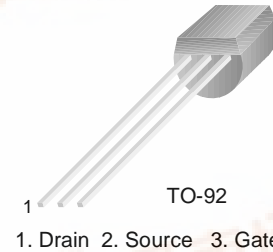


FAIRCHILD
SEMICONDUCTOR®

PF5102

N-Channel Switch

- This device is designed for low level analog switching, sample and hold circuits and chopper stabized amplifiers.
- Sourced from process 51.
- See J111 for characteristics.



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

Symbol	Parameter	Value	Units
V_{DG}	Drain-Gate Voltage	40	V
V_{GS}	Gate-Source Voltage	-40	V
I_{GF}	Forward Gate Current	50	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 ~ +150	$^{\circ}\text{C}$

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

NOTES:

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

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 Breakdwon Voltage	$I_C = -1.0\mu\text{A}, V_{DS} = 0$	-40		V
I_{GSS}	Gate Reverse Current	$V_{GS} = -15\text{V}, V_{DS} = 0$ $V_{GS} = -15\text{V}, V_{DS} = 0, T_A = 125^{\circ}\text{C}$		-1.0 -0.2	nA μA
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = 15\text{V}, I_D = 1.0\text{nA}$	-0.7	-1.6	V
$V_{GS(f)}$	Gate-Source Forward Voltage	$I_G = 1.0\text{mA}, V_{DS} = 0$		1.0	
On Characteristics					
I_{DSS}	Zero-Gate Voltage Drain Current *	$V_{DS} = 15\text{V}, V_{GS} = 0$	4.0	20	nA
Small Signal Characteristics					
g_{fs}	Forward Transfer Conductance	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1.0\text{KHz}$	11,000		μmhos
g_{oss}	Output Conductance	$V_{DS} = 15\text{V}, I_D = 500\mu\text{A}, f = 1.0\text{KHz}$		25	μmhos
C_{iss}	Input Capacitance	$V_{DG} = 15\text{V}, V_{GS} = 0, f = 1.0\text{MHz}$		16	pF
C_{rss}	Reverse Transfer Capacitance	$V_{DG} = 15\text{V}, V_{GS} = 0, f = 1.0\text{MHz}$		6	pF

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1.0\%$

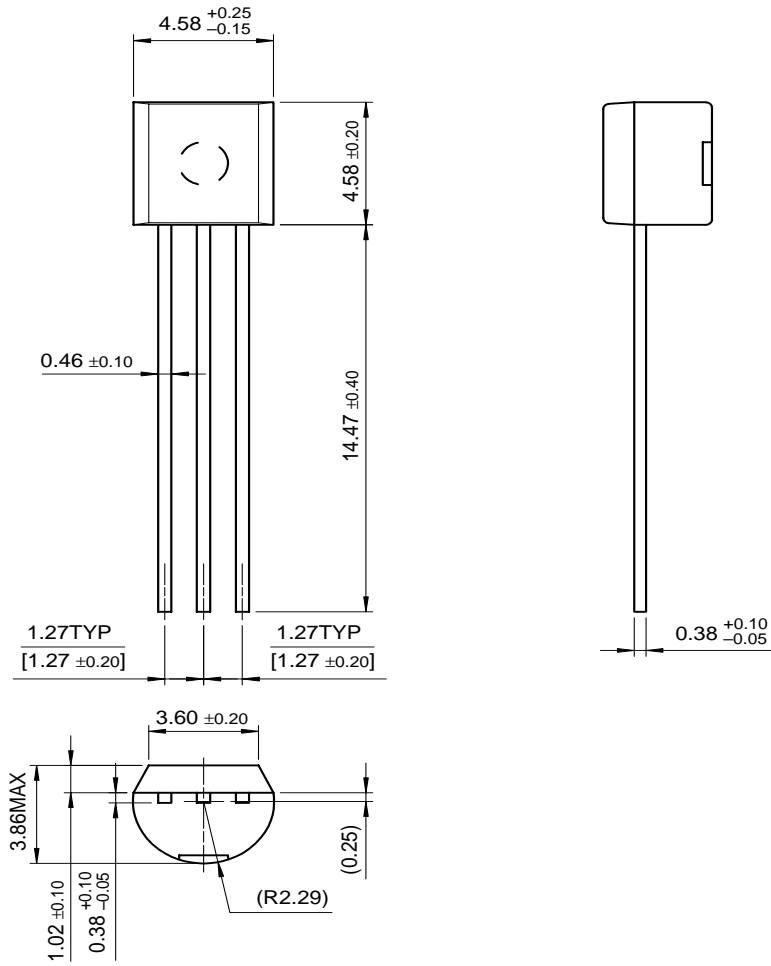
Thermal Characteristics $T_A=25^{\circ}\text{C}$ unless otherwise noted

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



Package Dimensions

TO-92



Dimensions in Millimeters

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CoolFET™	FASTr™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
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E ² CMOS™	HiSeC™	MSXPro™	Quiet Series™	TruTranslation™
EnSigna™	I ² C™	OCX™	RapidConfigure™	UHC™
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The Power Franchise™		OPTOLOGIC®	SILENT SWITCHER®	VCX™
Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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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
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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