

Japanese Equivalent JFET Types

Silicon Junction Field-Effect Transistors

Japanese			2SK17	2SK40	2SK59	2SK105
InterFET			IFN17	IFN40	IFN59	IFN105
Process			NJ16	NJ16	NJ16	NJ16
Parameters	Conditions	Unit Limit	N Channel	N Channel	N Channel	N Channel
BV_{GSS}	$I_G = -1.0 \mu A$	V Min	- 20	- 50	- 30	- 50
I_{GSS}	$V_{GS} = (), V_{DS} = \emptyset$	nA Max	0.10 (-10 V)	1.0 (-30 V)	1.0 (-10 V)	1.0 (-30 V)
$V_{GS(off)}$	$V_{DS} = (), I_D = 1.0 \text{ nA}$	V Min/Max	-0.5/-6.0 (10 V)	-0.4/-5.0 (15 V)	-0.4/-5.0 (10 V)	-0.25/-4.5 (5.0 V)
I_{DSS}	$V_{DS} = (), V_{GS} = \emptyset$	mA Min/Max	0.3/6.5 (10 V)	0.6/6.5 (15 V)	0.3/1.4 (10 V)	0.5/12 (5.0 V)
g_{fs}	$V_{DS} = (), V_{GS} = \emptyset$	mS Typ	2.0 (10 V)	2.0 (15 V)	1.5 (10 V)	2.1 (5.0 V)
C_{iss}	$V_{GS} = (), V_{DS} = ()$	pF Typ	4.0 ($\emptyset$) ($\emptyset$)	4.0 ($\emptyset$) (15 V)		4.0 ($\emptyset$) (10 V)
C_{rss}	$V_{GS} = (), V_{DS} = ()$	pF Typ	1.2 (-10 V) ($\emptyset$)	1.2 ($\emptyset$) (15 V)		1.0 ($\emptyset$) (10 V)
Package Configuration			TO-226AA	TO-226AA	TO-226AA	TO-226AA
Pin Configuration			SGD	SGD	SGD	DGS



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Japanese Equivalent JFET Types

Silicon Junction Field-Effect Transistors

2SK113	2SK152	2SK363	2SJ44	Japanese	
IFN113	IFN152	IFN363	IFP44	InterFET	
NJ132	NJ132L	NJ450	PJ99	Process	
N Channel	N Channel	N Channel	P Channel	Unit Limit	Parameters
- 50	- 20	- 40	25	V Min	BV_{GSS}
1.0 (-20 V)	0.1 (-10 V)	1.0 (-30 V)	1.0 (10 V)	nA Max	I_{GSS}
- 0.3/-10 (20 V)	- 0.5/- 2.0 (-10 V)	- 0.3/- 1.2 (10 V)	- 0.2/-1.5 (-10 V)	V Min/Max	$V_{GS(off)}$
5.0/150 (20 V)	5.0/20 (10 V)	5.0/30 (10 V)	1.0/18 (-10 V)	mA Min/Max	I_{DSS}
20 (20 V)	30 (10 V)	60 (10 V)	9 (-10 V)	mS Typ	g_{fs}
10 (Ø) (20 V)	15 (Ø) (10 V)	75 (Ø) (10 V)	15 (Ø) (-10 V)	pF Typ	C_{iss}
3.0 (Ø) (15 V)	4.0 (Ø) (10 V)	15 (Ø) (10 V)	3 (Ø) (-10 V)	pF Typ	C_{rss}
TO-18	TO-18	TO-18	TO-18	Package Configuration	
SDG	SDG	DGS	DGS	Pin Configuration	



IFN112

N-Channel Silicon Junction Field-Effect Transistor

- Low-Noise, High Gain
- Equivalent to Japanese 2SK112

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage	– 50 V
Continuous Forward Gate Current	10 mA
Continuous Device Power Dissipation	360 mW
Power Derating	2.88 mW/°C
Storage Temperature Range	– 65°C to 200°C

At 25°C free air temperature:

Static Electrical Characteristics

		IFN112		Process NJ132H		
		Min	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 50		V	$I_G = -1\ \mu\text{A}$, $V_{DS} = \emptyset\text{V}$	
Gate Reverse Current	I_{GSS}		– 0.1	nA	$V_{DS} = \emptyset\text{V}$, $V_{GS} = -30\text{V}$	
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 0.25	– 1.2	V	$V_{DS} = 15\text{V}$, $I_D = 100\text{ nA}$	
Drain Saturation Current (Pulsed)	I_{DSS}	1.2	9.0	mA	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	7	34	mS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ kHz}$
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Typ

