

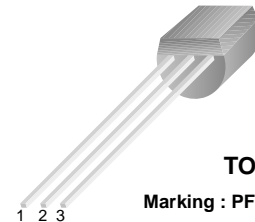


# PF5103

## N-Channel Switch

### Features

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



**TO-92**  
Marking : PF5103  
1. Drain 2. Source 3. Gate

### 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	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:

- 1) These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics\*

Symbol	Parameter	Value	Units
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	625 5.0	mW 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	$^\circ\text{C}/\text{W}$

\* Minimum land pad.

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

Symbol	Parameter	Test Condition	MIN	MAX	Units
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#### Off Characteristics

$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -1.0\mu\text{A}, V_{DS} = 0$	-40		V
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -15\text{V}, V_{DS} = 0$ $V_{GS} = -15\text{V}, V_{DS} = 0, T_a = 125^\circ\text{C}$		-200 -500	pA nA
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = 15\text{V}, I_D = 1.0\text{nA}$	-1.2	-2.7	V
$V_{GS(f)}$	Gate-Source Forward Voltage	$V_{DS} = 0\text{V}, I_G = 10\text{mA}$		1.0	V

#### On Characteristics

$I_{DSS}$	Zero-Gate Voltage Drain Current *	$V_{DS} = 15\text{V}, V_{GS} = 0$	10	40	mA
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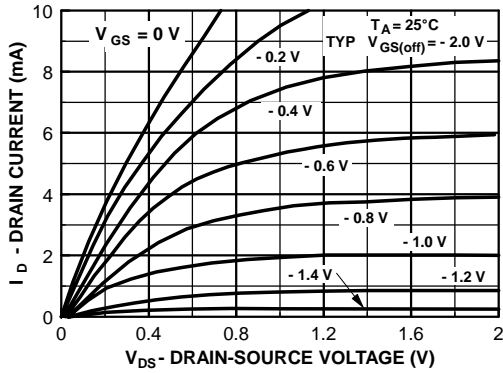
#### Small Signal Characteristics

$g_{fs}$	Forward Transfer conductance	$V_{DG} = 15\text{V}, I_D = 500\mu\text{A}, f = 1.0\text{KHz}$ $V_{DG} = 15\text{V}, I_D = 2.0\text{mA}, f = 1.0\text{KHz}$	3500 7500		$\mu\text{hos}$ $\mu\text{hos}$
$g_{oss}$	Output Conductance	$V_{DG} = 15\text{V}, I_D = 500\mu\text{A}, f = 1.0\text{KHz}$		25	$\mu\text{hos}$
$C_{iss}$	Input Capacitance	$V_{DG} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$		16	pF
$C_{rss}$	Reverse Transfer Capacitance	$V_{DG} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$		6	pF

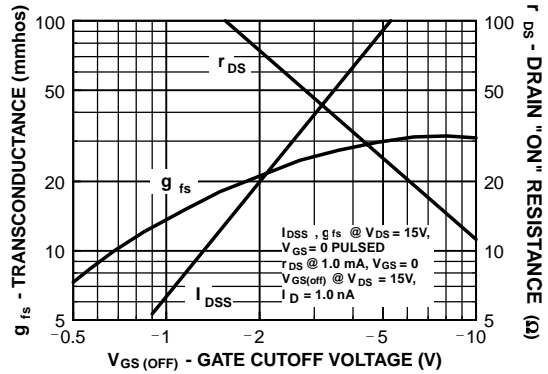
\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

