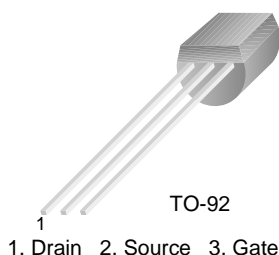


# PN4861

## N-Channel Switch

- This device is designed for electronic switching applications such as low ON resistance analog switching.
- Sourced from process 51.



### Absolute Maximum Ratings\* $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{DG}$	Drain-Gate Voltage	30	V
$V_{GS}$	Gate-Source Voltage	-30	V
$I_{GF}$	Forward Gate Current	50	mA
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 ~ 150	$^\circ\text{C}$

\* This ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These rating are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation	625	mW
	Derate above $25^\circ\text{C}$	5.0	mW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C}/\text{W}$

\* Device mounted on FR-4 PCB 1.5" X 1.6" X 0.06"

**Electrical Characteristics\***  $T_a=25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
--------	-----------	----------------	------	------	-------

**Off Characteristics**

$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = 1.0 \mu\text{A}, V_{DS} = 0 \text{ V}$	-30		V
$I_{GSS}$	Gate Reverse Current	$V_{GS} = 15 \text{ V}, V_{DS} = 0, T = 25^\circ\text{C}$ $T = 100^\circ\text{C}$		-0.25 -500	nA
$V_{GS(OFF)}$	Gate-Source Cut-off Voltage	$V_{DS} = 15 \text{ V}, I_D = 0.5 \text{ nA}$	-0.8	-4.0	V

**On Characteristics**

$I_{DSS}$	Zero-Gate Voltage Drain Current *	$V_{DS} = 15\text{V}, V_{GS} = 0$	8	80	mA
$V_{DS(ON)}$	Drain-Source On Voltage	$I_D = 5 \text{ mA}$		0.5	V
$R_{DS(ON)}$	Drain-Source On Voltage	$V_{DS} = 0 \text{ V}, V_{GS} = 0 \text{ V}, f = 1\text{kHz}$		60	$\Omega$

**Small Signal Characteristics**


$C_{iss}$	Input Capacitance	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$		18	pF
$C_{rss}$	Reverse Transfer Capacitance	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$		8	pF

\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle = 2%



**TRADEMARKS**

The following are registered and unregistered trademarks and service marks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

- |                                      |  |  |                                  |
|--------------------------------------|--|--|----------------------------------|
| ACEx <sup>®</sup>                    | Green FPS <sup>™</sup>   | Power247 <sup>®</sup>                  | SuperSOT <sup>™</sup> -8         |
| Build it Now <sup>™</sup>            | Green FPS <sup>™</sup> e-Series <sup>™</sup>   | POWEREDGE <sup>®</sup>                 | SyncFET <sup>™</sup>             |
| CorePLUS <sup>™</sup>                | GTOT <sup>™</sup>  | Power-SPM <sup>™</sup>                 | The Power Franchise <sup>®</sup> |
| CROSSVOLT <sup>™</sup>               | i-Lo <sup>™</sup>  | PowerTrench <sup>®</sup>               | <b>power</b><br>the franchise    |
| CTL <sup>™</sup>                     | IntelliMAX <sup>™</sup>  | Programmable Active Droop <sup>™</sup> | TinyBoost <sup>™</sup>           |
| Current Transfer Logic <sup>™</sup>  | ISOPLANAR <sup>™</sup>   | QFET <sup>®</sup>                      | TinyBuck <sup>™</sup>            |
| EcoSPARK <sup>®</sup>                | MegaBuck <sup>™</sup>  | QST <sup>™</sup>                       | TinyLogic <sup>®</sup>           |
| <b>F</b> <sup>®</sup>                | MICROCOUPLER <sup>™</sup>  | QT Optoelectronics <sup>™</sup>        | TINYOPTO <sup>™</sup>            |
| Fairchild <sup>®</sup>               | MicroFET <sup>™</sup>  | Quiet Series <sup>™</sup>              | TinyPower <sup>™</sup>           |
| Fairchild Semiconductor <sup>®</sup> | MicroPak <sup>™</sup>  | RapidConfigure <sup>™</sup>            | TinyPWM <sup>™</sup>             |
| FACT Quiet Series <sup>™</sup>       | Motion-SPM <sup>™</sup>  | SMART START <sup>™</sup>               | TinyWire <sup>™</sup>            |
| FACT <sup>®</sup>                    | OPTOLOGIC <sup>®</sup>   | SPM <sup>®</sup>                       | µSerDes <sup>™</sup>             |
| FAST <sup>®</sup>                    | OPTOPLANAR <sup>®</sup>  | STEALTH <sup>™</sup>                   | UHC <sup>®</sup>                 |
| FastvCore <sup>™</sup>               |  <sup>®</sup> | SuperFET <sup>™</sup>                  | UniFET <sup>™</sup>              |
| FPS <sup>™</sup>                     | PDP-SPM <sup>™</sup>   | SuperSOT <sup>™</sup> -3               | VCX <sup>™</sup>                 |
| FRFET <sup>®</sup>                   | Power220 <sup>®</sup>  | SuperSOT <sup>™</sup> -6               |                                  |
| Global Power Resource <sup>SM</sup>  |  |  |                                  |

**DISCLAIMER**

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

**PRODUCT STATUS DEFINITIONS**

**Definition of Terms**

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.

Rev. 130