows.

CLASSIFICATION	SYMBOL	I_{DSS} (mA)		$V_{GS(OFF)}$ (V)		$\|y_{fs}\|$ (μS)	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
2SK15-R	R	0.45	0.9	-0.65	-1.8	800	1900
2SK15-O	O	0.8	1.6	-0.9	-2.5	1000	2300
2SK15-Y	Y	1.4	2.8	-1.3	-3.5	1300	3000
2SK15-GR	GR	2.6	5.0	-1.8	-5.0	1600	3200

STANDARD MATCHED PAIR FETS

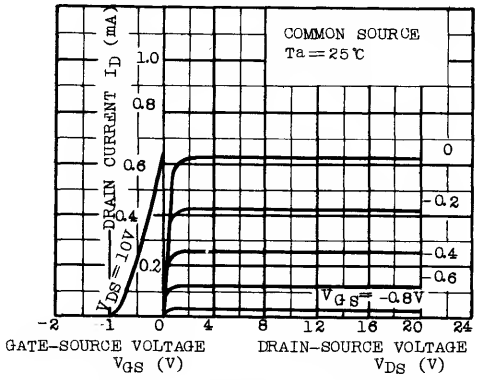
2SK12-R Ⓟ	2SK15-R Ⓟ
2SK12-O Ⓟ	2SK15-O Ⓟ
2SK12-Y Ⓟ	2SK15-Y Ⓟ
2SK12-GR Ⓟ	2SK15-GR Ⓟ

MATCHED PAIR CHARACTERISTICS (Ta=25°C)

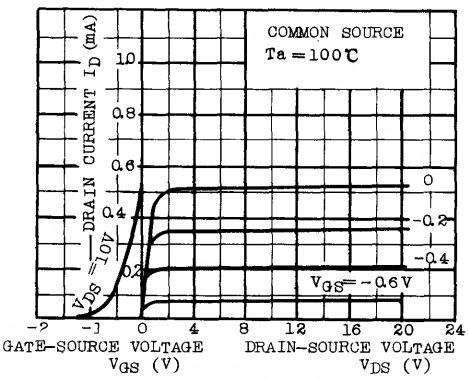
CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Differential Drain Current	ΔI_{DSS}	V_{DS}=10V, V_{GS}=0	-	-	10	%
Gate-Source Voltage Differential Drift	ΔV_{GS}	V_{DG}=10V, I_D=0.3mA	-	-	20	mV

Other Characteristics are same as 2SK12, 2SK15.

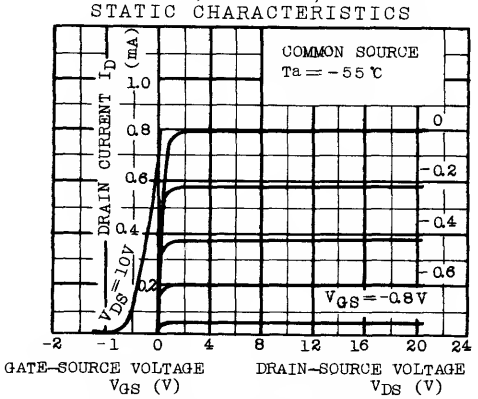
2SK11-R, 2SK12-R, 2SK15-R
STATIC CHARACTERISTICS



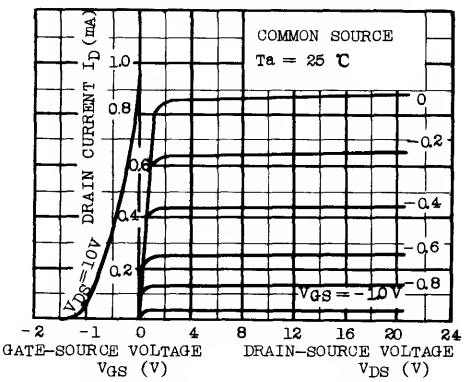
2SK11-R, 2SK12-R, 2SK15-R
STATIC CHARACTERISTICS



