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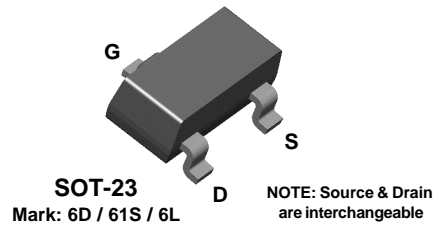
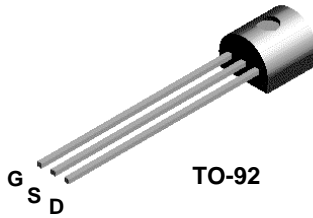
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**2N5457**  
**2N5458**  
**2N5459**

**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
		2N5457-5459	*MMBF5457-5459	
$P_D$	Total Device Dissipation	625	350	mW
	Derate above 25°C	5.0	2.8	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 General Purpose Amplifier

(continued)

### Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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#### OFF CHARACTERISTICS

V <sub>(BR)GSS</sub>	Gate-Source Breakdown Voltage	I <sub>G</sub> = 10 μA, V <sub>DS</sub> = 0	- 25			V
I <sub>GSS</sub>	Gate Reverse Current	V <sub>GS</sub> = -15 V, V <sub>DS</sub> = 0			- 1.0	nA
		V <sub>GS</sub> = -15 V, V <sub>DS</sub> = 0, T <sub>A</sub> = 100°C			- 200	nA
V <sub>GS(off)</sub>	Gate-Source Cutoff Voltage	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 10 nA	<b>5457</b>	- 0.5	- 6.0	V
			<b>5458</b>	- 1.0	- 7.0	V
			<b>5459</b>	- 2.0	- 8.0	V
V <sub>GS</sub>	Gate-Source Voltage	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 100 μA	<b>5457</b>	- 2.5		V
		V <sub>DS</sub> = 15 V, I <sub>D</sub> = 200 μA	<b>5458</b>	- 3.5		V
		V <sub>DS</sub> = 15 V, I <sub>D</sub> = 400 μA	<b>5459</b>	- 4.5		V

#### ON CHARACTERISTICS

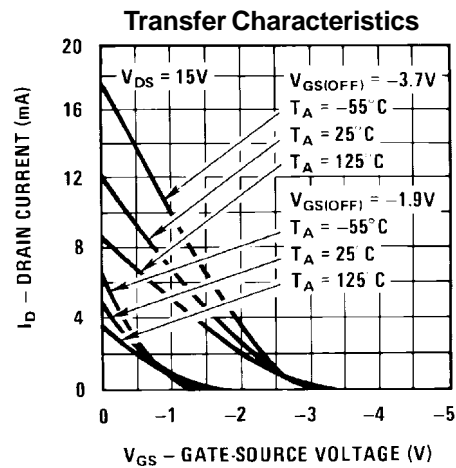
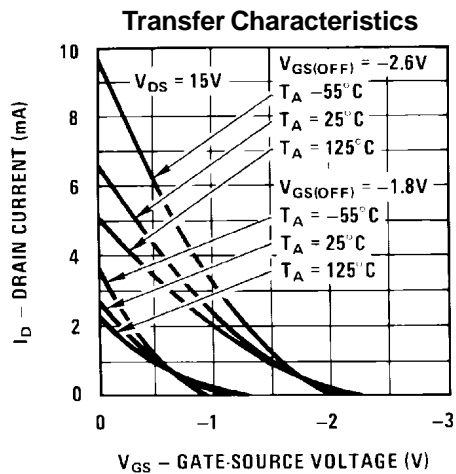
I <sub>DSS</sub>	Zero-Gate Voltage Drain Current*	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0	<b>5457</b>	1.0	3.0	5.0	mA
			<b>5458</b>	2.0	6.0	9.0	mA
			<b>5459</b>	4.0	9.0	16	mA

