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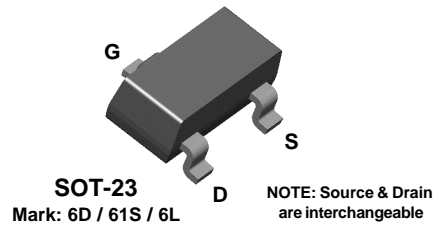
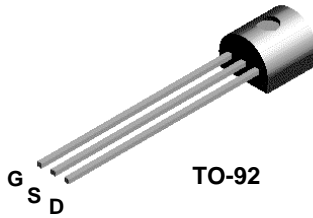
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**2N5457  
2N5458  
2N5459**

**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."

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

## N-Channel General Purpose Amplifier

(continued)

### Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = 10 \mu\text{A}, V_{DS} = 0$	- 25			V
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -15 \text{ V}, V_{DS} = 0$			- 1.0	nA
		$V_{GS} = -15 \text{ V}, V_{DS} = 0, T_A = 100^\circ\text{C}$			- 200	nA
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ nA}$	<b>5457</b> <b>5458</b> <b>5459</b>	- 0.5 - 1.0 - 2.0	- 6.0 - 7.0 - 8.0	V
$V_{GS}$	Gate-Source Voltage	$V_{DS} = 15 \text{ V}, I_D = 100 \mu\text{A}$	<b>5457</b>	- 2.5		V
		$V_{DS} = 15 \text{ V}, I_D = 200 \mu\text{A}$	<b>5458</b>	- 3.5		V
		$V_{DS} = 15 \text{ V}, I_D = 400 \mu\text{A}$	<b>5459</b>	- 4.5		V

### ON CHARACTERISTICS

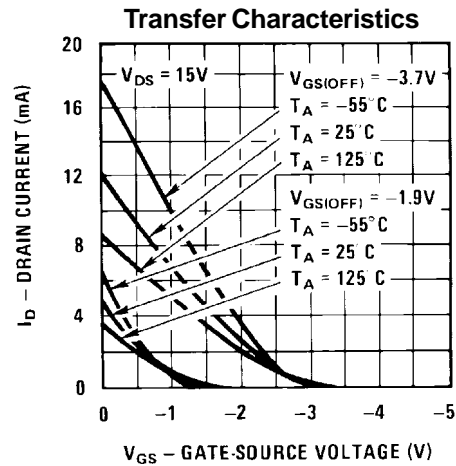
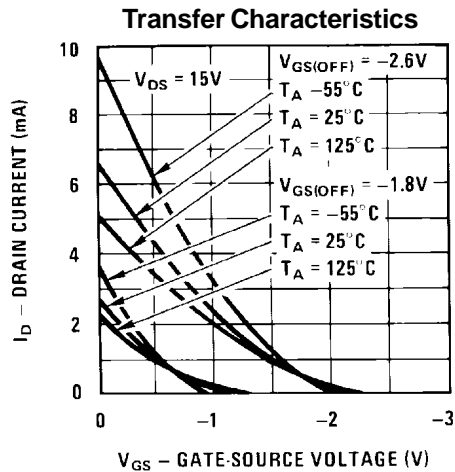
$I_{DSS}$	Zero-Gate Voltage Drain Current*	$V_{DS} = 15 \text{ V}, V_{GS} = 0$	<b>5457</b> <b>5458</b> <b>5459</b>	1.0 2.0 4.0	3.0 6.0 9.0	5.0 9.0 16	mA mA mA
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### SMALL SIGNAL CHARACTERISTICS