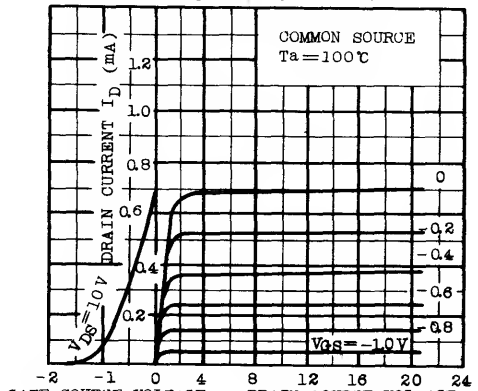
2SK11-R, 2SK12-R, 2SK15-R
STATIC CHARACTERISTICS



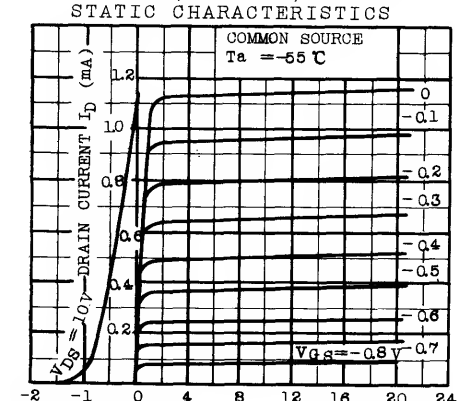
2SK11-O, 2SK12-O, 2SK15-O
STATIC CHARACTERISTICS



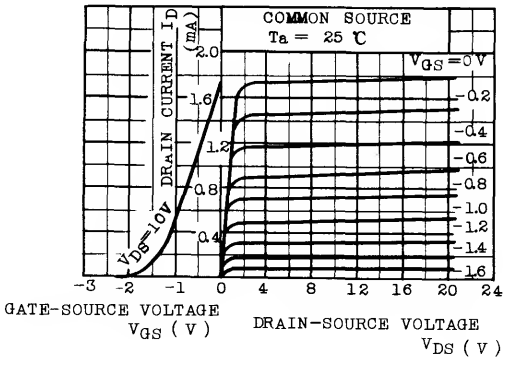
2SK11-O, 2SK12-O, 2SK15-O
STATIC CHARACTERISTICS



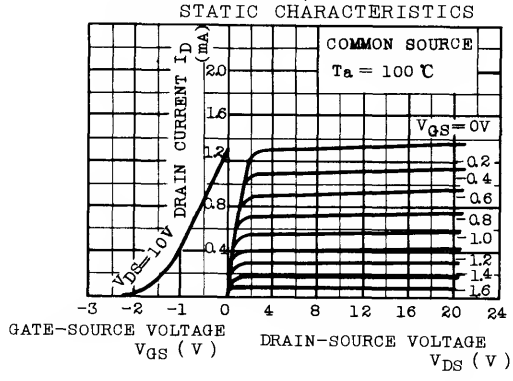
2SK11-O, 2SK12-O, 2SK15-O
STATIC CHARACTERISTICS



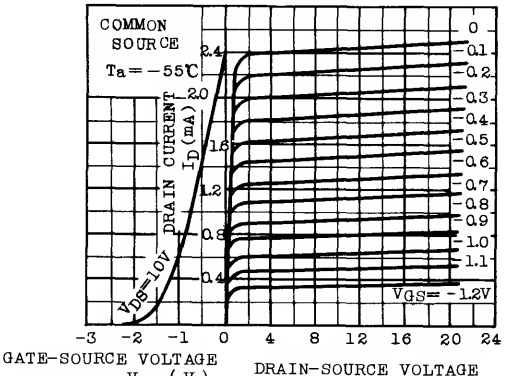
2SK11-O, 2SK12-Y, 2SK15-Y
STATIC CHARACTERISTICS