#### SMALL SIGNAL CHARACTERISTICS

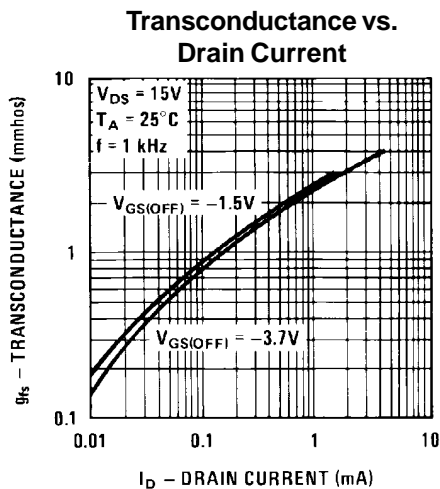
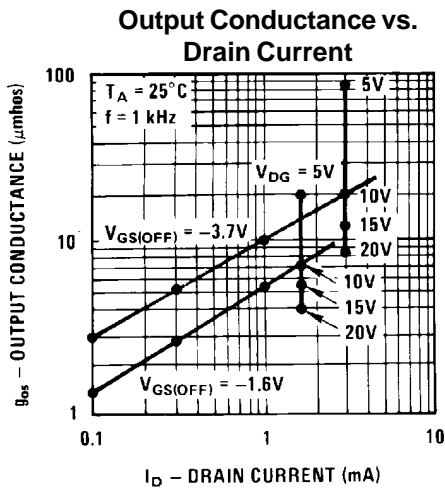
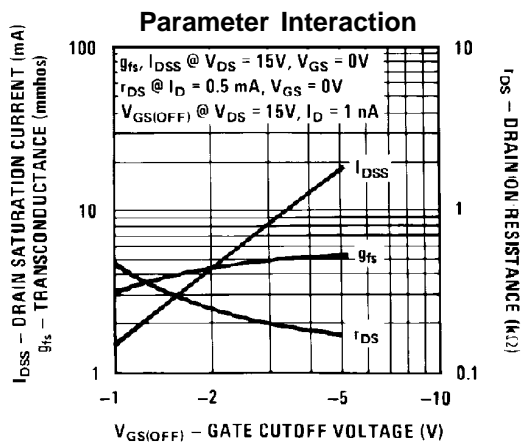
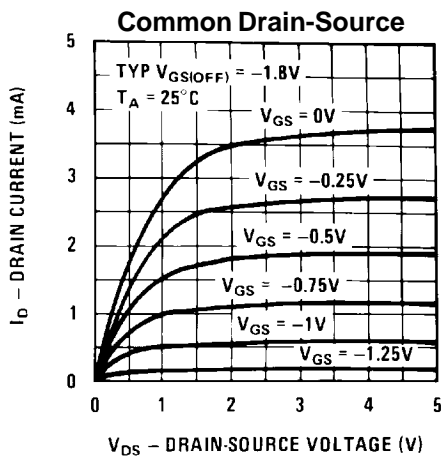
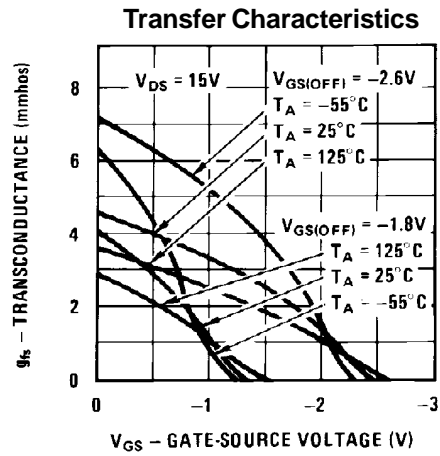
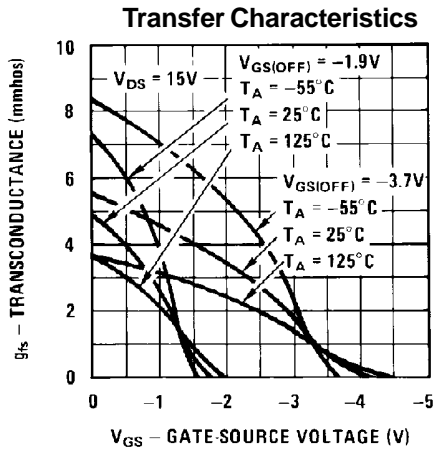
g <sub>fs</sub>	Forward Transfer Conductance*	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz				
			<b>5457</b>	1000	5000	μmhos
			<b>5458</b>	1500	5500	μmhos
			<b>5459</b>	2000	6000	μmhos
g <sub>os</sub>	Output Conductance*	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz		10	50	μmhos
C <sub>iSS</sub>	Input Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz		4.5	7.0	pF
C <sub>rSS</sub>	Reverse Transfer Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz		1.5	3.0	pF
NF	Noise Figure	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz, R <sub>G</sub> = 1.0 megohm, BW = 1.0 Hz			3.0	dB

