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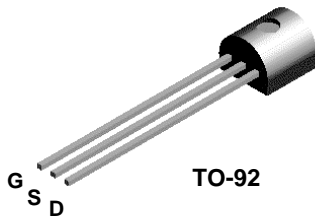
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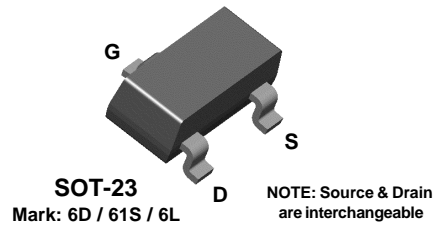


**2N5457**  
**2N5458**  
**2N5459**

**MMBF5457**  
**MMBF5458**  
**MMBF5459**



TO-92



SOT-23

Mark: 6D / 61S / 6L

NOTE: Source & Drain are interchangeable

## 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 <sub>DG</sub>	Drain-Gate Voltage	25	V
V <sub>GS</sub>	Gate-Source Voltage	- 25	V
I <sub>GF</sub>	Forward Gate Current	10	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
		2N5457-5459	*MMBF5457-5459	
P <sub>D</sub>	Total Device Dissipation	625	350	mW
	Derate above 25°C	5.0	2.8	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."

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

## N-Channel General Purpose Amplifier

(continued)

### Electrical Characteristics

TA = 25°C unless otherwise noted

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

### ON CHARACTERISTICS

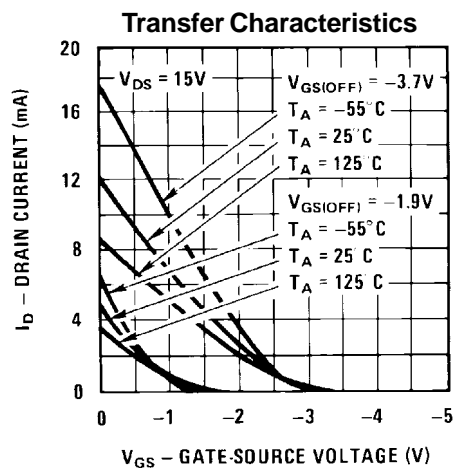
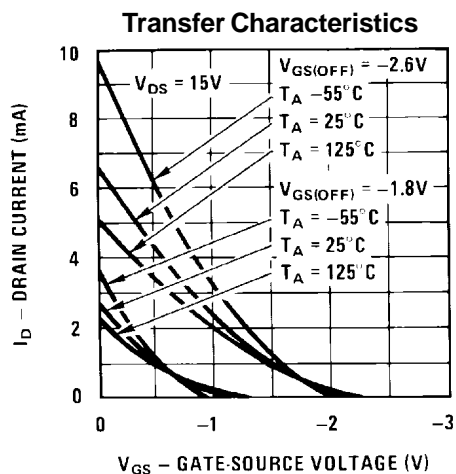
$I_{DSS}$	Zero-Gate Voltage Drain Current*	$V_{DS} = 15 V, V_{GS} = 0$	<b>5457</b> <b>5458</b> <b>5459</b>	1.0 2.0 4.0	3.0 6.0 9.0	5.0 9.0 16	mA mA mA
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### SMALL SIGNAL CHARACTERISTICS