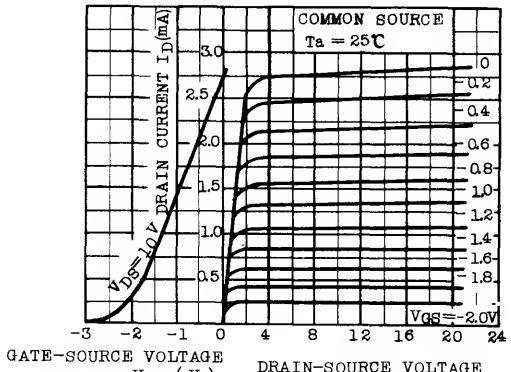
2SK11-O, 2SK12-Y, 2SK15-Y
STATIC CHARACTERISTICS



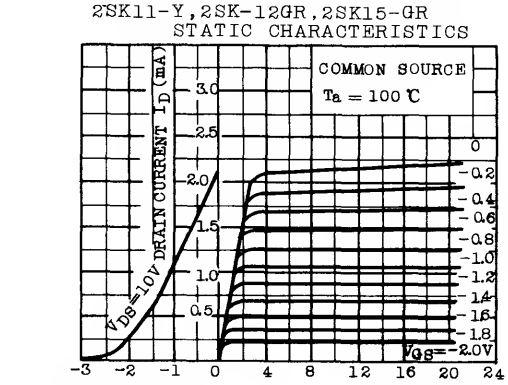
2SK11-O, 2SK12-Y, 2SK15-Y
STATIC CHARACTERISTICS



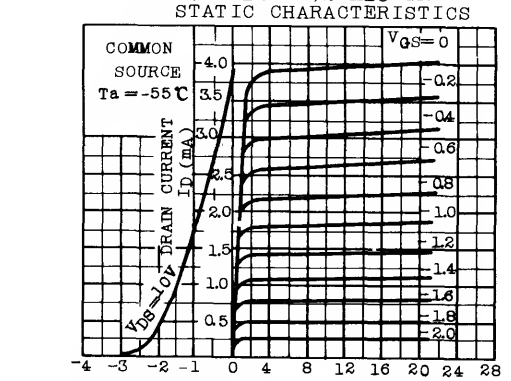
2SK11-Y, 2SK12-GR, 2SK15-GR
STATIC CHARACTERISTICS



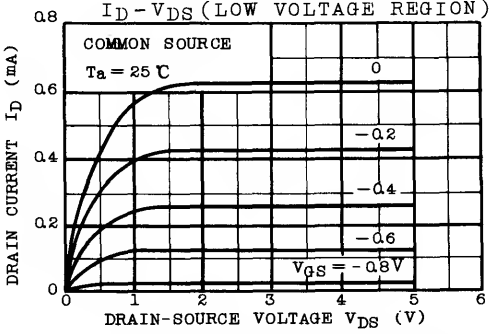
2SK11-Y, 2SK-12GR, 2SK15-GR
STATIC CHARACTERISTICS



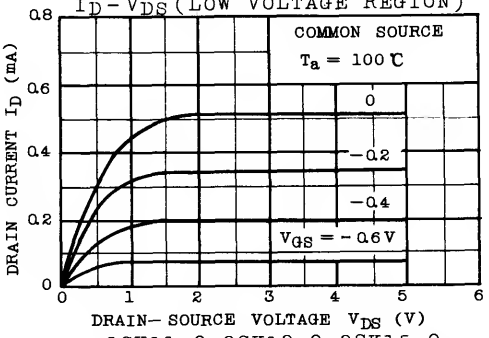
2SK11-Y, 2SK12-GR, 2SK15-GR
STATIC CHARACTERISTICS



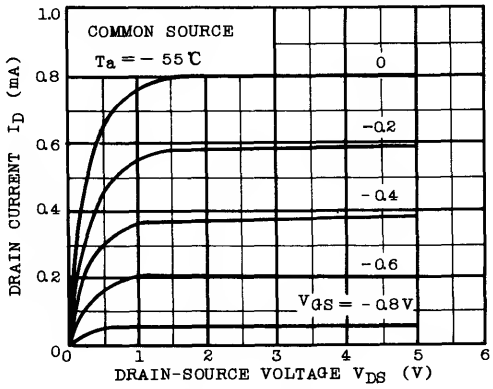
2SK11-R, 2SK12-R, 2SK15-R
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



