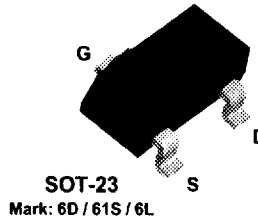
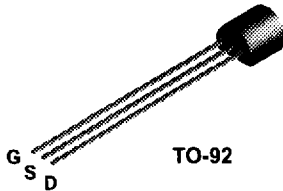


2N5457
2N5458
2N5459

MMBF5457
MMBF5458
MMBF5459



N-Channel General Purpose Amplifier

This device is a low level audio amplifier and switching transistors, and can be used for analog switching applications. Sourced from Process 55.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------------------------------|--|-------------|-------|
| V _{DG} | Drain-Gate Voltage | 25 | V |
| V _{GS} | Gate-Source Voltage | - 25 | V |
| I _{GF} | Forward Gate Current | 10 | 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 |
|------------------|---|--------|-----------|-------|
| | | 2N5457 | *MMBF5457 | |
| P _D | Total Device Dissipation | 625 | 350 | mW |
| | Derate above 25°C | 5.0 | 2.8 | mW/°C |
| R _{RJC} | Thermal Resistance, Junction to Case | 83.3 | | °C/W |
| R _{θJA} | Thermal Resistance, Junction to Ambient | 200 | 357 | °C/W |

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

2N5457 / 2N5458 / 2N5459 / MMBF5457 / MMBF5458 / MMBF5459

7

N-Channel General Purpose Amplifier

(continued)

Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|----------------------------|-------------------------------|--|----------------------------|----------------------|----------------------|-------------|
| OFF CHARACTERISTICS | | | | | | |
| $V_{(BR)GSS}$ | Gate-Source Breakdown Voltage | $I_G = 10 \mu A, V_{DS} = 0$ | -25 | | | V |
| I_{GSS} | Gate Reverse Current | $V_{GS} = -15 V, V_{DS} = 0$ $V_{GS} = -15 V, V_{DS} = 0, T_A = 100^\circ C$ | | | -1.0 -200 | nA nA |
| $V_{GS(off)}$ | Gate-Source Cutoff Voltage | $V_{DS} = 15 V, I_D = 10 nA$ | 2N5457 2N5458 2N5459 | -0.5 -1.0 -2.0 | -6.0 -7.0 -8.0 | V V V |
| V_{GS} | Gate-Source Voltage | $V_{DS} = 15 V, I_D = 100 \mu A$ $V_{DS} = 15 V, I_D = 200 \mu A$ $V_{DS} = 15 V, I_D = 400 \mu A$ | 2N5457 2N5458 2N5459 | -2.5 -3.5 -4.5 | | V V V |

ON CHARACTERISTICS

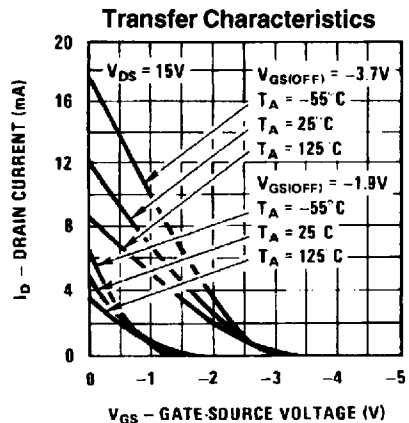
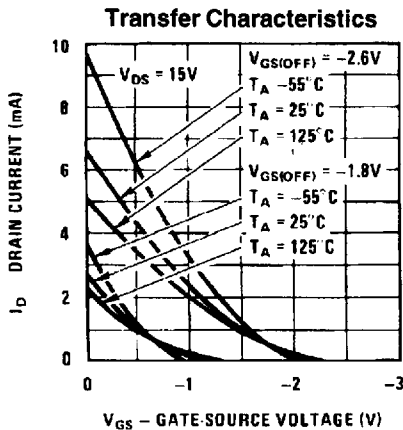
| | | | | | | | |
|-----------|----------------------------------|-----------------------------|----------------------------|-------------------|-------------------|------------------|----------------|
| I_{DSS} | Zero-Gate Voltage Drain Current* | $V_{DS} = 15 V, V_{GS} = 0$ | 2N5457 2N5458 2N5459 | 1.0 2.0 4.0 | 3.0 6.0 9.0 | 5.0 9.0 16 | mA mA mA |
|-----------|----------------------------------|-----------------------------|----------------------------|-------------------|-------------------|------------------|----------------|

