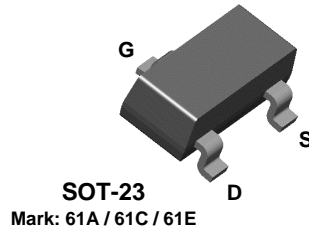
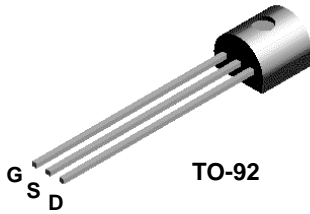


**PN4117
PN4118
PN4119**

**MMBF4117
MMBF4118
MMBF4119**



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	350	225	mW
	Derate above 25°C	2.8	1.8	mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125		°C/W
R _{θJA}	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

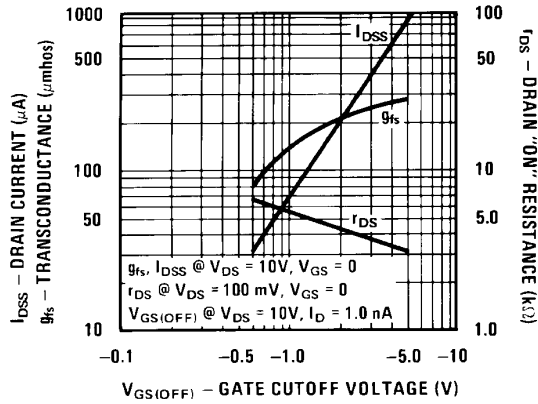
Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -1.0 \mu A, V_{DS} = 0$	-40		V
I_{GSS}	Gate Reverse Current	$V_{GS} = -20 V, V_{DS} = 0$ $V_{GS} = -20 V, V_{DS} = 0, T_A = 150^\circ C$		-10 -25	pA nA
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = -10 V, I_D = 1.0 nA$	-0.6 -1.0 -2.0	-1.8 -3.0 -6.0	V V V
ON CHARACTERISTICS					
I_{DSS}	Zero-Gate Voltage Drain Current*	$V_{DS} = 10 V, V_{GS} = 0$	30 80 200	90 240 600	μA μA μA
SMALL-SIGNAL CHARACTERISTICS					
g_{fs}	Common-Source Forward Transconductance	$V_{DS} = 10 V, V_{GS} = 0, f = 1.0 kHz$	70 80 100	210 250 330	$\mu mhos$ $\mu mhos$ $\mu mhos$
g_{oss}	Common-Source Output Conductance	$V_{DS} = 10 V, V_{GS} = 0, f = 1.0 kHz$		3.0 5.0 10	$\mu mhos$ $\mu mhos$ $\mu mhos$
$Re(y_{fs})$	Common-Source Forward Transconductance	$V_{DS} = 10 V, V_{GS} = 0, f = 30 MHz$	60 70 90		$\mu mhos$ $\mu mhos$ $\mu mhos$
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 $\leq 300 \mu s$, Duty Cycle $\leq 1.0\%$

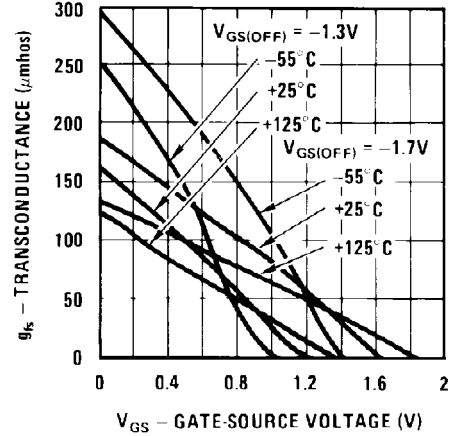
PN4117 / 4118 / 4119 / MMBF4117 / 4118 / 4119

