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[Fairchild Semiconductor](#)  
[2N5639](#)

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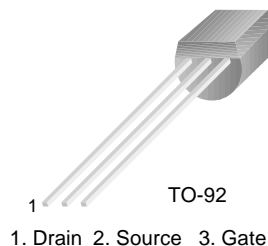
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



## 2N5639

### N-Channel Switch

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



### Absolute Maximum Ratings \* $T_C=25^\circ\text{C}$ 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	$^\circ\text{C}$

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

#### NOTES:

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

### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$V_{DS} = 0, I_G = -10\mu\text{A}$	-30			V
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -15\text{V}, V_{DS} = 0$			-1.0	nA
$I_{D(off)}$	Drain Cutoff Leakage Current	$V_{DS} = 12\text{V}, V_{GS} = 15\text{V}$			1.0	nA
<b>On Characteristics</b>						
$I_{DSS}$	Zero-Gate Voltage Drain Current *	$V_{DS} = 20\text{V}, I_{GS} = 0$	25			mA
$r_{DS(on)}$	Drain-Source On Resistance	$V_{GS} = 0\text{V}, I_D = 1.0\text{mA}$			60	$\Omega$
<b>Small Signal Characteristics</b>						
$r_{ds(on)}$	Drain-Source On Resistance	$V_{DS} = V_{GS} = 0, f = 1.0\text{kHz}$			60	$\Omega$
$C_{iss}$	Input Capacitance	$V_{DS} = 0, V_{GS} = 12\text{V}, f = 1.0\text{MHz}$			10	pF
$C_{rss}$	Reverse Transfer Capacitance	$V_{DS} = 0\text{V}, V_{GS} = 12\text{V}, f = 1.0\text{MHz}$			4.0	pF
<b>Switching Characteristics</b>						
$t_{d(on)}$	Trun On Delay Time	$V_{DD} = 10\text{V}, V_{GS(on)} = 0$ $V_{GS(off)} = -12, I_{D(on)} = 12\text{mA}$ $R_G = 50\Omega$			6.0	ns
$t_r$	Rise Time				8.0	ns
$t_{d(off)}$	Trun Off Delay Time				10	ns
$t_f$	Fall Time				20	ns

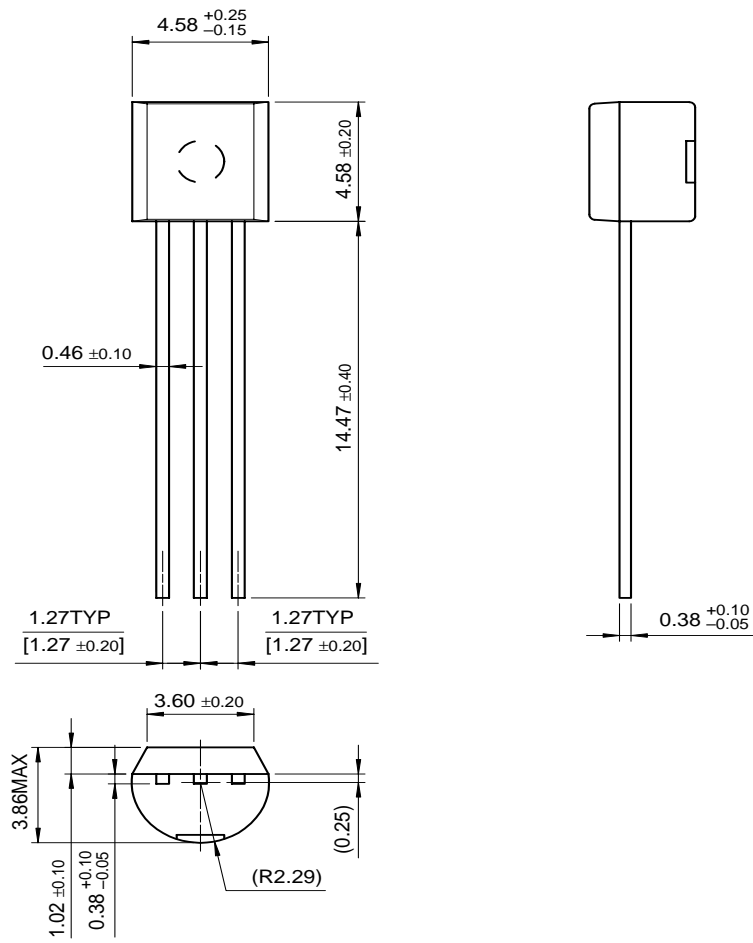
\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

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

Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	350 2.8	mW mW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C/W}$

Package Dimensions

TO-92



Dimensions in Millimeters

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CROSSVOLT™	FRFET™	MicroPak™	QFET®	SuperSOT™-8
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