FAIRCHILD
SEMICONDUCTOR ™

PN4117
PN4118
PN4119

MMBF4117
MMBF4118
MMBF4119

G
S
D
TO-92

G
S
D
SOT-23
Mark: 61A / 61C / 61E
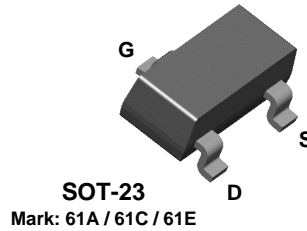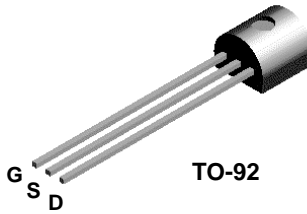
**NOTE: Source & Drain
are interchangeable**

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* $T_A = 25°C$ 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 $T_A = 25°C$ 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
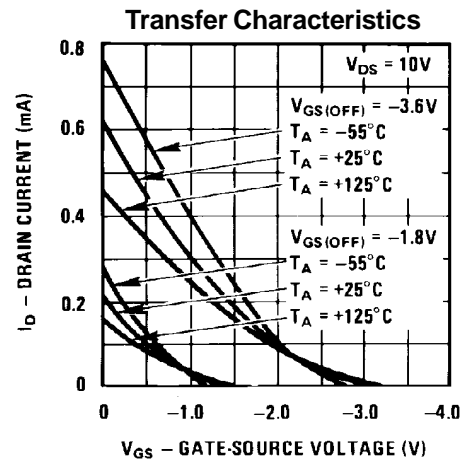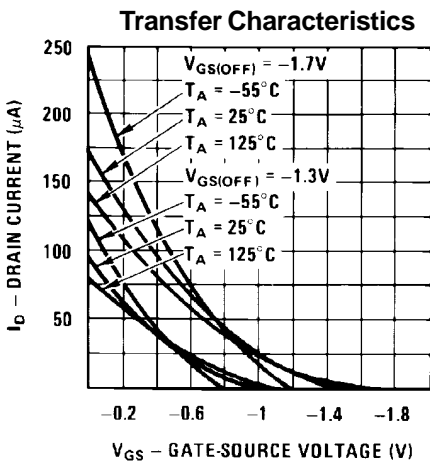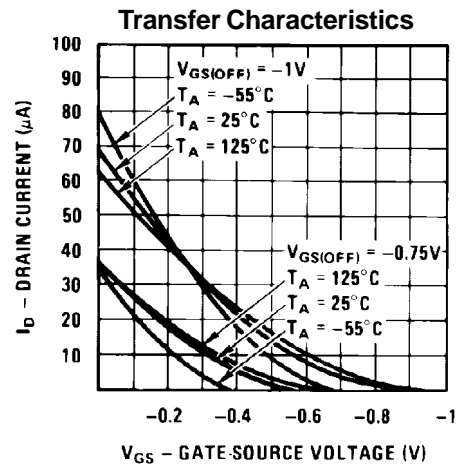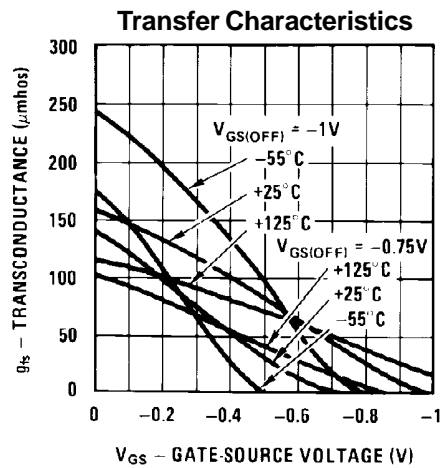(continued)

Electrical Characteristics   TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -1.0\ \mu A$, $V_{DS} = 0$	- 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

