LSK170
ULTRA LOW NOISE
SINGLE
N-CHANNEL JFET

Linear Systems replaces discontinued Toshiba 2SK170 with LSK170

The 2SK170 / LSK170 is an Ultra Low Noise Single N-Channel JFET

Optimized to provide low noise at both high and low frequency with a narrow range of IDSS and low capacitance. The 2SK170 / LSK170's low noise to capacitance ratio and narrow range of low value IDSS provide solutions for low noise applications which cannot tolerate high values of capacitance or wide ranges of IDSS

The narrow ranges of IDSS binning with the 2SK170 / LSK170 promote ease of design tolerancing, particularly in low voltage applications. The 2SK170 / LSK170 is ideal for portable battery operated applications, and features high BVDSS for maximum linear headroom in high transient program content amplifiers. The 2SK170 / LSK170 series has a uniquely linear VGS transfer function for a stability that is highly desirable, particularly for audio front-end preamplifiers.

2SK170 / LSK170 Applications:

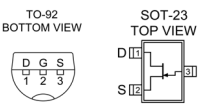
Audio amplifiers and preamps, discrete low-noise operational amplifiers, battery-operated audio preamps, guitar pickups, effects pedals, microphones, audio mixer consoles, acoustic sensors, sonobuoys, hydrophones, chemical and radiation detectors, instrumentation amplifiers, accelerometers, CT scanners input stages, oscilloscope input stages, electrometers and vibrations detectors.

Surface mount SOT23 available (not offered by Toshiba 2SK170)
Improved pin for pin replacement for Toshiba 2SK170
Improved functional replacement for Interfet IF1320, IF1330, IF1331, and IF4500

FEATURES	
ULTRA LOW NOISE (f = 1kHz)	e_n = 0.9nV/√Hz
HIGH BREAKDOWN VOLTAGE	BV_{GSS} = 40V max
HIGH GAIN	Y_{fs} = 22mS (typ)
HIGH INPUT IMPEDANCE	I_G = -500pA max
LOW CAPACITANCE	22pF max
IMPROVED SECOND SOURCE REPLACEMENT FOR 2SK170	

ABSOLUTE MAXIMUM RATINGS[1] @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature	-65 to +150 °C
Operating Junction Temperature	-55 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

Available Packages:
2SK170 / LSK170 in TO-92
2SK170 / LSK170 in SOT-23
2SK170 / LSK170 available as bare die



Please contact Micross for package and die dimensions

ELECTRICAL CHARACTERISTICS @ 25 °C (unless otherwise stated)

SYMBOL	CHARACTERISTIC		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		0.2		2	V	V_{DS} = 10V, I_D = 1nA
V_{GS}	Gate to Source Operating Voltage			0.5		V	V_{DS} = 10V, I_D = 1mA
I_{DSS}	Drain to Source Saturation Current	LSK170A	2.6		6.5	mA	V_{DG} = 10V, V_{GS} = 0
		LSK170B	6		12		
		LSK170C	10		20		
I_G	Gate Operating Current				0.5	nA	V_{DG} = 10V, I_D = 1mA
I_{GSS}	Gate to Source Leakage Current				1	nA	V_{DG} = 10V, V_{DS} = 0
Y_{fss}	Full Conduction Transconductance			22		mS	V_{GD} = 10V, V_{GS} = 0, f = 1kHz
Y_{fs}	Typical Conduction Transconductance			10		mS	V_{DG} = 15V, I_D = 1mA
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			20		pF	V_{DS} = 15V, I_D = 500µA
C_{RSS}	Common Source Reverse Transfer Cap.			5		pF	

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.