

### The 3N164 is an enhancement mode P-Channel Mosfet

The 3N164 is an enhancement mode P-Channel Mosfet designed for use as a General Purpose amplifier or switch

The hermetically sealed TO-72 package is well suited for high reliability and harsh environment applications.

(See Packaging Information).

#### 3N164 Features:

- Very high Input Impedance
- Low Capacitance
- High Gain
- High Gate Breakdown Voltage
- Low Threshold Voltage

#### FEATURES

DIRECT REPLACEMENT FOR INTERSIL 3N164

**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>**  
@ 25°C (unless otherwise noted)

#### Maximum Temperatures

Storage Temperature	-65°C to +200°C
Operating Junction Temperature	-55°C to +150°C

#### Maximum Power Dissipation

Continuous Power Dissipation	375mW
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#### MAXIMUM CURRENT

Drain Current	50mA
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#### MAXIMUM VOLTAGES

Drain to Gate	-30V
Drain to Source	-30V
Peak Gate to Source <sup>2</sup>	±125V

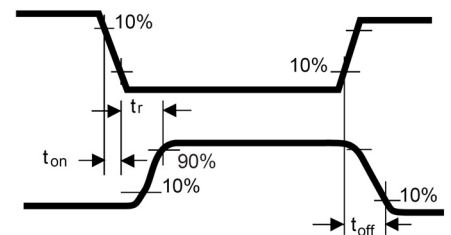
#### 3N164 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$I_{GSSF}$	Gate Forward Current	-10	--	--	pA	$V_{GS} = -30V, V_{DS} = 0V$
		$T_A = +125^\circ C$	--	-25		
$BV_{DSS}$	Drain to Source Breakdown Voltage	-30	--	--	V	$I_D = -10\mu A, V_{GS} = 0V$
$BV_{SDS}$	Source-Drain Breakdown Voltage	-30	--	--		$I_S = -10\mu A, V_{GD} = 0V, V_{BD} = 0V$
$V_{GS(th)}$	Gate to Source Threshold Voltage	-2.0	--	-5.0		$V_{DS} = V_{GS}, I_D = -10\mu A$
		-2.0	--	-5.0		$V_{DS} = -15V, I_D = -10\mu A$
$V_{GS}$	Gate Source Voltage	-3.0	--	-6.5		$V_{DS} = -15V, I_D = -0.5mA$
$I_{DSS}$	Drain Leakage Current "Off"	--	--	200	pA	$V_{DS} = -15V, V_{GS} = 0V$
$I_{SDS}$	Source Drain Current	--	--	400		$V_{DS} = 15V, V_{GS} = V_{DB} = 0V$
$r_{DS(on)}$	Drain to Source "On" Resistance	--	--	250	$\Omega$	$V_{GS} = -20V, I_D = -100\mu A$
$I_{D(on)}$	Drain Current "On"	-5.0	--	-30		$V_{DS} = -15V, V_{GS} = -10V$
$g_{fs}$	Forward Transconductance	2000	--	4000	$\mu S$	$V_{DS} = -15V, I_D = -10mA, f = 1kHz$
$g_{os}$	Output Admittance	--	--	250		
$C_{iss}$	Input Capacitance—Output shorted	--	--	2.5	pF	$V_{DS} = -15V, I_D = -10mA, f = 1MHz^3$
$C_{rss}$	Reverse Transfer Capacitance	--	--	0.7		
$C_{oss}$	Output Capacitance—Input Shorted	--	--	3.0		

#### SWITCHING CHARACTERISTICS - $T_A = 25^\circ C$ and $V_{BS} = 0$ unless otherwise noted

SYMBOL	CHARACTERISTIC	MAX	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Delay Time	12	ns	$V_{DD} = -15V$ $I_{D(on)} = -10mA$ $R_G = R_L = 1.4K\Omega^3$
$t_r$	Turn On Rise Time	24		
$t_{off}$	Turn Off Time	50		

#### TIMING WAVEFORMS



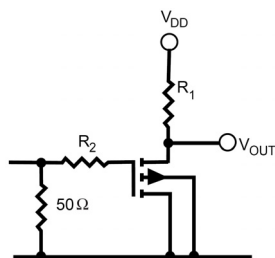
#### INPUT PULSE

Rise Time  $\leq 2ns$   
Pulse Width  $\geq 200ns$

#### SAMPLING SCOPE

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

#### SWITCHING TEST CIRCUIT



Note 1 - Absolute maximum ratings are limiting values above which 3N164 serviceability may be impaired.  
Note 2 - Device must not be tested at  $\pm 125V$  more than once or longer than 300ms.  
Note 3 - For design reference only, not 100% tested

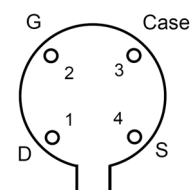
Micross Components Europe

Available Packages:

3N164 in TO-72  
3N164 in bare die.

Please contact Micross for full package and die dimensions

TO-72 (Bottom View)



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