Transfer Characteristics

Transfer Characteristics

Transfer Characteristics

Transfer Characteristics

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
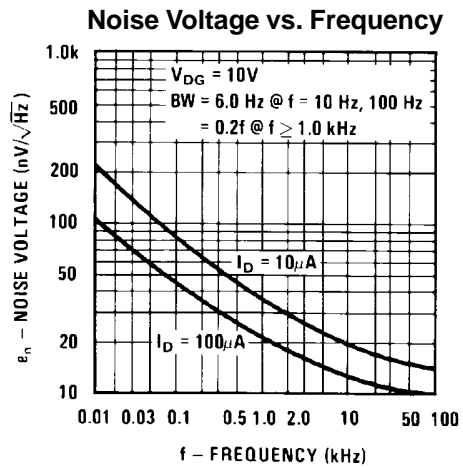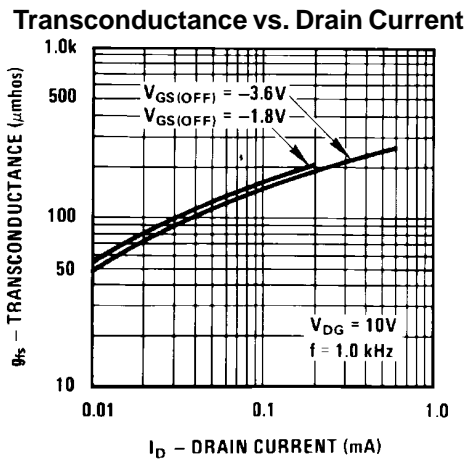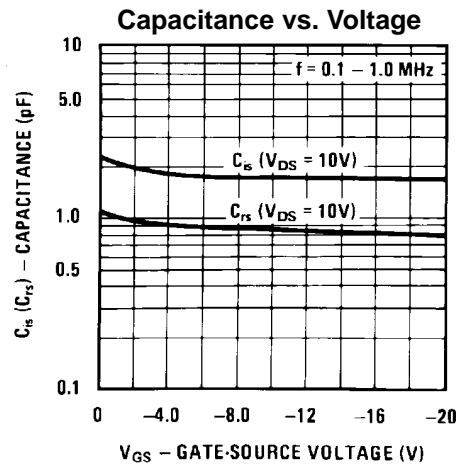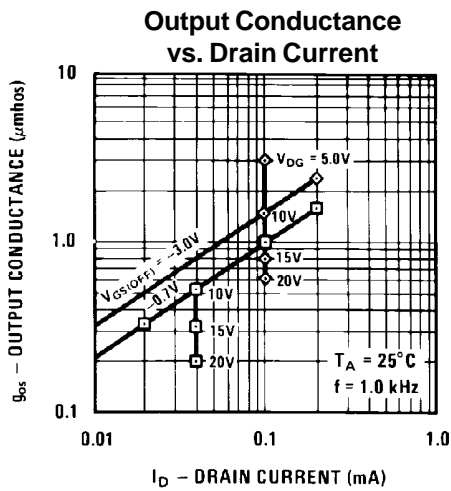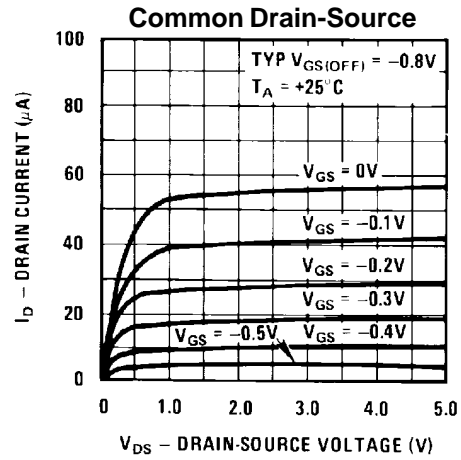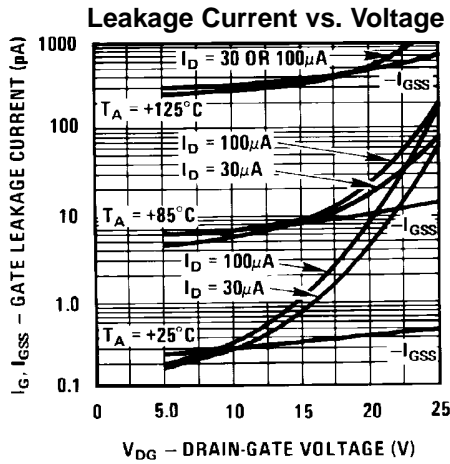
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Rev. G