# Typical Characteristics

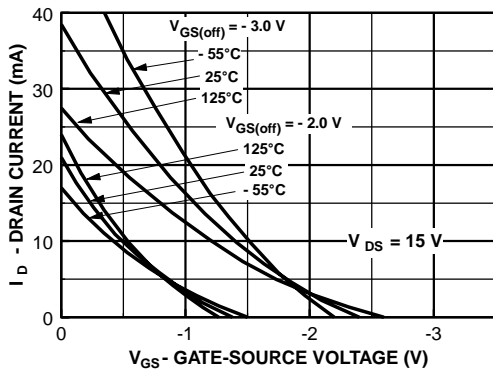
Common Drain-Source



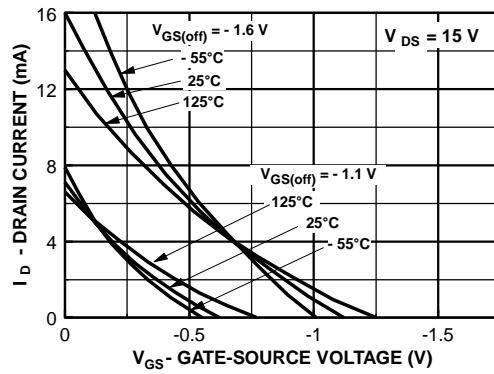
Parameter Interactions



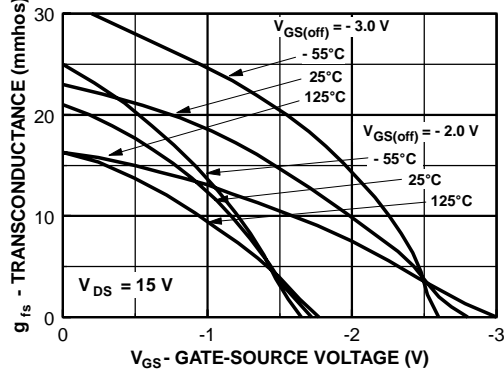
Transfer Characteristics



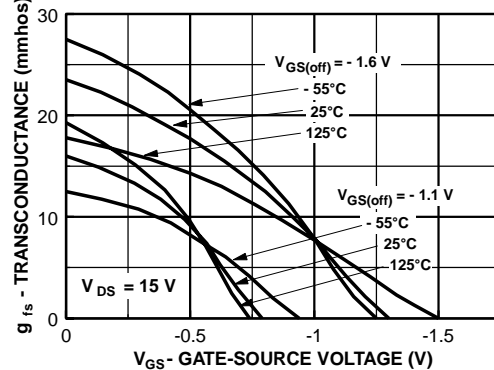
Transfer Characteristics



Transfer Characteristics

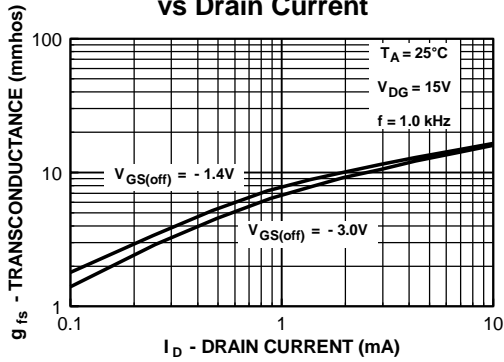


Transfer Characteristics

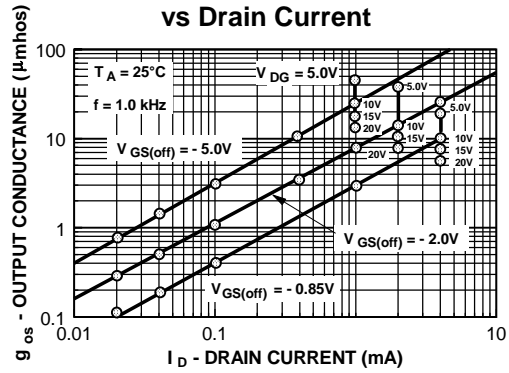


# Typical Characteristics(continued)

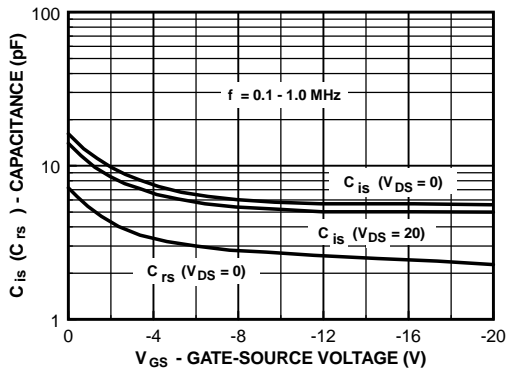