Typical Characteristics

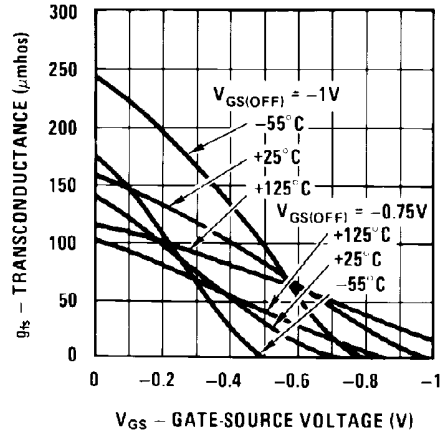
Parameter Interactions



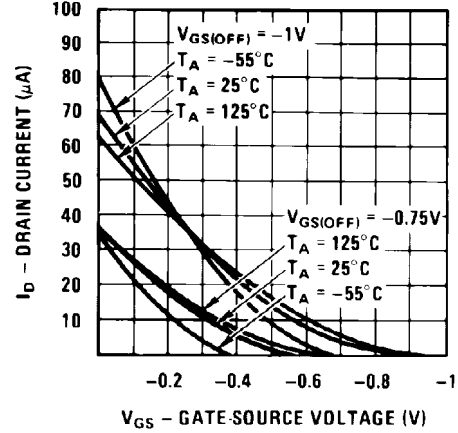
Transfer Characteristics



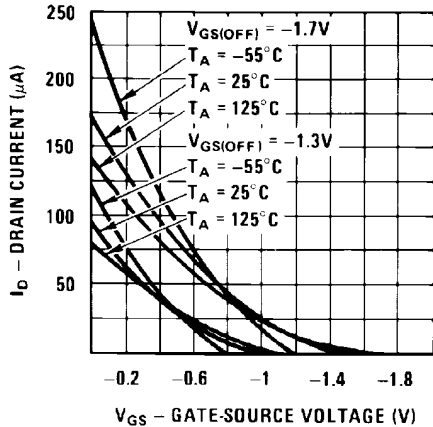
Transfer Characteristics



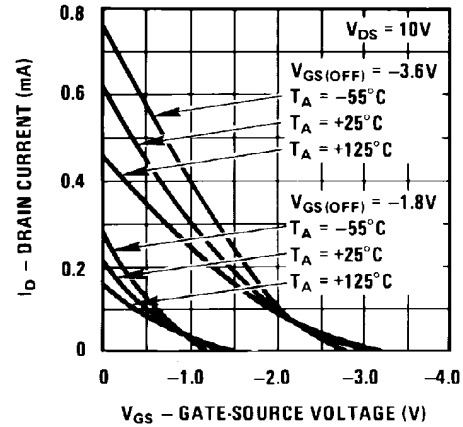
Transfer Characteristics



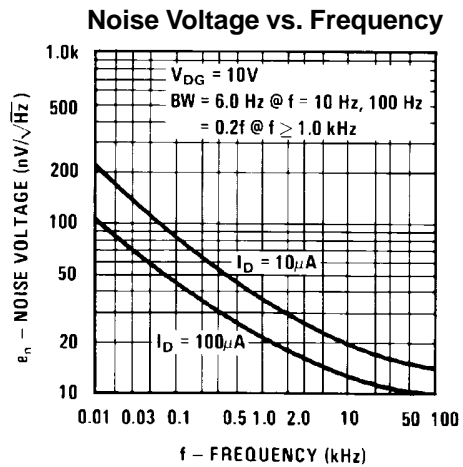
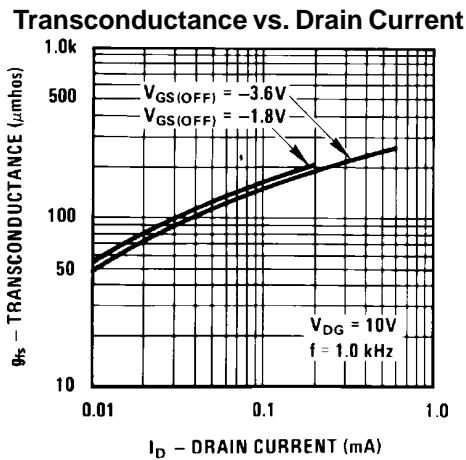
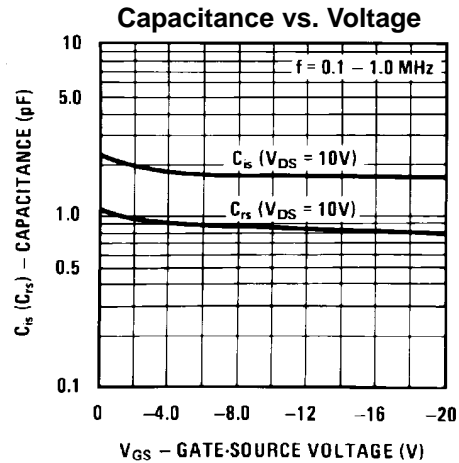
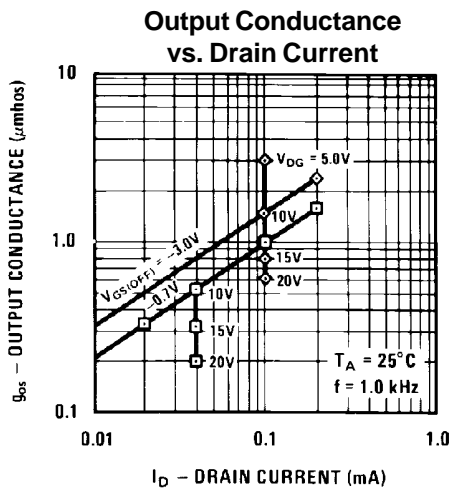
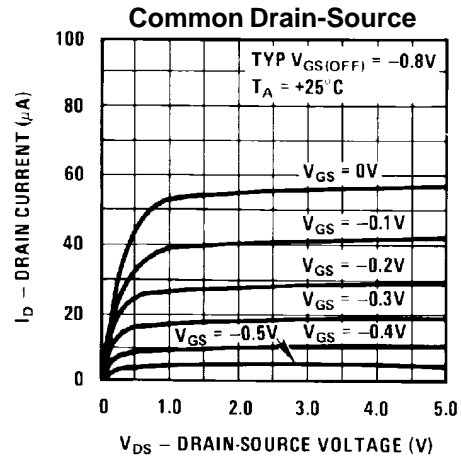
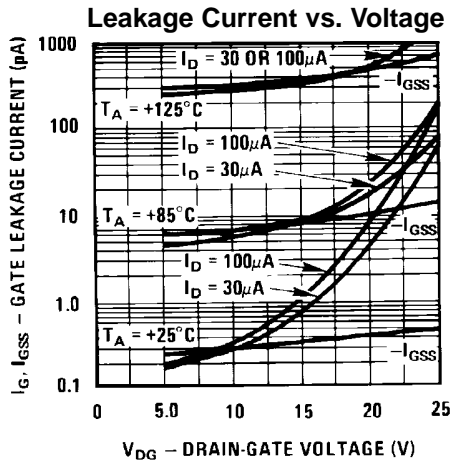
Transfer Characteristics



Transfer Characteristics



Typical Characteristics (continued)



TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACE ^x TM	FAST ^r TM	PowerTrench [®]	SyncFET TM
Bottomless TM	GlobalOptoisolator TM	QFET TM	TinyLogic TM
CoolFET TM	GTO TM	QS TM	UHC TM
CROSSVOLT TM	HiSeC TM	QT Optoelectronics TM	VCX TM
DOME TM	ISOPLANAR TM	Quiet Series TM	
E ² CMOS TM	MICROWIRE TM	SILENT SWITCHER [®]	
EnSigna TM	OPTOLOGIC TM	SMART START TM	
FACT TM	OPTOPLANAR TM	SuperSOT TM -3	
FACT Quiet Series TM	PACMAN TM	SuperSOT TM -6	
FAST [®]	POP TM	SuperSOT TM -8	

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
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
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.