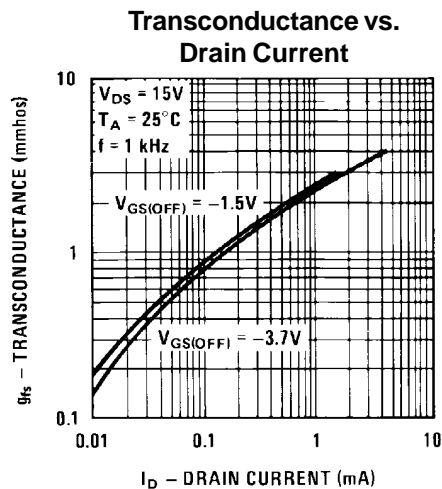
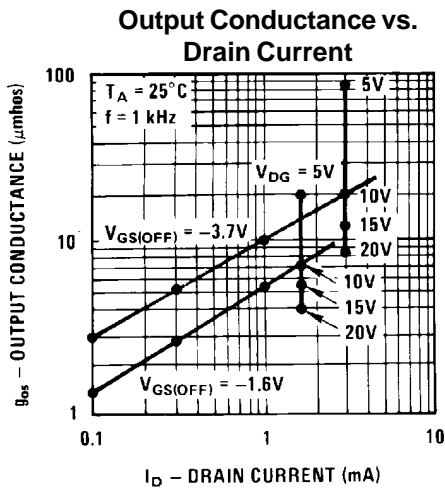
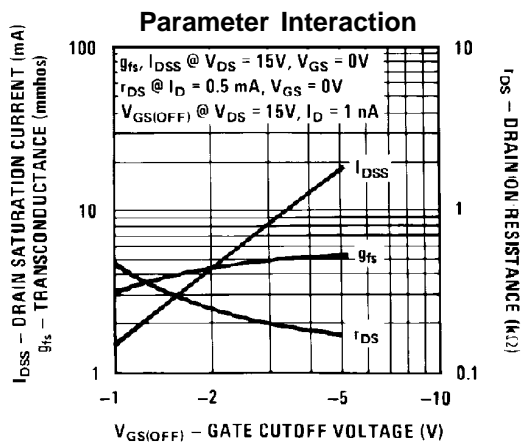
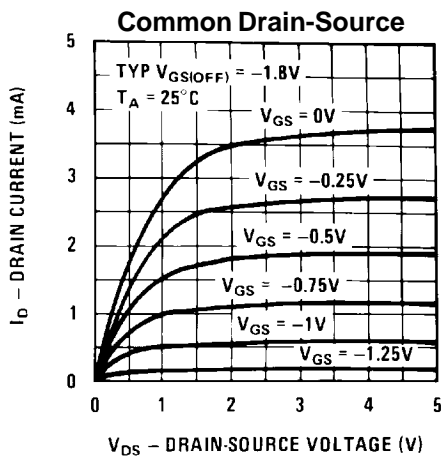
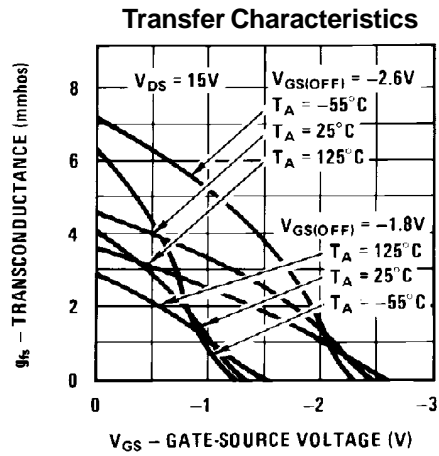
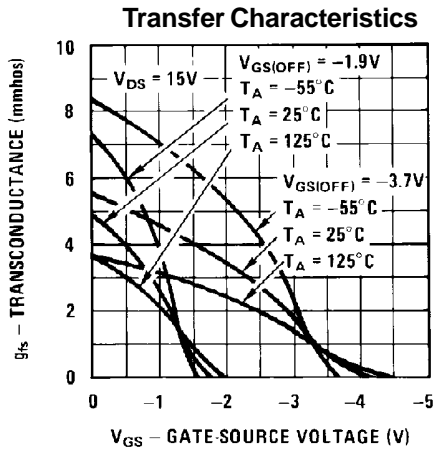
$g_{fs}$	Forward Transfer Conductance*	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$	<b>5457</b> <b>5458</b> <b>5459</b>	1000 1500 2000	5000 5500 6000	$\mu\text{hos}$ $\mu\text{hos}$ $\mu\text{hos}$
$g_{os}$	Output Conductance*	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$			10 50	$\mu\text{hos}$
$C_{iss}$	Input Capacitance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$			4.5 7.0	pF
$C_{rss}$	Reverse Transfer Capacitance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$			1.5 3.0	pF
NF	Noise Figure	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}, R_G = 1.0 \text{ megohm}, BW = 1.0 \text{ Hz}$			3.0	dB

