# LINEAR SYSTEMS

### LSK389 ULTRA LOW NOISE MONOLITHIC DUAL N-CHANNEL JFET



## Linear Systems replaces discontinued Toshiba 2SK389 with LSK389

The 2SK389 / LSK389 is a monolithic matched dual JFET on a single chip

Why use On-Chip Dual JFET instead of 2 single JFETS?	FEATURES				
	ULTRA LOW NOISE	e <sub>n</sub> = 0.9nV/√Hz (typ)			
Save Cost	TIGHT MATCHING	V <sub>GS1-2</sub>   = 20mV max			
2SK389 / LSK389 removes significant cost for test screening time needed to match loss on 2 individual JFETS and offers ZERO	HIGH BREAKDOWN VOLTAGE	BV <sub>GSS</sub> = 40V max			
	HIGH GAIN	$Y_{fs}$ = 20mS (typ)			
yield loss.	LOW CAPACITANCE	25pF typ			
	IMPROVED SECOND SOURCE REPLACEMENT FOR 2SK389				
Improve Performance	ABSOLUTE MAXIMUM RATINGS <sup>1</sup>				
2SK389 / LSK389 On-Chip lbss matching gives closest possible synchronous electrical performance and also offers better	@ 25 °C (unless otherwise stated)				
	Maximum Temperatures				
matched performance when the chip is subjected to temperature.	Storage Temperature	-65 to +150 °C			
[]	Operating Junction Temperature	-55 to +135 °C			
2SK389 / LSK389 Applications:	Maximum Power Dissipation				
End audio microphone, Audio Amplifier and audio effects box	Continuous Power Dissipation @ +125 °C	C 400mW			
manufacturers	Maximum Currents				
Instrumentation-input stages of various instruments The acoustic sensor market –sonoboys / antisubmarine, military personnel and vehicle detectors, sonar makers. Radiation detectors.	Gate Forward Current	I <sub>G(F)</sub> = 10mA			
	Maximum Voltages				
	Gate to Source	V <sub>GSS</sub> = 40V			
	Gate to Drain	V <sub>GDS</sub> = 40V			

#### MATCHING CHARACTERISTICS @ 25 °C (unless otherwise stated)

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNIT	CONDITIONS
$\left V_{GS1}-V_{GS2}\right $	Differential Gate to Source Cutoff Voltage			20	mV	$V_{DS}$ = 10V, $I_D$ = 1mA
Iddesse Iddesse	Gate to Source Saturation Current Ratio	0.9			-	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V

### ELECTRICAL CHARACTERISTICS @ 25 °C (unless otherwise stated)

SYMBOL	CHARACTERISTIC		MIN	TYP	MAX	UNITS	CONDITIONS
BV <sub>GSS</sub>	Gate to Source Breakdown Voltage		40			V	V <sub>DS</sub> = 0, I <sub>D</sub> = 100µA
V <sub>GS(OFF)</sub>	Gate to Source Pinch-off Voltage		0.15		2	V	V <sub>DS</sub> = 10V, I <sub>D</sub> = 0.1µA
	Drain to Source Saturation	LSK389A	2.6		6.5	mA	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0
I <sub>DSS</sub>		LSK389B	6		12		
		LSK389C	10		20		
I <sub>GSS</sub>	Gate to Source Leakage Current				200	pА	$V_{GS}$ = -30V, $V_{DS}$ = 0
Y <sub>fs</sub>	Full Conduction Transconductance		8	20		mS	$V_{DS}$ = 10V, $V_{GS}$ = 0, $I_{DSS}$ = 3mA, f = 1kHz
en	Noise Voltage			0.9	1.9	nV/√Hz	V <sub>DS</sub> = 10V, I <sub>D</sub> = 2mA, <i>f</i> = 1kHz, NBW = 1Hz
en	Noise Voltage			2.5	4	nV/√Hz	V <sub>DS</sub> = 10V, I <sub>D</sub> = 2mA, <i>f</i> = 10Hz, NBW = 1Hz
C <sub>ISS</sub>	Common Source Input Capacitance			25		pF	$V_{DS} = 10V, V_{GS} = 0, f = 1MHz,$
C <sub>RSS</sub>	Common Source Reverse Transfer Cap.			5.5		рF	$V_{DG} = 10V, I_{D} = 0, f = 1MHz,$

Available Packages: 2SK389 / LSK389 in SOIC-8 Lead 2SK389 / LSK389 in Thru-hole TO-71 6 Lead 2SK389 / LSK389 Toshiba footprint, SO8 / TO-71 with socket adaptor 2SK389 / LSK389 available as bare die 2SK389 / LSK389 available as wafer form Please contact Micross for package and die dimensions



