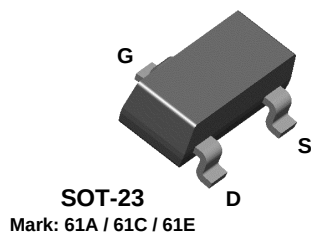
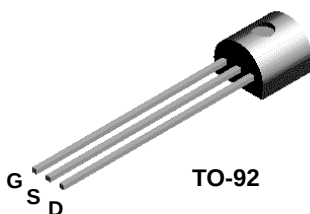


**PN4117**  
**PN4118**  
**PN4119**

**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 <sub>DG</sub>                   | Drain-Gate Voltage                               | 40          | V     |
| V <sub>GS</sub>                   | Gate-Source Voltage                              | - 40        | V     |
| I <sub>GF</sub>                   | Forward Gate Current                             | 50          | mA    |
| T <sub>J</sub> , T <sub>stg</sub> | 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 <sub>D</sub>   | Total Device Dissipation<br>Derate above 25°C | 350<br>2.8  | 225<br>1.8     | mW<br>mW/°C |
| R <sub>θJC</sub> | Thermal Resistance, Junction to Case          | 125         |                | °C/W        |
| R <sub>θJA</sub> | 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

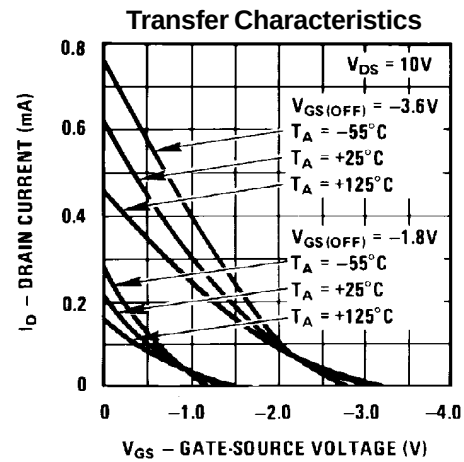
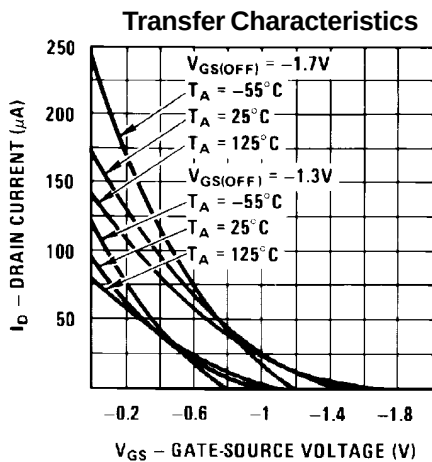
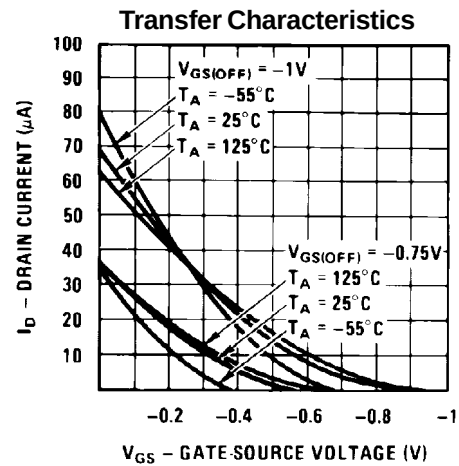
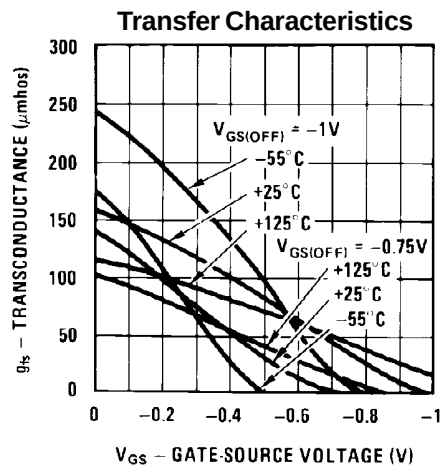
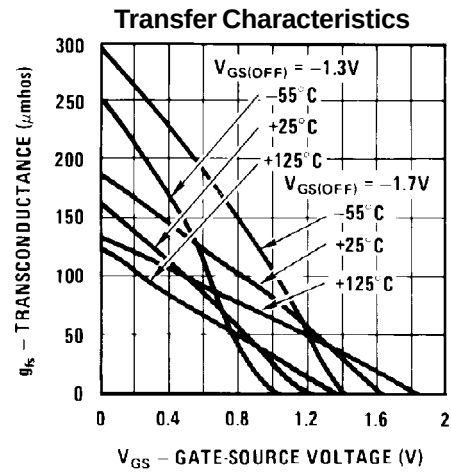
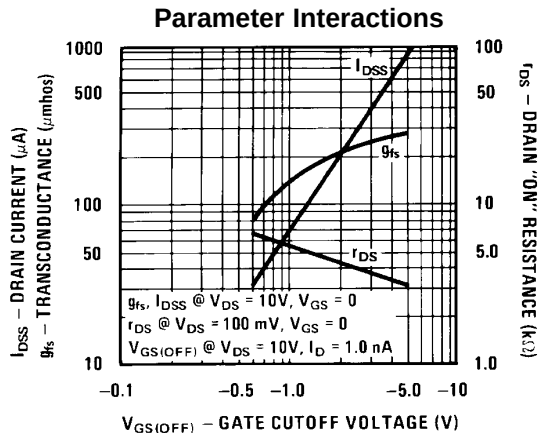
TA = 25°C unless otherwise noted

