LINEAR SYSTEMS

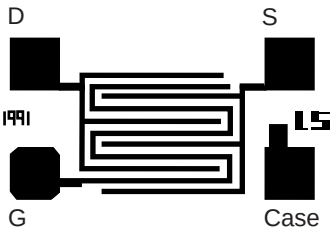
Linear Integrated Systems

3N163, 3N164

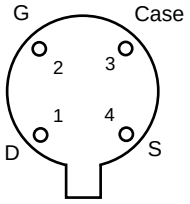
P-CHANNEL ENHANCEMENT MODE MOSFET

FEATURES
VERY HIGH INPUT IMPEDANCE
HIGH GATE BREAKDOWN
ULTRA LOW LEAKAGE
FAST SWITCHING
LOW CAPACITANCE

ABSOLUTE MAXIMUM RATINGS (NOTE 1) @ 25°C (unless otherwise noted)	
Drain-Source or Drain-Gate Voltage	
3N163	-40V
3N164	-30V
Transient G-S Voltage (NOTE 1)	±125V
Drain Current	50mA
Storage Temperature	-65°C to +200°C
Power Dissipation	375mW



18 X 30 MILS



TO-72
Bottom View

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS	3N163 MIN	3N163 MAX	3N164 MIN	3N164 MAX	UNITS	CONDITIONS
I_{GSSF}	Gate Forward Current	-10		-10	pA	V_{GS}=-40V	V_{DS}=0 (3N163)
	T_A=+125°C		-25		-25	V_{GS}=-30V	V_{DS}=0 (3N164)
BV_{DSS}	Drain-Source Breakdown Voltage	-40		-30		I_D=-10μA	V_{GS}=0
BV_{SDS}	Source-Drain Breakdown Voltage	-40		-30		V I_S=-10μA	V_{GD}=0 V_{BD}=0
$V_{GS(th)}$	Threshold Voltage	-2.0	-5.0	-2.0	-5.0	V_{DS}=V_{GS}	I_D=-10μA
$V_{GS(th)}$	Threshold Voltage	-2.0	-5.0	-2.0	-5.0	V_{DS}=-15V	I_D=-10μA
V_{GS}	Gate Source Voltage	-3.0	-6.5	-3.0	-6.5	V_{DS}=-15V	I_D=-0.5mA
I_{DSS}	Zero Gate Voltage Drain Current		200		400	pA V_{DS}=-15V	V_{GS}=0
I_{SDS}	Source Drain Current		400		800	V_{DS}=15V	V_{GS}=V_{DB}=0
$r_{DS(on)}$	Drain-Source on Resistance		250		300	ohms V_{GS}=-20V	I_D=-100μA
$I_{D(on)}$	On Drain Current	-5.0	-30	-3.0	-30	mA V_{DS}=-15V	V_{GS}=-10V
g_{fs}	Forward Transconductance	2000	4000	1000	4000	μs V_{DS}=-15V	I_D=-10mA f=1kHz
g_{os}	Output Admittance		250		250		
C_{iss}	Input Capacitance-Output Shorted		2.5		2.5	pF V_{DS}=-15V	I_D=-10mA f=1MHz
C_{rss}	Reverse Transfer Capacitance		0.7		0.7	(NOTE 2)	
C_{oss}	Output Capacitance Input Shorted		3.0		3.0		

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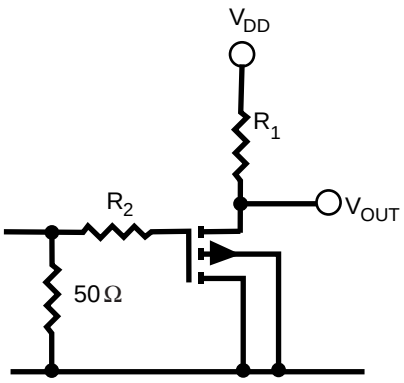
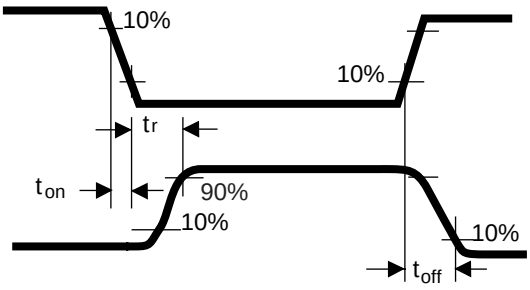
SWITCHING CHARACTERISTICS T_A=25°C and V_{BS}=0 unless otherwise noted)

SYMBOL	CHARACTERISTICS	3N163		3N164		UNITS	CONDITIONS
		MIN	MAX	MIN	MAX		
t_{on}	Turn-On Delay Time		12		12	ns	V_{DD}=-15V
t_r	Rise Time		24		24		$I_{D(on)}$=-10mA (**NOTE 2**)
t_{off}	Turn-Off Time		50		50		R_G=R_L=1.4KΩ



TYPICAL SWITCHING WAVEFORM



INPUT PULSE

Rise Time≤2ns
Pulse Width≥200ns

SAMPLING SCOPE

T_r≤0.2ns
C_{IN}≤2pF
R_{IN}≥10M

Switching Times Test Circuit

NOTES:

1. Devices must not be tested at ±125V more than once, nor for longer than 300ms.
2. For design reference only, not 100% tested.

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.