

LINEAR SYSTEMS

Linear Integrated Systems

3N163, 3N164 P-CHANNEL ENHANCEMENT MODE MOSFET

FEATURES

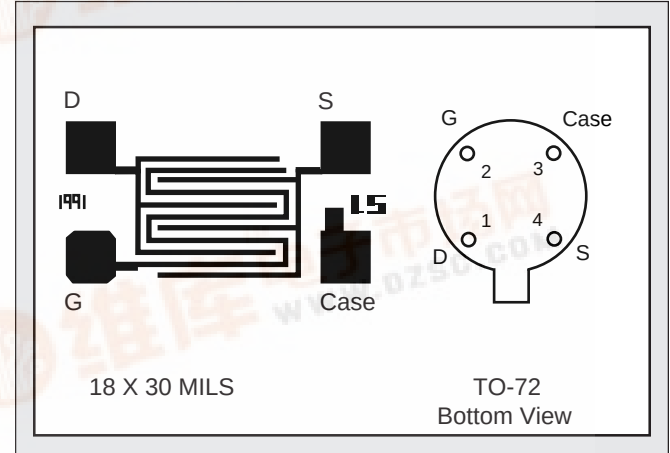
VERY HIGH INPUT IMPEDANCE
HIGH GATE BREAKDOWN
ULTRA LOW LEAKAGE
FAST SWITCHING
LOW CAPACITANCE

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



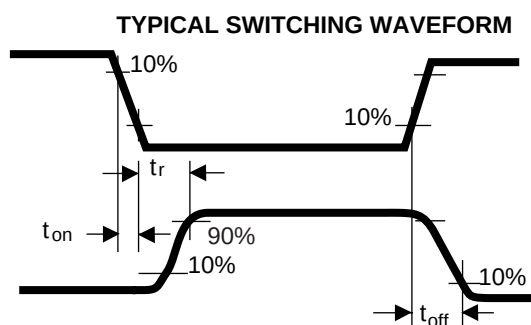
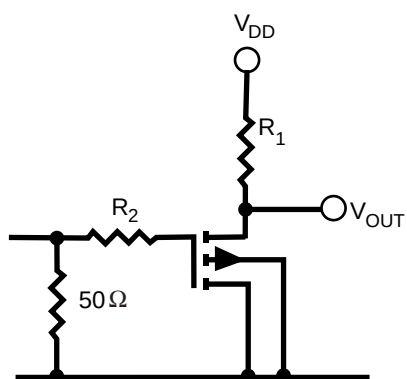
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

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



SWITCHING CHARACTERISTICS $T_A=25^{\circ}\text{C}$ 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	$V_{DD}=-15\text{V}$ $I_{D(on)}=-10\text{mA}$ (NOTE 2) $R_G=R_L=1.4\text{K}\Omega$
t_r	Rise Time		24		24		
t_{off}	Turn-Off Time		50		50		



INPUT PULSE

Rise Time $\leq 2\text{ns}$
Pulse Width $\geq 200\text{ns}$

SAMPLING SCOPE

$T_r \leq 0.2\text{ns}$
 $C_N \leq 2\text{pF}$
 $R_N \geq 10\text{M}$

Switching Times Test Circuit

NOTES:

1. Devices must not be tested at $\pm 125\text{V}$ 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.