\*Pulse Test: Pulse Width  $\leq 300 \text{ ms}$ , Duty Cycle  $\leq 2\%$

### Typical Characteristics



Typical Characteristics (continued)



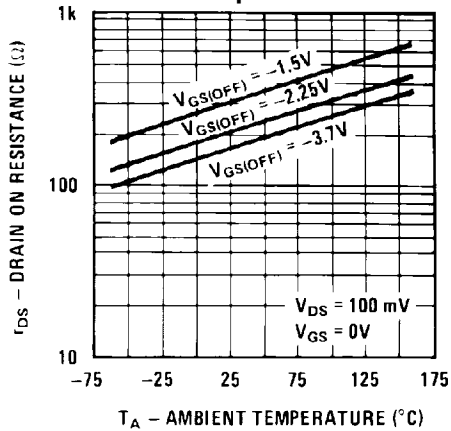
# N-Channel General Purpose Amplifier

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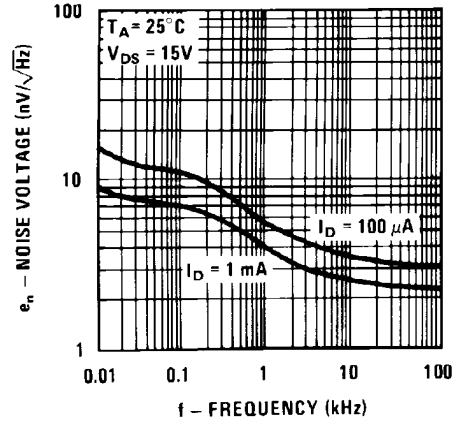
2N5457 / 5458 / 5459 / MMBF5457 / 5458 / 5459

## Typical Characteristics (continued)

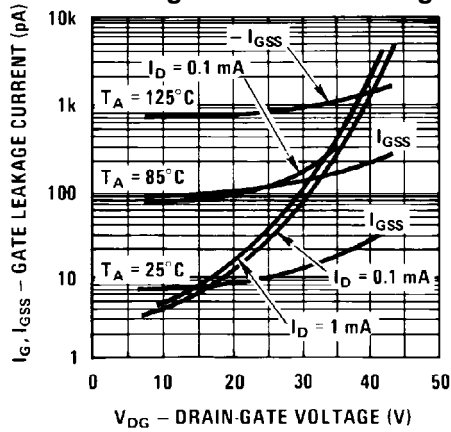
### Channel Resistance vs. Temperature



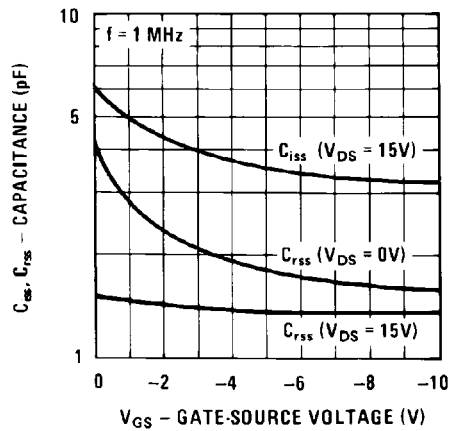
### Noise Voltage vs. Frequency



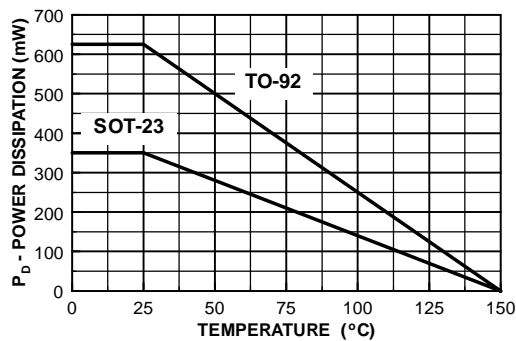
### Leakage Current vs. Voltage



### Capacitance vs. Voltage



### Power Dissipation vs. Ambient Temperature



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