| 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                   | $V_{GS} = -20 V, V_{DS} = 0$<br>$V_{GS} = -20 V, V_{DS} = 0, T_A = 150^\circ C$ |                      | -10<br>-25           | pA<br>nA                               |
| $V_{GS(off)}$                | Gate-Source Cutoff Voltage             | $V_{DS} = -10 V, I_D = 1.0 nA$                                                  | -0.6<br>-1.0<br>-2.0 | -1.8<br>-3.0<br>-6.0 | V<br>V<br>V                            |
| ON CHARACTERISTICS           |                                        |                                                                                 |                      |                      |                                        |
| $I_{DSS}$                    | Zero-Gate Voltage Drain Current*       | $V_{DS} = 10 V, V_{GS} = 0$                                                     | 30<br>80<br>200      | 90<br>240<br>600     | $\mu A$<br>$\mu A$<br>$\mu A$          |
| SMALL-SIGNAL CHARACTERISTICS |                                        |                                                                                 |                      |                      |                                        |
| $g_{fs}$                     | Common-Source Forward Transconductance | $V_{DS} = 10 V, V_{GS} = 0, f = 1.0 kHz$                                        | 70<br>80<br>100      | 210<br>250<br>330    | $\mu mhos$<br>$\mu mhos$<br>$\mu mhos$ |
| $g_{oss}$                    | Common-Source Output Conductance       | $V_{DS} = 10 V, V_{GS} = 0, f = 1.0 kHz$                                        |                      | 3.0<br>5.0<br>10     | $\mu mhos$<br>$\mu mhos$<br>$\mu mhos$ |
| $Re(fs)$                     | Common-Source Forward Transconductance | $V_{DS} = 10 V, V_{GS} = 0, f = 30 MHz$                                         | 60<br>70<br>90       |                      | $\mu mhos$<br>$\mu mhos$<br>$\mu mhos$ |
| $C_{iss}$                    | 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

