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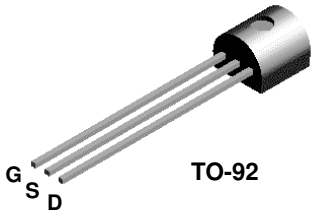
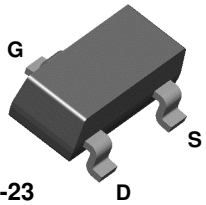
FAIRCHILD
SEMICONDUCTOR™

PN4117 PN4118 PN4119

MMBF4117 MMBF4118 MMBF4119



TO-92



SOT-23
Mark: 61A / 61C / 61E

NOTE: Source & Drain are interchangeable

N-Channel Switch

This device is designed for low current DC and audio applications. These devices provide excellent performance as input stages for sub-picoamp instrumentation or any high impedance signal sources. Sourced from Process 53.

Absolute Maximum Ratings*

TA = 25°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 to +150	°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.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max		Units
		PN4117-4119	*MMBF4117-4119	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	225 1.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	556	°C/W

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

N-Channel Switch
(continued)

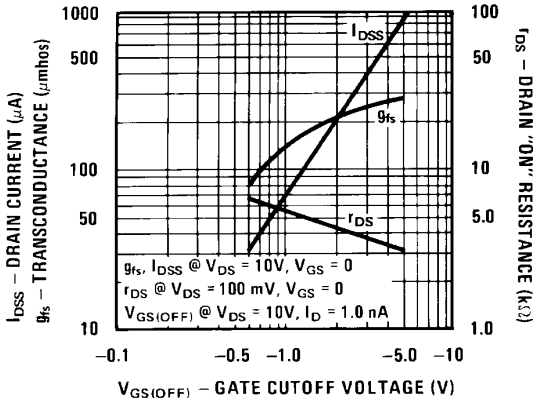
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min	Max	Units
OFF CHARACTERISTICS						
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	I_G = - 1.0 µA, V_{DS} = 0		- 40		V
I_{GSS}	Gate Reverse Current	V_{GS} = - 20 V, V_{DS} = 0			- 10	pA
		V_{GS} = - 20 V, V_{DS} = 0, T_A = 150°C			- 25	nA
$V_{GS(off)}$	Gate-Source Cutoff Voltage	V_{DS} = - 10 V, I_D = 1.0 nA	**4117**	- 0.6	- 1.8	V
			4118	- 1.0	- 3.0	V
			4119	- 2.0	- 6.0	V
ON CHARACTERISTICS						
I_{DSS}	Zero-Gate Voltage Drain Current*	V_{DS} = 10 V, V_{GS} = 0	**4117**	30	90	µA
			4118	80	240	µA
			4119	200	600	µA
SMALL-SIGNAL CHARACTERISTICS						
g_{fs}	Common-Source Forward Transconductance	V_{DS} = 10 V V_{GS} = 0, f= 1.0 kHz				
			4117	70	210	µmhos
			4118	80	250	µmhos
			4119	100	330	µmhos
g_{oss}	Common-Source Output Conductance	V_{DS} = 10 V V_{GS} = 0, f= 1.0 kHz				
			4117		3.0	µmhos
			4118		5.0	µmhos
			4119		10	µmhos
$R_{e(yfs)}$	Common-Source Forwad Transconductance	V_{DS} = 10 V, V_{GS} = 0, f= 30 MHz				
			4117	60		µmhos
			4118	70		µmhos
			4119	90		µmhos
C_{iss}	Input Capacitance	V_{DS} = 10 V, V_{GS} = 0, f= 1.0 kHz			3.0	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 10 V, V_{GS} = 0, f= 1.0 MHz,			1.5	pF

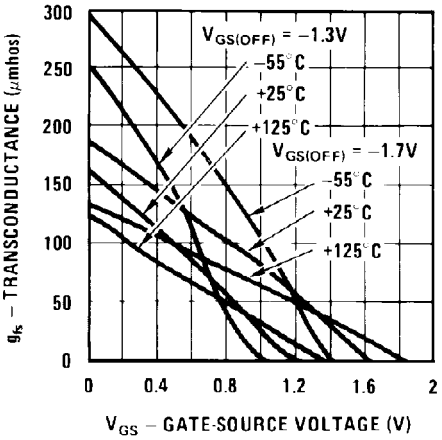
*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 1.0%

Typical Characteristics

Parameter Interactions



Transfer Characteristics



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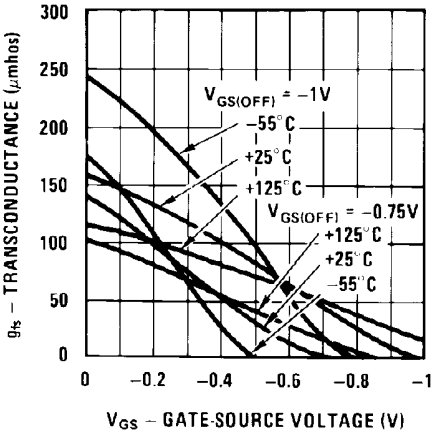

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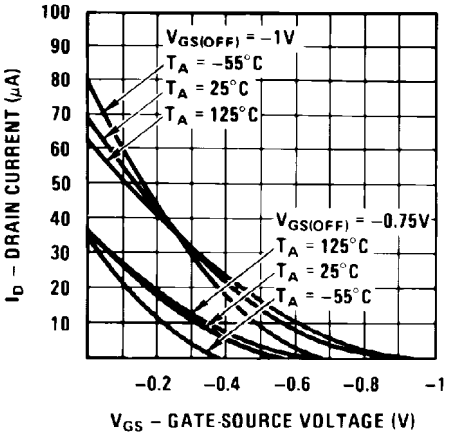