**Transconductance vs Drain Current**



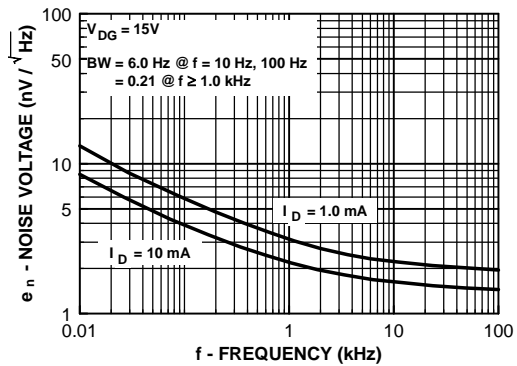
**Output Conductance vs Drain Current**



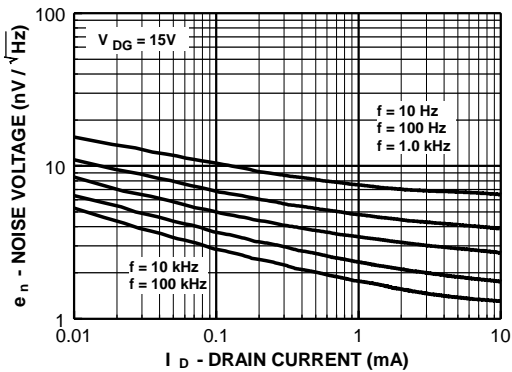
**Capacitance vs Voltage**



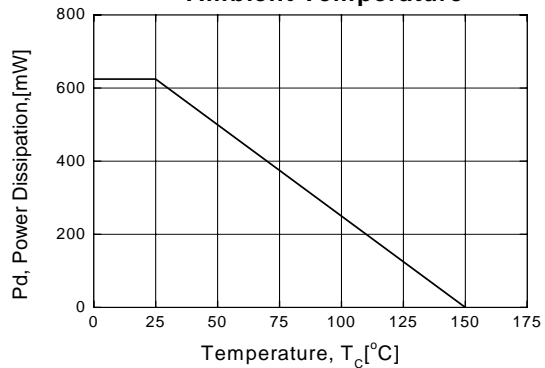
**Noise Voltage vs Frequency**



**Noise Voltage vs Current**

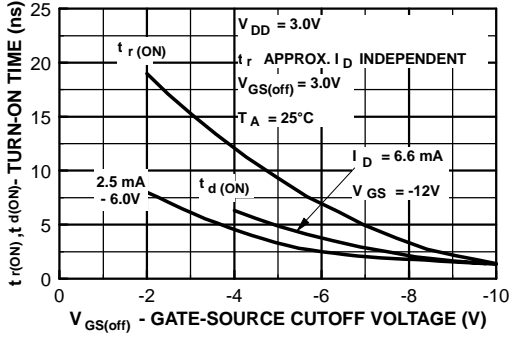


**Power Dissipation vs Ambient Temperature**

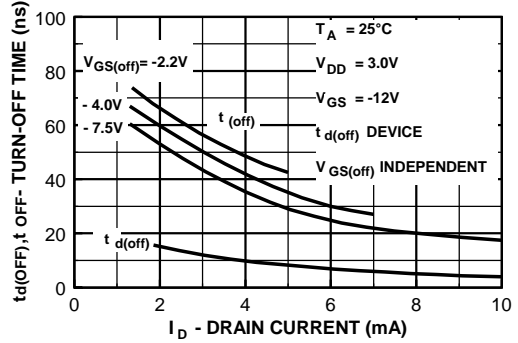


Typical Characteristics(continued)