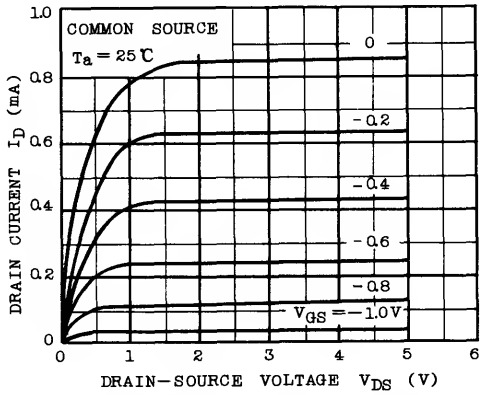
2SK11-R, 2SK12-R, 2SK15-R
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



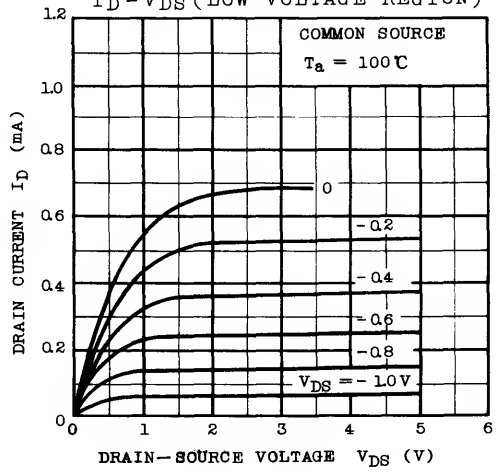
2SK11-R, 2SK12-R, 2SK15-R
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



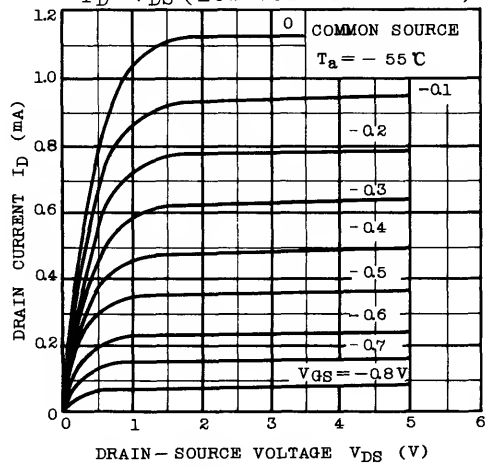
2SK11-O, 2SK12-O, 2SK15-O
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



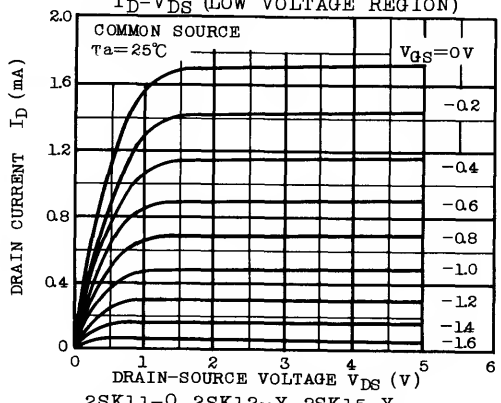
2SK11-O, 2SK12-O, 2SK15-O
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



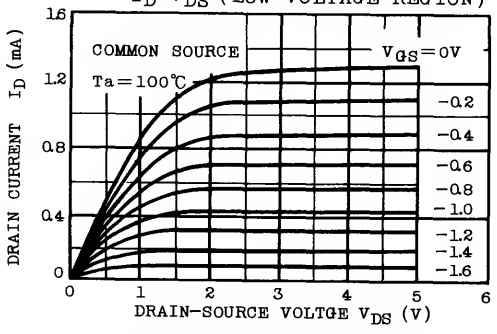
2SK11-O, 2SK12-O, 2SK15-O
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