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

### Typical Characteristics



Typical Characteristics (continued)



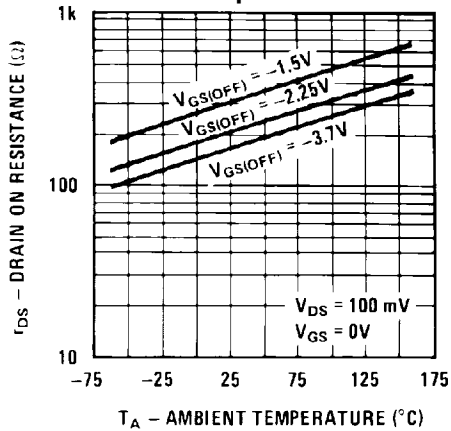
# N-Channel General Purpose Amplifier

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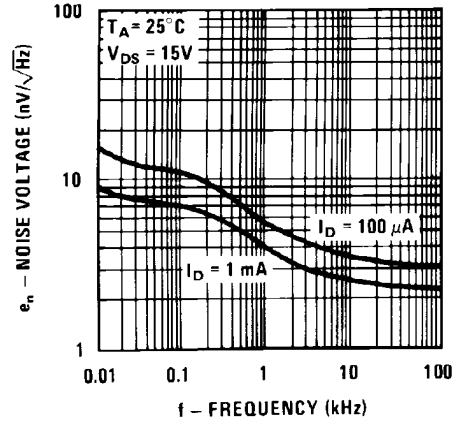
2N5457 / 5458 / 5459 / MMBF5457 / 5458 / 5459

## Typical Characteristics (continued)

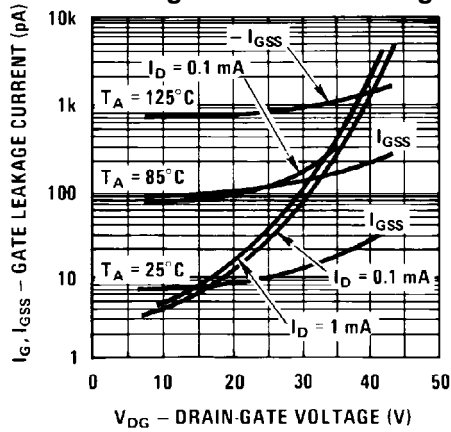
### Channel Resistance vs. Temperature



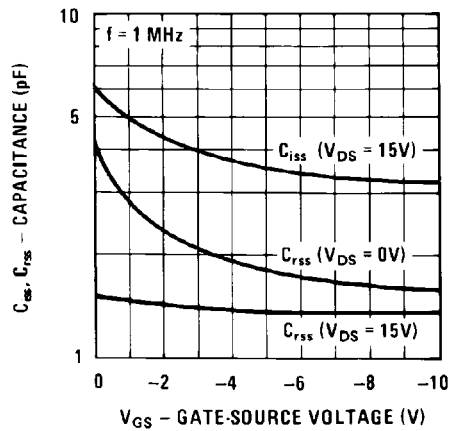
### Noise Voltage vs. Frequency



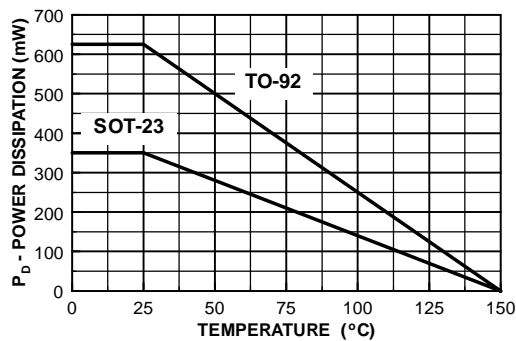
### Leakage Current vs. Voltage



### Capacitance vs. Voltage



### Power Dissipation vs. Ambient Temperature



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