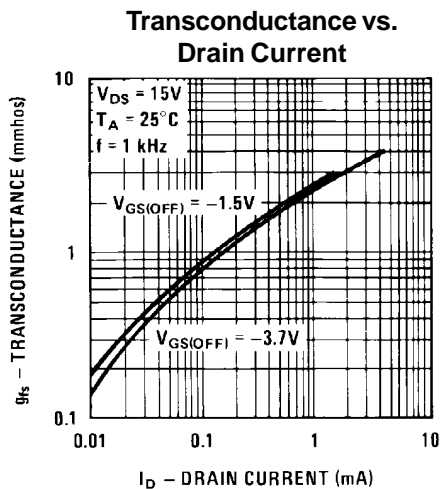
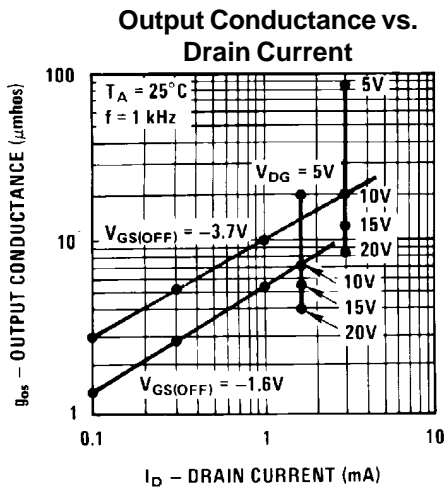
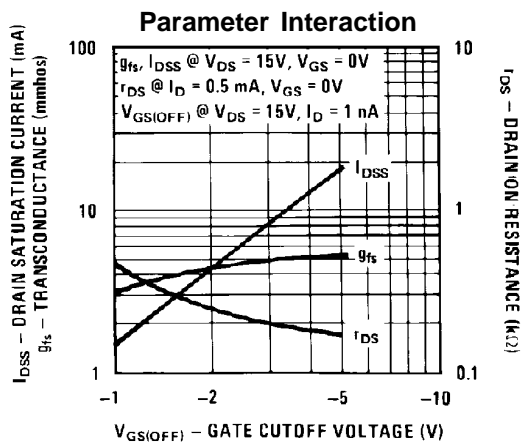
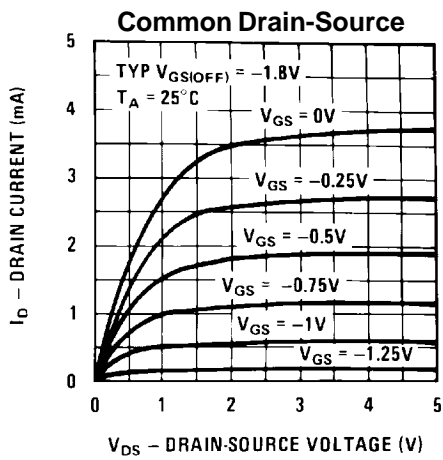
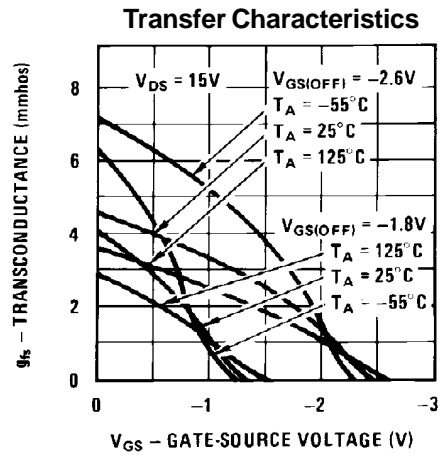
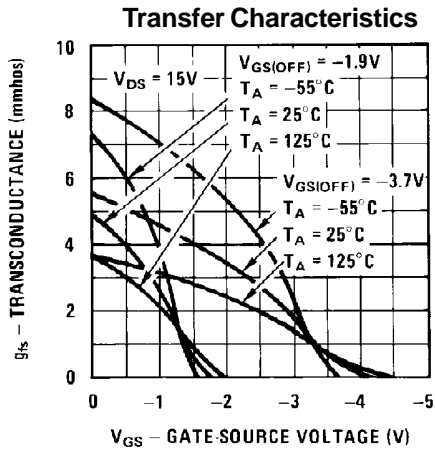
$g_{fs}$	Forward Transfer Conductance*	$V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$	<b>5457</b> <b>5458</b> <b>5459</b>	1000 1500 2000	5000 5500 6000	$\mu mhos$ $\mu mhos$ $\mu mhos$
$g_{os}$	Output Conductance*	$V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$			10 50	$\mu mhos$
$C_{iss}$	Input Capacitance	$V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz$			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  $\leq 300 ms$ , Duty Cycle  $\leq 2\%$