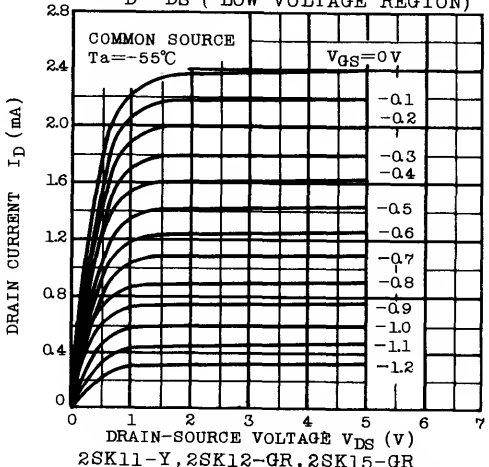
2SK11-O, 2SK12-Y, 2SK15-Y
I_D-V_{DS} (LOW VOLTAGE REGION)



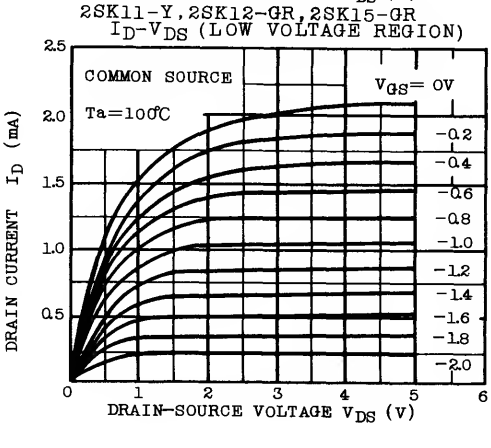
2SK11-O, 2SK12-Y, 2SK15-Y
I_D-V_{DS} (LOW VOLTAGE REGION)



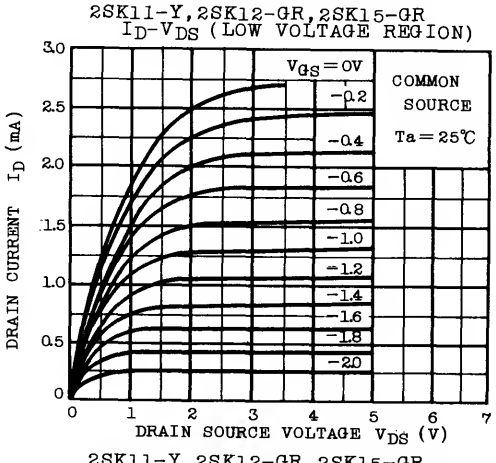
2SK11-O, 2SK12-Y, 2SK15-Y
I_D-V_{DS} (LOW VOLTAGE REGION)



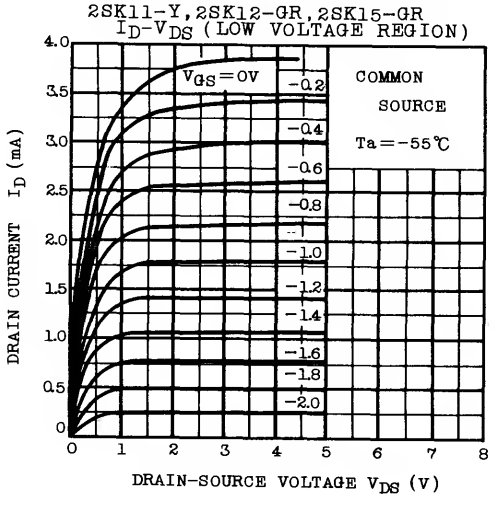
2SK11-Y, 2SK12-GR, 2SK15-GR
I_D-V_{DS} (LOW VOLTAGE REGION)