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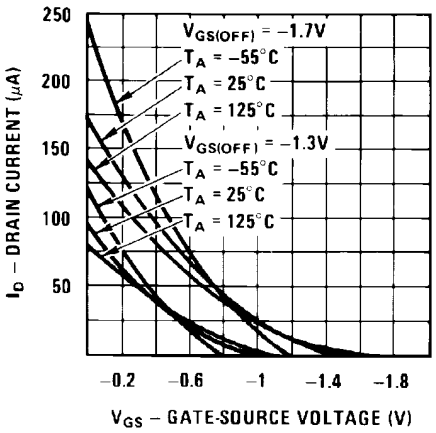

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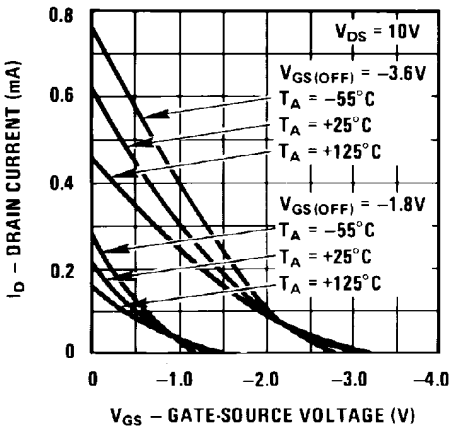
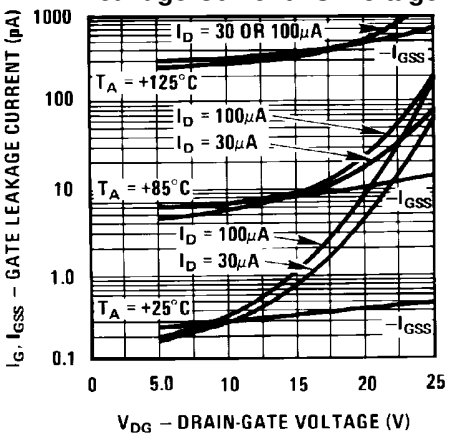
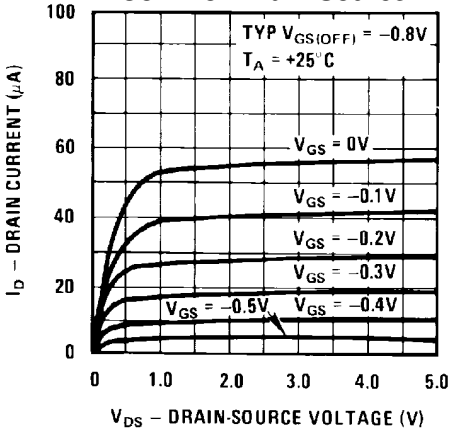


Typical Characteristics (continued)

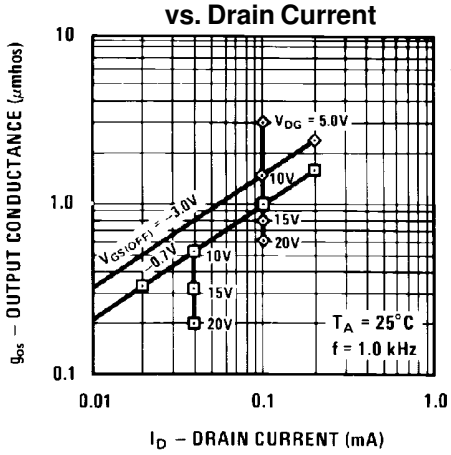
Leakage Current vs. Voltage



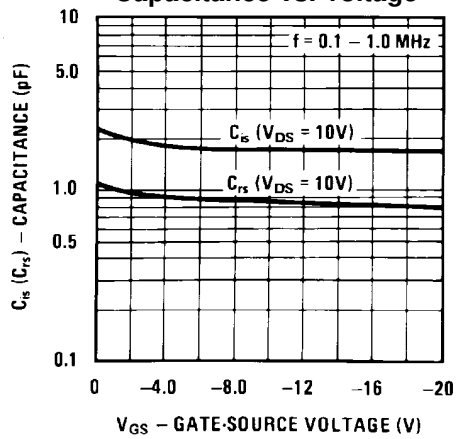
Common Drain-Source



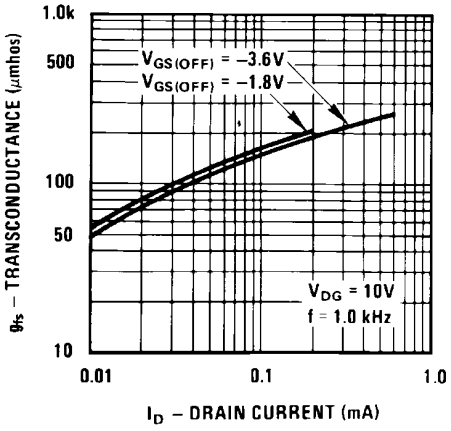
Output Conductance vs. Drain Current



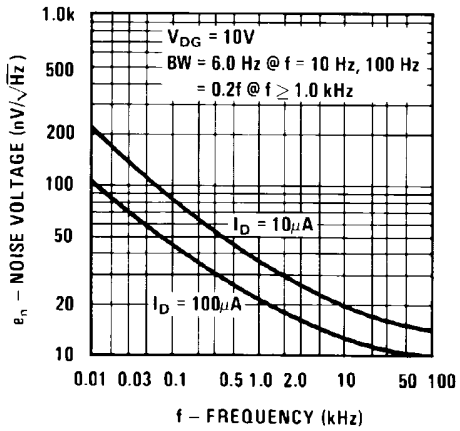
Capacitance vs. Voltage



Transconductance vs. Drain Current



Noise Voltage vs. Frequency



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