### Typical Characteristics



Typical Characteristics (continued)



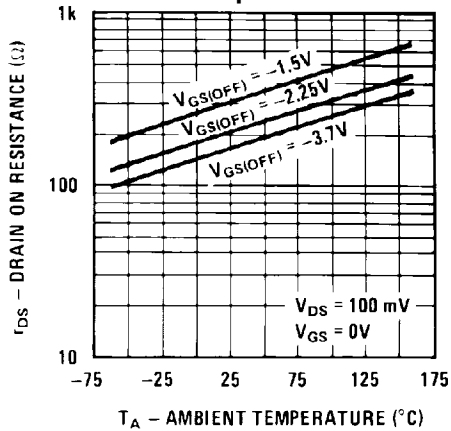
# N-Channel General Purpose Amplifier

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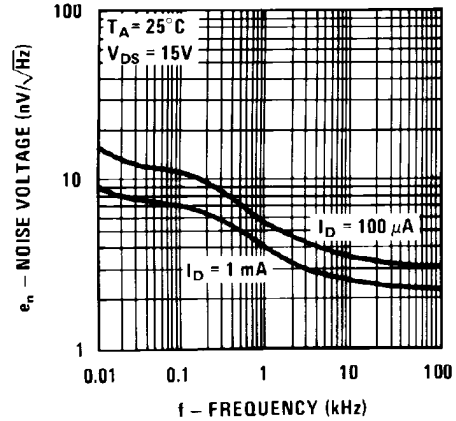
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## Typical Characteristics (continued)

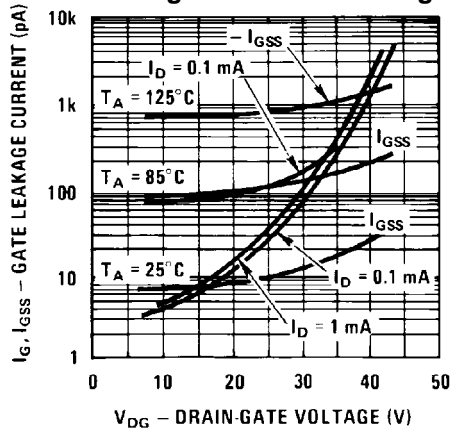
### Channel Resistance vs. Temperature



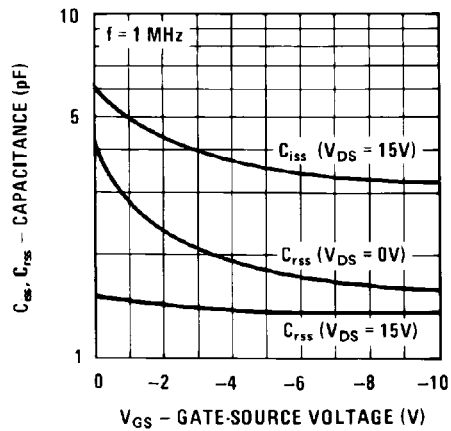
### Noise Voltage vs. Frequency



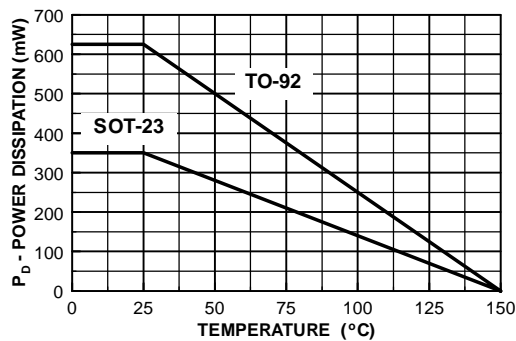
### Leakage Current vs. Voltage



### Capacitance vs. Voltage



### Power Dissipation vs. Ambient Temperature



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