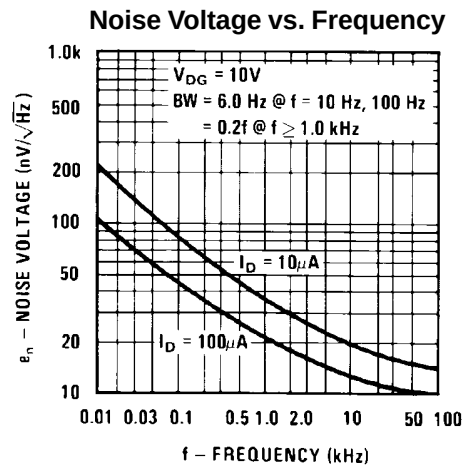
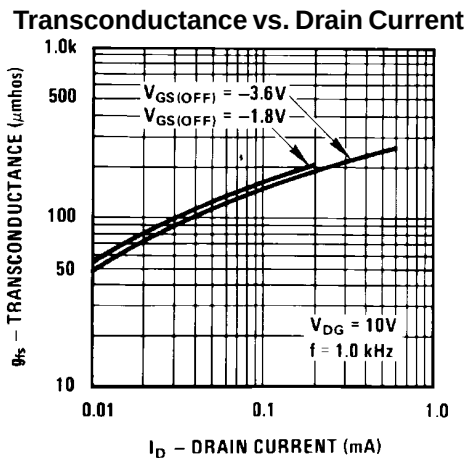
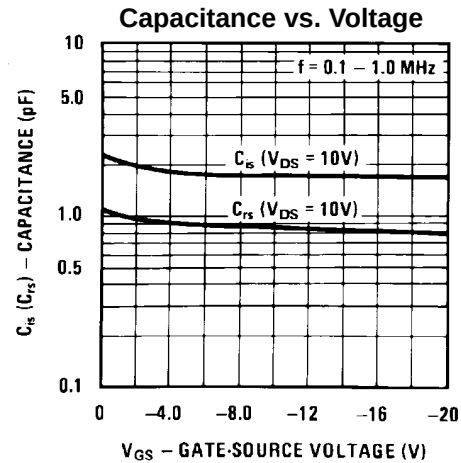
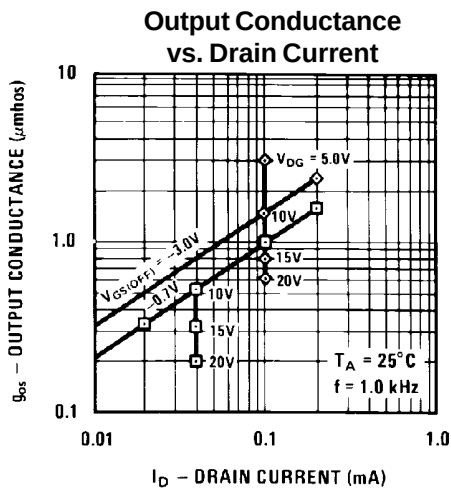
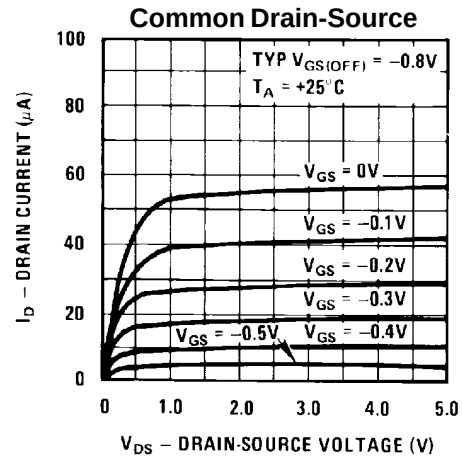
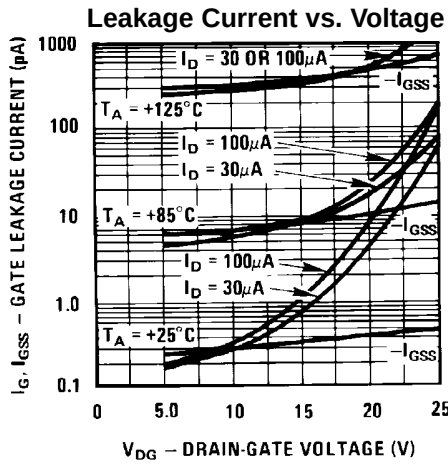
## Typical Characteristics



# N-Channel Switch (continued)

PN4117 / 4118 / 4119 / MMBF4117 / 4118 / 4119

## Typical Characteristics (continued)



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