SMALL SIGNAL CHARACTERISTICS

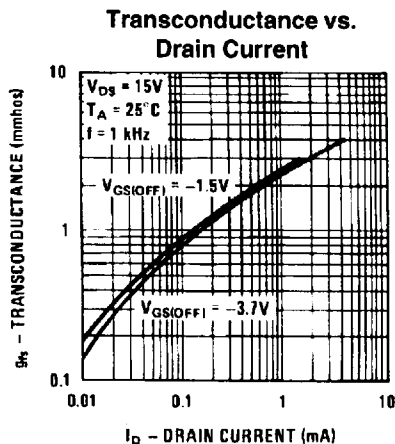
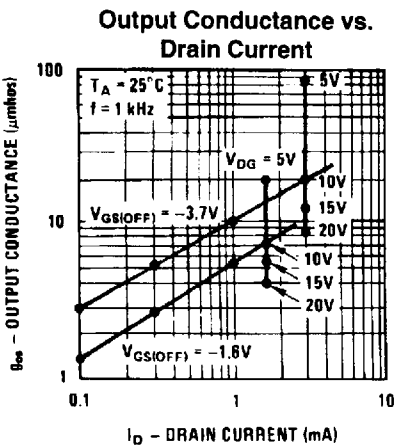
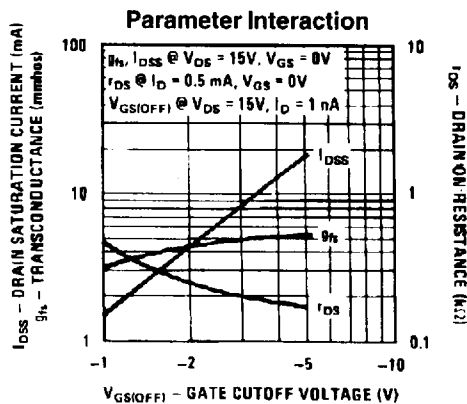
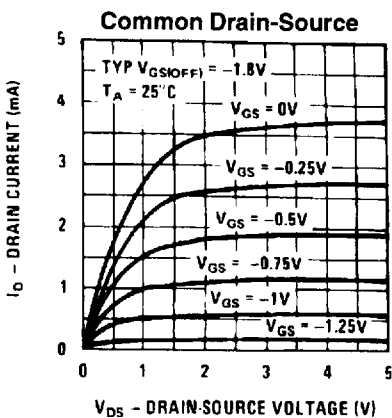
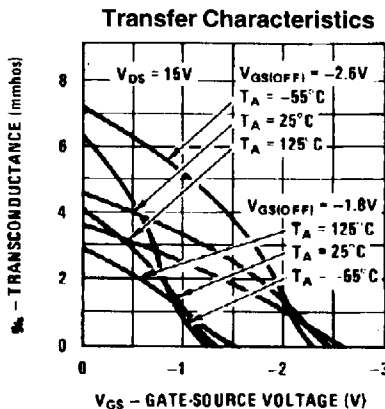
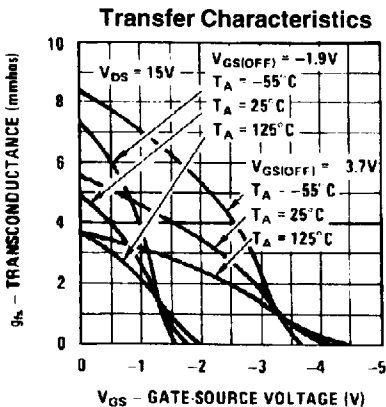
| | | | | | | | |
|-----------|-------------------------------|--|----------------------------|----------------------|-----|----------------------|--|
| g_{fs} | Forward Transfer Conductance* | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$ | 2N5457 2N5458 2N5459 | 1000 1500 2000 | | 5000 5500 6000 | $\mu mhos$ $\mu mhos$ $\mu mhos$ |
| g_{os} | Output Conductance* | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$ | | | 10 | 50 | $\mu mhos$ |
| C_{iss} | Input Capacitance | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz$ | | | 4.5 | 7.0 | pF |
| C_{rss} | Reverse Transfer Capacitance | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz$ | | | 1.5 | 3.0 | pF |
| NF | Noise Figure | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz,$ $R_G = 1.0 megohm, BW = 1.0 Hz$ | | | | 3.0 | dB |

*Pulse Test: Pulse Width < 300 ms, Duty Cycle < 2%

Typical Characteristics



Typical Characteristics (continued)



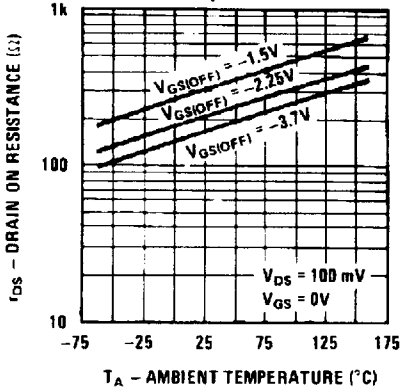
2N5457 / 2N5458 / 2N5459 / MMBF5457 / MMBF5458 / MMBF5459

N-Channel General Purpose Amplifier

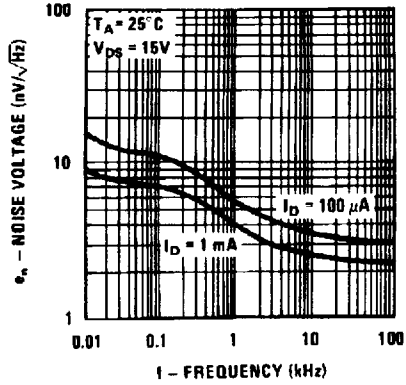
(continued)

Typical Characteristics (continued)

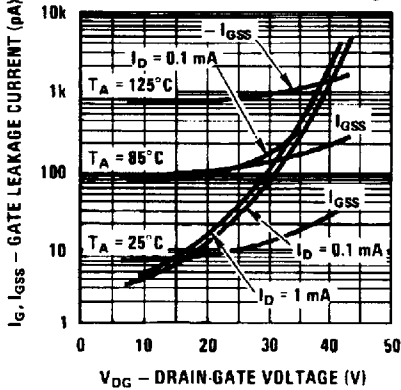
Channel Resistance vs. Temperature



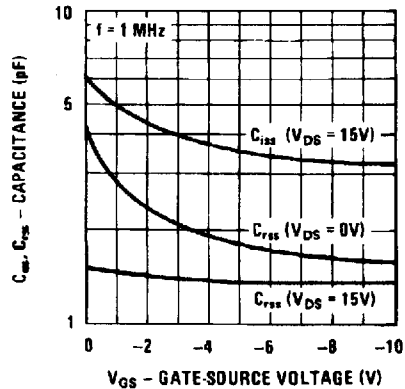
Noise Voltage vs. Frequency



Leakage Current vs. Voltage



Capacitance vs. Voltage



Maximum Power Dissipation vs. Ambient Temperature