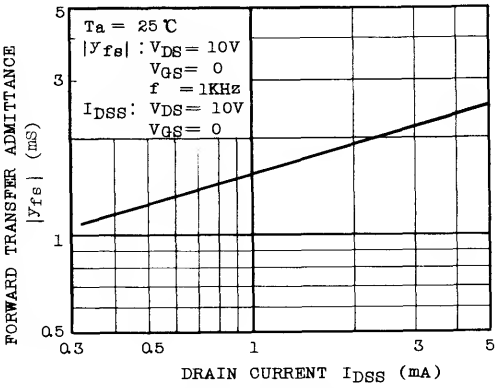
2SK11-Y, 2SK12-GR, 2SK15-GR
I_D-V_{DS} (LOW VOLTAGE REGION)



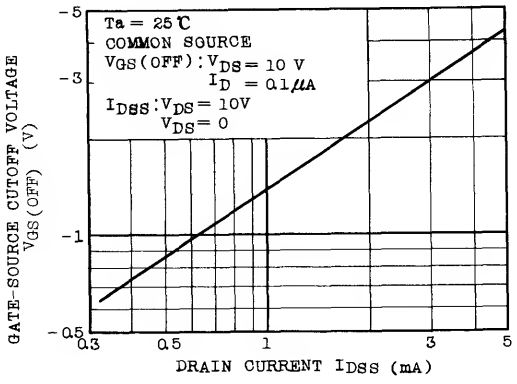
2SK11-Y, 2SK12-GR, 2SK15-GR
I_D-V_{DS} (LOW VOLTAGE REGION)