Common Source Input Capacitance	C_{iss}	12	pF	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}	3	pF	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ MHz}$
Equivalent Short Circuit Input Noise Voltage	$\bar{e}_N$	2.5	nV/√Hz	$V_{DS} = 10\text{V}$, $I_D = 5.0\text{ mA}$	$f = 1\text{ kHz}$

TO-18 Package

Dimensions in Inches (mm)

Pin Configuration

1 Source, 2 Drain, 3 Gate & Case



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IFN146

Dual N-Channel Silicon Junction Field-Effect Transistor

- Low-Noise Audio Amplifier
- Equivalent to Japanese 2SK146

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage	– 40 V
Continuous Forward Gate Current	10 mA
Continuous Device Power Dissipation	375 mW
Power Derating	3 mW/°C
Storage Temperature Range	– 65°C to 200°C

At 25°C free air temperature:

Static Electrical Characteristics

		IFN146			Process NJ450		
		Min	Typ	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 40			V	$I_G = -1\ \mu\text{A}$, $V_{DS} = \emptyset\text{V}$	
Gate Reverse Current	I_{GSS}			– 1	nA	$V_{GS} = -30\text{V}$, $V_{DS} = \emptyset\text{V}$	
				– 1	μA	$V_{GS} = -30\text{V}$, $V_{DS} = \emptyset\text{V}$	$T_A = 150^\circ\text{C}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	– 0.3		– 1.2	V	$V_{DS} = 10\text{V}$, $I_D = 1\ \mu\text{A}$	
Drain Saturation Current (Pulsed)	I_{DSS}			30	mA	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$	

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	30	40		mS	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$ $I_{DSS} = 5\text{ mA}$	$f = 1\text{ kHz}$
Common Source Input Capacitance	C_{iss}			75	pF	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ kHz}$
Common Source Reverse Transfer Capacitance	C_{rss}			15	pF	$V_{DS} = 10\text{V}$, $I_D = \emptyset\text{A}$	$f = 1\text{ kHz}$
Noise Figure	NF		1		dB	$V_{DS} = 10\text{V}$, $I_D = 5\text{ mA}$ $R_G = 100\ \Omega$	$f = 1\text{ kHz}$
Differential Gate Source Voltage	$ V_{GS1} - V_{GS2} $			20	mV	$V_{DS} = 10\text{V}$, $I_D = 5\text{ mA}$	

TO-71 Package

Dimensions in Inches (mm)

Pin Configuration

1 Source, 2 Gate, 3 Drain,
5 Source, 6 Gate, 7 Drain

IFN147

N-Channel Silicon Junction Field-Effect Transistor

- Low-Noise Audio Amplifier
- Equivalent to Japanese 2SK147

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage	- 40 V
Continuous Forward Gate Current	10 mA
Continuous Device Power Dissipation	300 mW
Power Derating	2.4 mW/°C

At 25°C free air temperature:

Static Electrical Characteristics

		IFN147			Process NJ450		
		Min	Typ	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	- 40			V	$I_G = -1\ \mu\text{A}$, $V_{DS} = \emptyset\text{V}$	
Gate Reverse Current	I_{GSS}			- 1	nA	$V_{GS} = -30\text{V}$, $V_{DS} = \emptyset\text{V}$	
				- 1	μA	$V_{GS} = -30\text{V}$, $V_{DS} = \emptyset\text{V}$	
Gate Source Cutoff Voltage	$V_{GS(OFF)}$	- 0.3		- 1.2	V	$V_{DS} = 10\text{V}$, $I_D = 1\ \mu\text{A}$	
Drain Saturation Current (Pulsed)	I_{DSS}	5		30	mA	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$	

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	30	40		mS	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$ $I_{DSS} = 5\text{ mA}$	$f = 1\text{ kHz}$
Common Source Input Capacitance	C_{iss}			75	pF	$V_{DS} = 10\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ kHz}$
Common Source Reverse Transfer Capacitance	C_{rss}			15	pF	$V_{DS} = 10\text{V}$, $I_D = \emptyset$	$f = 1\text{ Hz}$
Noise Figure	NF		1		dB	$V_{DS} = 10\text{V}$, $I_D = 5\text{ mA}$	$f = 1\text{ kHz}$
				10	dB	$R_G = 100\ \Omega$	$f = 100\text{ Hz}$

TO-18 Package

Dimensions in Inches (mm)

Pin Configuration

1 Source, 2 Gate & Case, 3 Drain



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