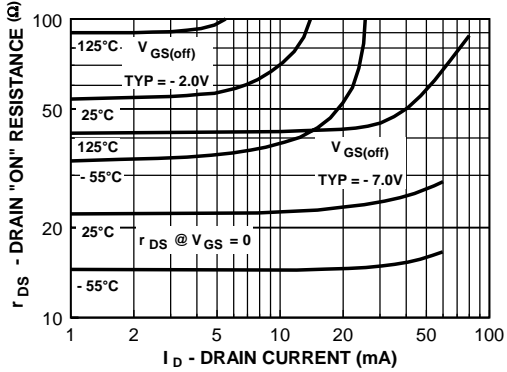
Switching Turn-On Time vs Gate-Source Voltage



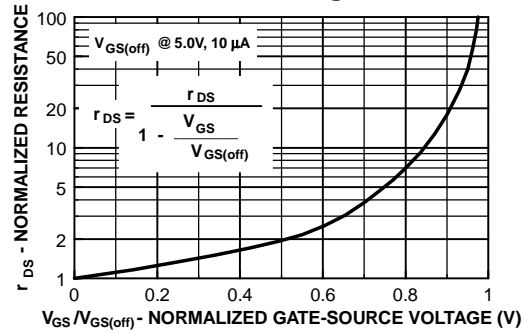
Switching Turn-Off Time vs Drain Current



On Resistance vs Drain Current

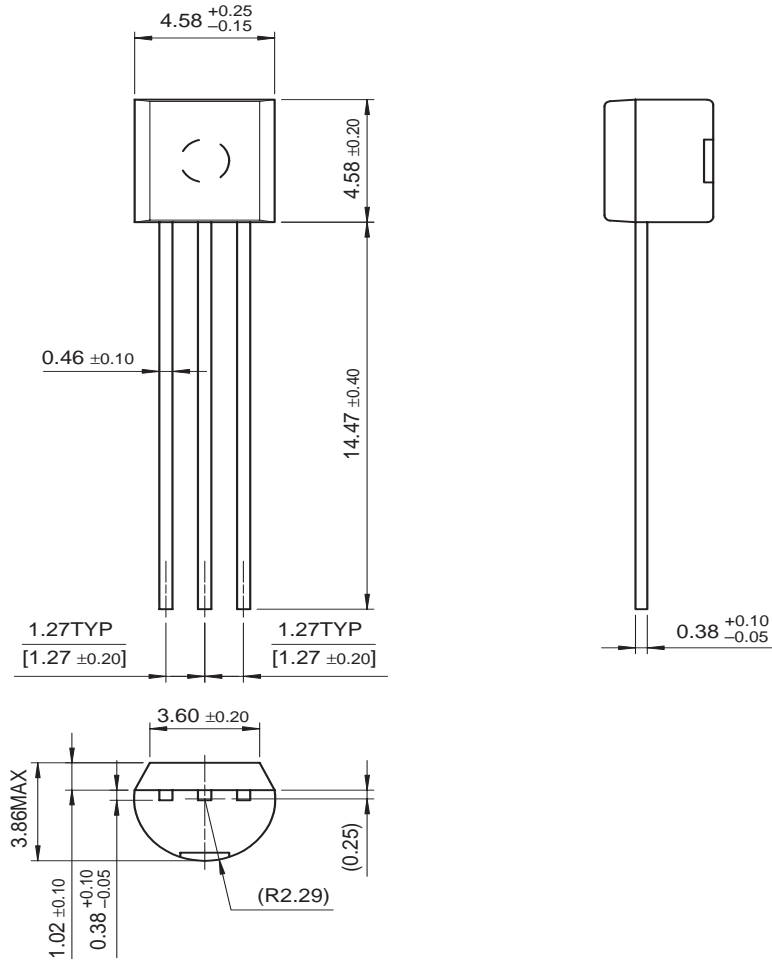


Normalized Drain Resistance vs Bias Voltage



# Package Dimensions

## TO-92



Dimensions in Millimeters

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DOMETM	ImpliedDisconnect™	Power247™	SuperSOT™-6	
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EnSigna™	LittleFET™	PowerTrench®	TCM™	
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FAST®	MicroFET™	QS™	TinyBuck™	
FASTr™	MicroPak™	QT Optoelectronics™	TinyPWM™	
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Rev. I20