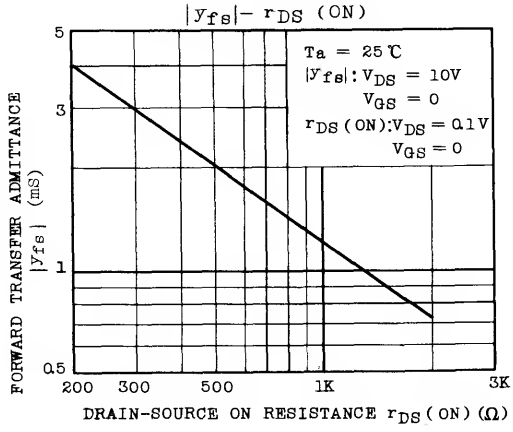
$|y_{fs}| - I_{DSS}$



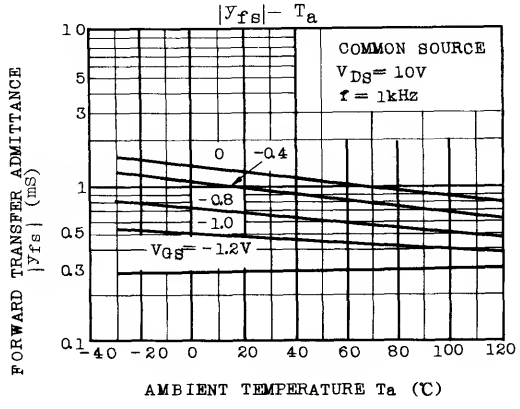
$V_{GS\ (OFF)} - I_{DSS}$



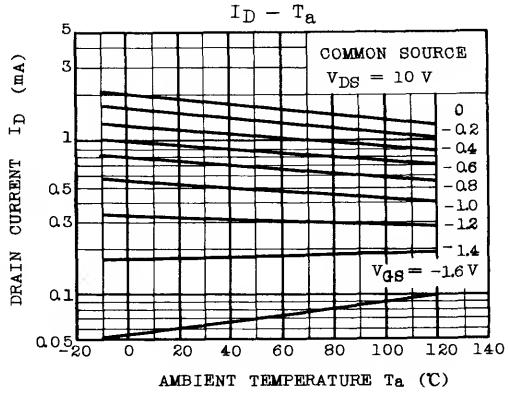
$|y_{fs}| - r_{DS\ (ON)}$



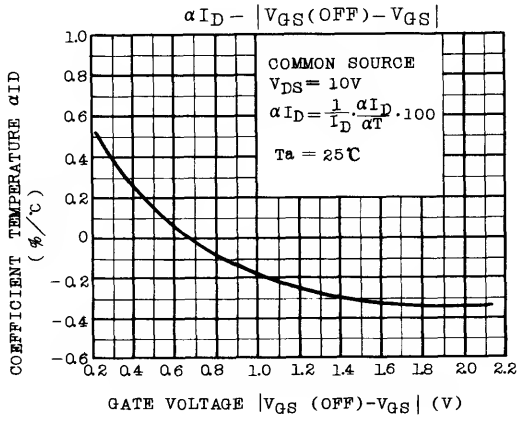
$|y_{fs}| - T_a$



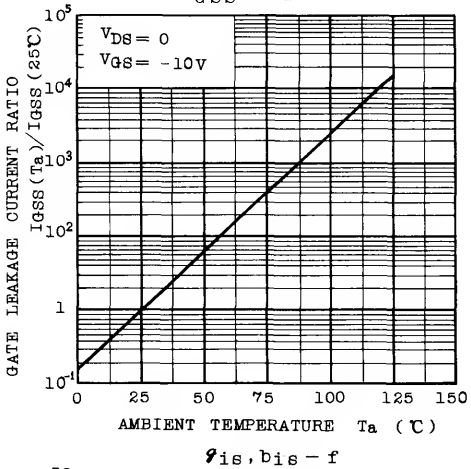
$I_D - T_a$



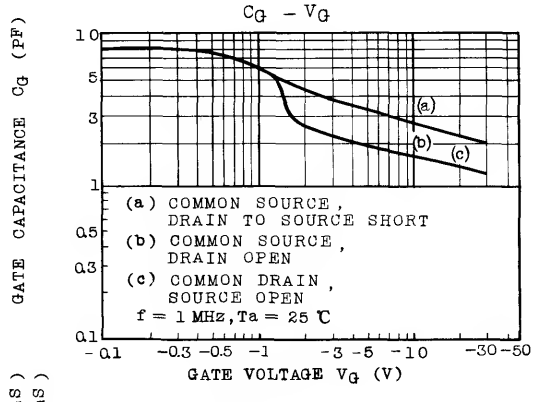
$\alpha I_D - |V_{GS(OFF)} - V_{GS}|$



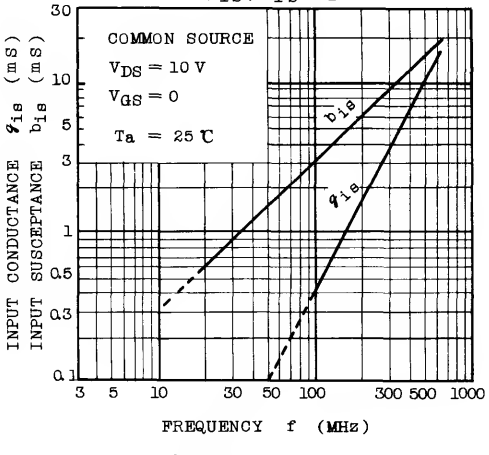
I_{GSS} – Ta



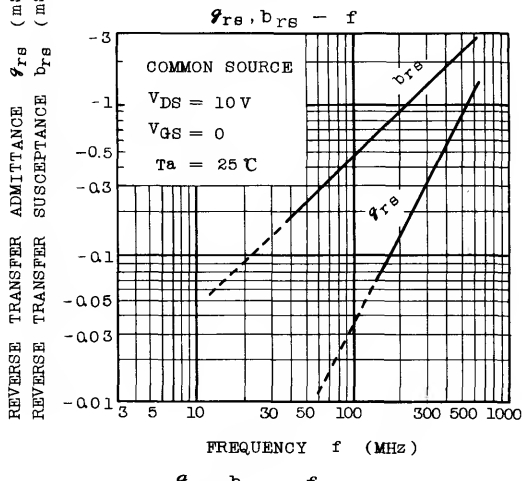
