

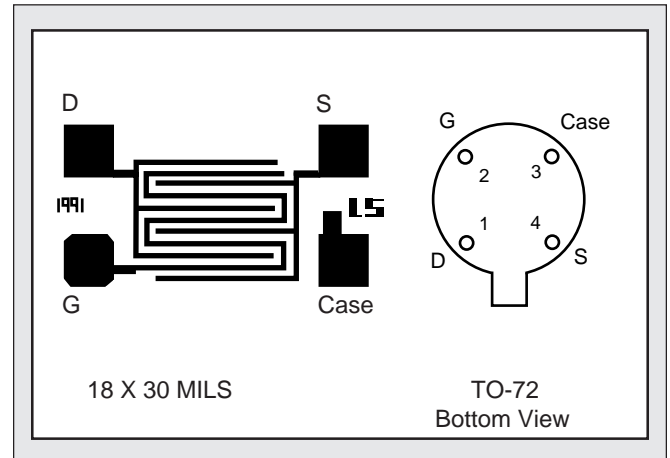
LINEAR SYSTEMS

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)

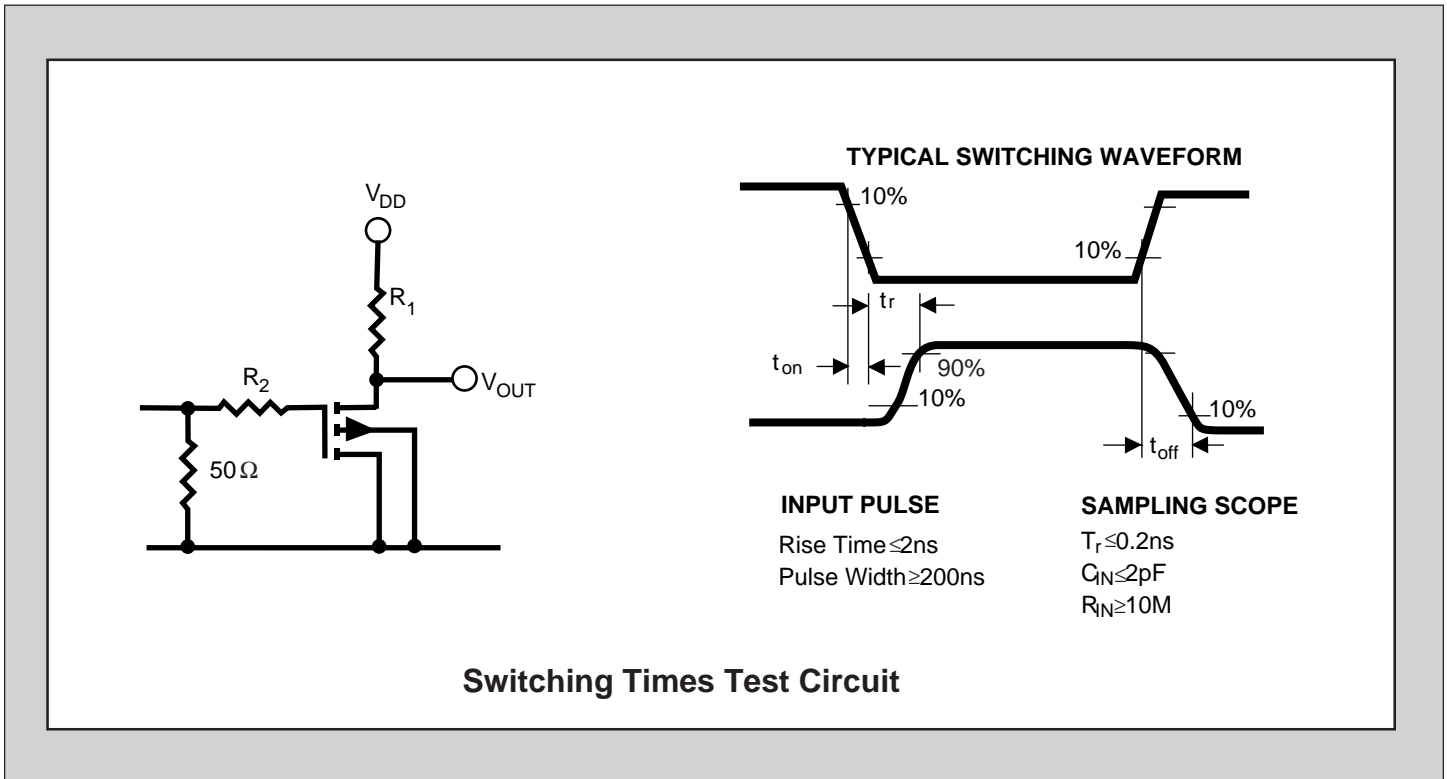
| SYMBOL | CHARACTERISTICS | 3N163 | | 3N164 | | UNITS | CONDITIONS |
|--------------|----------------------------------|-------|------|-------|------|-------|--|
| | | MIN | MAX | MIN | MAX | | |
| I_{GSSF} | Gate Forward Current | -10 | | -10 | | pA | $V_{GS} = -40V$ $V_{DS} = 0$ (3N163) $V_{GS} =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

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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 | | |



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.