LINEAR SYSTEMS
Improved Standard Products®

3N170 3N171

N-CHANNEL MOSFET ENHANCEMENT MODE

FEATURES	
Direct Replacement for INTERSIL 3N170 & 3N171	
LOW DRAIN TO SOURCE RESISTANCE	$r_{ds(on)} \leq 200\Omega$
FAST SWITCHING	$t_{d(on)} \leq 3.0ns$
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	300mW
Maximum Current	
Drain to Source	30mA
Maximum Voltages	
Drain to Gate	±35V
Drain to Source	25V
Gate to Source	±35V

3N170 & 3N171 SOT-143 4L Top View

Body 1 ● | Gate 4
Source 2 | Drain 3

3N170 & 3N171 TO-72 4L Top View

D ③ | ② G
Case & Body ④ | ① S
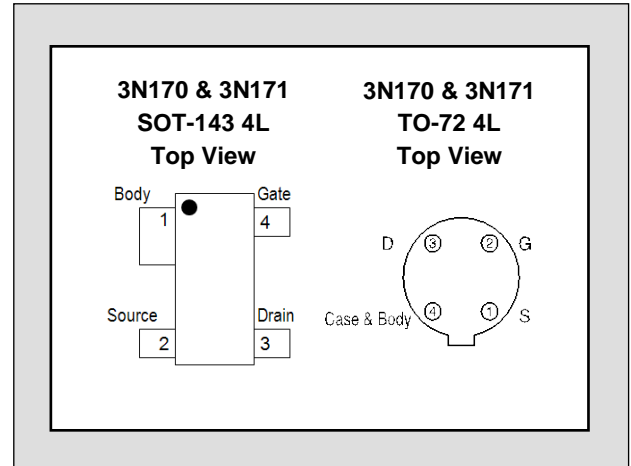
ELECTRICAL CHARACTERISTICS @ 25 °C (unless otherwise stated) (V_{SB} = 0V unless otherwise stated)

SYMBOL	CHARACTERISTIC		MIN	TYP	MAX	UNITS	CONDITIONS
BV_{DSS}	Drain to Source Breakdown Voltage		25			V	I_D = 10µA, V_{GS} = 0V
$V_{DS(on)}$	Drain to Source "On" Voltage				2.0		I_D = 10mA, V_{GS} = 10V
$V_{GS(th)}$	Gate to Source Threshold Voltage	3N170	1.0		2.0		V_{DS} = 10V, I_D = 10µA
		3N171	1.5		3.0		
I_{GSS}	Gate Leakage Current				10	pA	V_{GS} = -35V, V_{DS} = 0V
I_{DSS}	Drain Leakage Current "Off"				10	nA	V_{DS} = 10V, V_{GS} = 0V
$I_{D(on)}$	Drain Current "On"		10			mA	V_{GS} = 10V, V_{DS} = 10V
g_{fs}	Forward Transconductance		1000			µS	V_{DS} = 10V, I_D = 2.0mA, f = 1.0kHz
$r_{ds(on)}$	Drain to Source "On" Resistance				200	Ω	V_{GS} = 10V, I_D = 100µA, f = 1.0kHz
C_{rss}	Reverse Transfer Capacitance				1.3		V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
C_{iss}	Input Capacitance				5.0	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz
C_{db}	Drain to Body Capacitance				5.0		V_{DB} = 10V, f = 1.0MHz

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SWITCHING CHARACTERISTICS

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Delay Time			3.0		$V_{DD} = 10V$, $ID_{D(on)} = 10mA$, $V_{GS(on)} = 10V$, $V_{GS(off)} = 0V$ $R_G = 50\Omega$
t_r	Turn On Rise Time			10	ns	
$t_{d(off)}$	Turn Off Delay Time			3.0		
t_f	Turn Off Fall Time			15		

Linear Integrated Systems develops and produces the highest performance semiconductors of their kind in the industry. Linear Systems, founded in 1987, uses patented and proprietary processes and designs to create its high performance discrete semiconductors. Expertise brought to the company is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company founder John H. Hall.