C_G – V_G



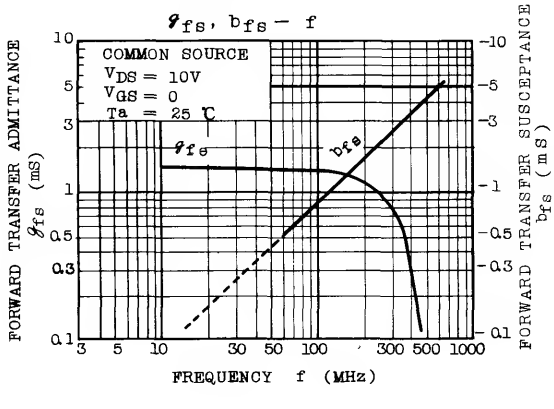
g_{is}, b_{is} – f



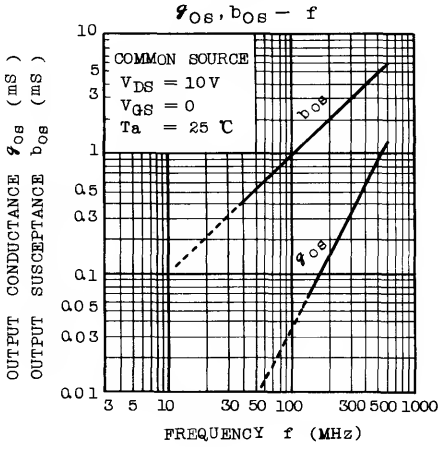
g_{rs}, b_{rs} – f



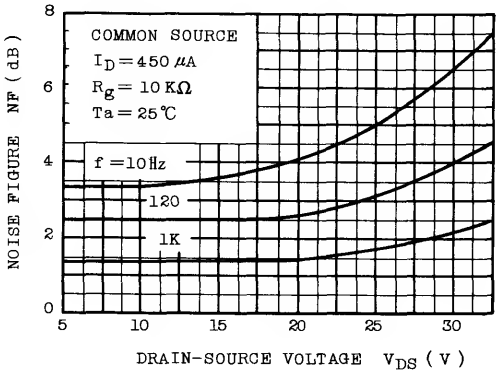
g_{fs}, b_{fs} – f



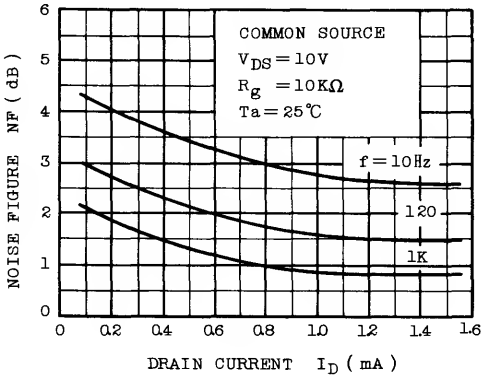
g_{os}, b_{os} – f



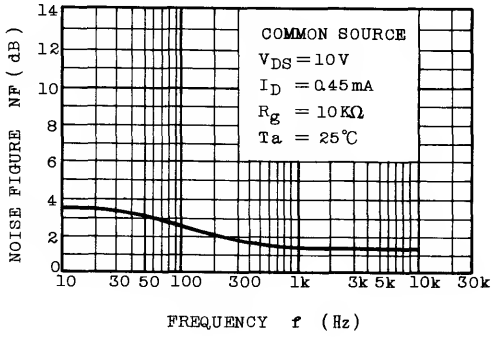
2SK15 NF - V_{DS}



2SK15 NF - I_D



2SK15 NF - f



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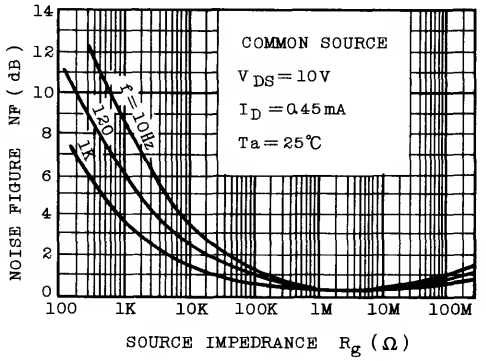

P_D - Ta