LINEAR SYSTEMS

LSK389
ULTRA LOW NOISE
DUAL N-CHANNEL J-FET

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Replace discontinued Toshiba 2SK389 with LSK389

The 2SK389 / LSK389 is a 1nV/√Hz single chip dual JFET

Why use monolithic dual JFET instead of 2 single JFETS?

2SK389 / LSK389 removes significant cost for test screening time needed to match Idss on 2 individual JFETS and offers ZERO yield loss.

2SK389 / LSK389 On-Chip Idss matching gives closest possible synchronous electrical performance and also offers better matched performance when the chip is subjected to temperature.

The 8 Pin SOIC-A provides ease of manufacturing, and the symmetrical pinout prevents improper orientation.

(See Packaging Information).

2SK389 / LSK389 Applications:

- Audio – Amps, effects boxes, microphones
- Instrumentation– Input stages
- Acoustic Sensors – Sonobouys
- Military – Antisubmarine, personnel vehicle detectors, sonar, radiation detectors

FEATURES	
ULTRA LOW NOISE	e_n = 0.9nV / √ Hz (typ)
TIGHT MATCHING	$\|V_{GS1-2}\|$ = 20mV max
HIGH BREAKDOWN VOLTAGE	BV_{GSS} = 40V max
HIGH GAIN	Y_{fs} = 20mS (typ)
LOW CAPACITANCE	25pF (typ)
IMPROVED SECOND SOURCE REPLACEMENT FOR 2SK389	

ABSOLUTE MAXIMUM RATINGS [1]
@ 25°C (unless otherwise noted)

Maximum Temperatures	
Storage Temperature	-65°C to +150°C
Operating Junction Temperature	-55°C to +135°C
Maximum Power Dissipation	
Continuous Power Dissipation @ + 125°C	400mW
Maximum Currents	
Gate Forward Current	$I_{G(F)}$ = 10mA
Maximum Voltages	
Gate to Source	V_{GSS} = 40V
Gate to Drain	V_{GDS} = 40V

FOR EQUIVALENT SINGLE VERSION, SEE LSK170A
www.micross.com/pdf/LSM_LSK170A_SOT-23.pdf

MATCHING CHARACTERISTICS @ 25°C (unless otherwise stated)

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	CONDITIONS
$\|V_{GS1} - V_{GS2}\|$	Differential Gate to Source Cutoff Voltage	--	--	20	mV	V_{DS} = 10V, I_D = 1mA
I_{DSS1} / I_{DSS2}	Gate to Source Saturation Current Ratio	0.9	--	--	--	V_{DS} = 10V, V_{GS} = 0V

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS		MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV_{GSS}	Gate to Source Breakdown Voltage		40	--	--	V	V_{DS} = 0, I_D = 100µA
$V_{GS(OFF)}$	Gate to Source Pinch-off Voltage		0.15	--	2	V	V_{DS} = 10V, I_D = 0.1µA
I_{DSS}	Drain to Source Saturation Current	2SK389A / LSK389A	2.6	--	6.5	mA	V_{DS} = 10V, V_{GS} = 0V
		2SK389B / LSK389B	6	--	12		
		2SK389C / LSK389C	10	--	20		
I_{GSS}	Gate to Source Leakage Current		--	--	200	pA	V_{GS} = -30V, V_{DS} = 0V
Y_{fs}	Full Conduction Transconductance		8	20	--	mS	V_{DS} = 10V, V_{GS} = 0V, I_{DSS} = 3mA, f = 1kHz
e_n	Noise Voltage		--	0.9	1.9	nV/√Hz	V_{DS} = 10V, I_D = 2mA, f = 1kHz, NBW = 1Hz
e_n	Noise Voltage		--	2.5	4	nV/√Hz	V_{DS} = 10V, I_D = 2mA, f = 10Hz, NBW = 1Hz
C_{ISS}	Common Source Input Capacitance		--	25	--	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1MHz
C_{RSS}	Common Source Reverse Transfer Capacitance		--	5.5	--	pF	V_{DG} = 10V, I_D = 0V, f = 1MHz

Notes:
1. Absolute Maximum ratings are limiting values above which serviceability may be impaired

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Available Packages:

LSK389 in SOIC-A
LSK389 available as bare die

Please contact Micross for full package and die dimensions:

Email: chipcomponents@micross.com
Web: www.micross.com/distribution.aspx

SOIC-A (Top View)