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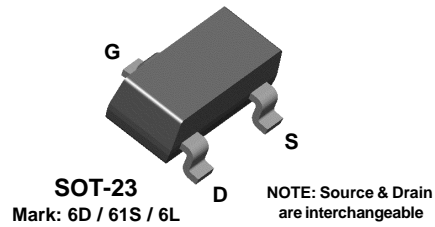
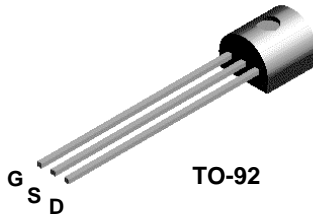
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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

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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

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = 10 \mu\text{A}, V_{DS} = 0$	- 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	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ nA}$	5457 5458 5459	- 0.5 - 1.0 - 2.0	- 6.0 - 7.0 - 8.0	V
V_{GS}	Gate-Source Voltage	$V_{DS} = 15 \text{ V}, I_D = 100 \mu\text{A}$	5457	- 2.5		V
		$V_{DS} = 15 \text{ V}, I_D = 200 \mu\text{A}$	5458	- 3.5		V
		$V_{DS} = 15 \text{ V}, I_D = 400 \mu\text{A}$	5459	- 4.5		V

ON CHARACTERISTICS

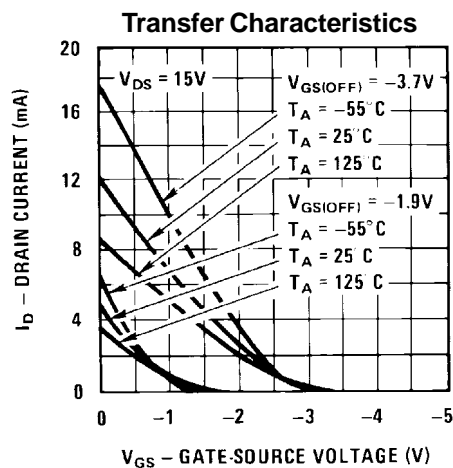
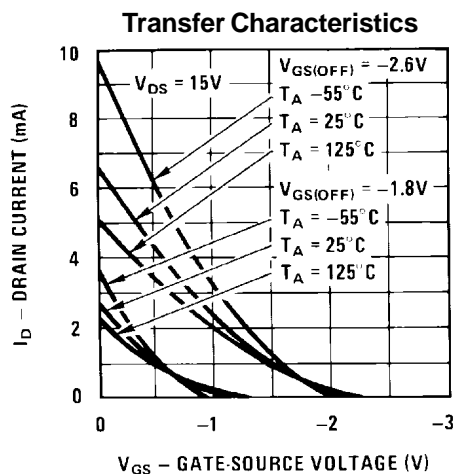
I_{DSS}	Zero-Gate Voltage Drain Current*	$V_{DS} = 15 \text{ V}, V_{GS} = 0$	5457 5458 5459	1.0 2.0 4.0	3.0 6.0 9.0	5.0 9.0 16	mA mA mA
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SMALL SIGNAL CHARACTERISTICS

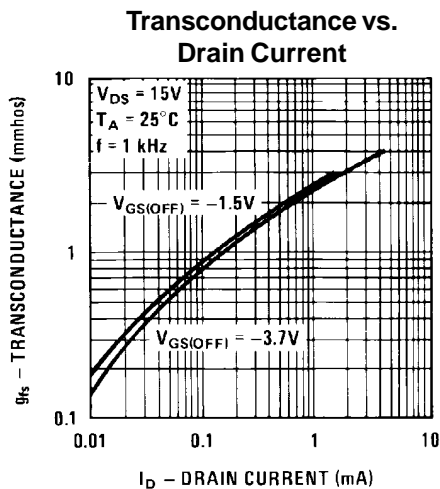
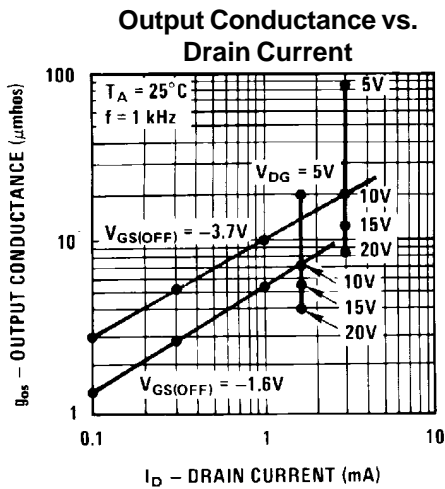
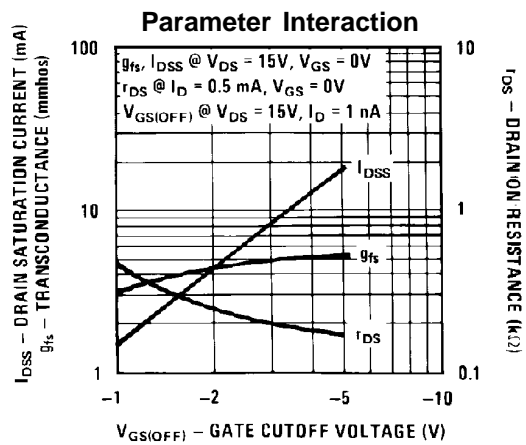
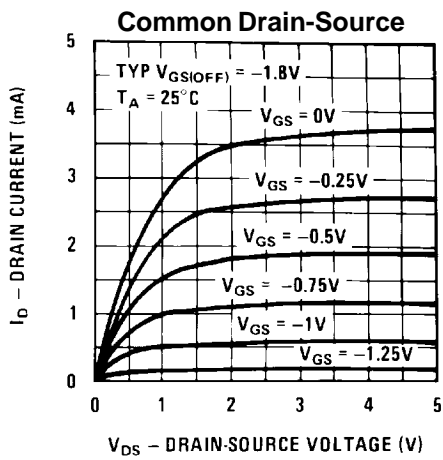
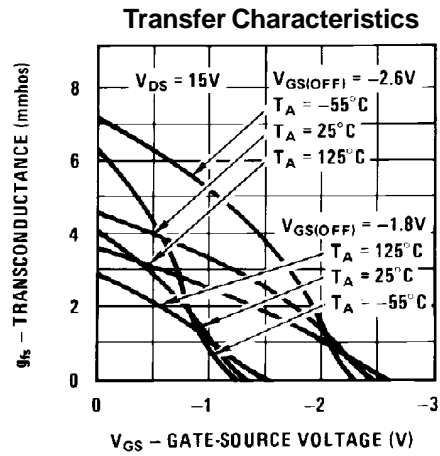
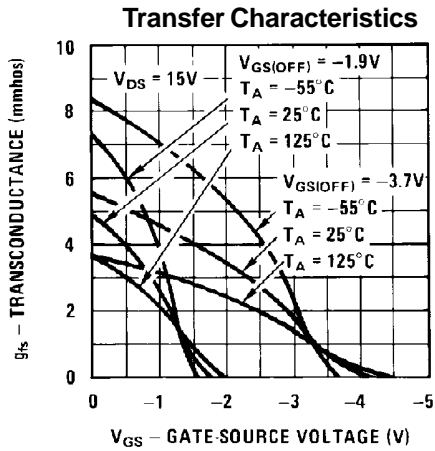
g_{fs}	Forward Transfer Conductance*	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$	5457 5458 5459	1000 1500 2000	5000 5500 6000	μmhos μmhos μmhos
g_{os}	Output Conductance*	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$			10 50	μmhos
C_{iss}	Input Capacitance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$			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)



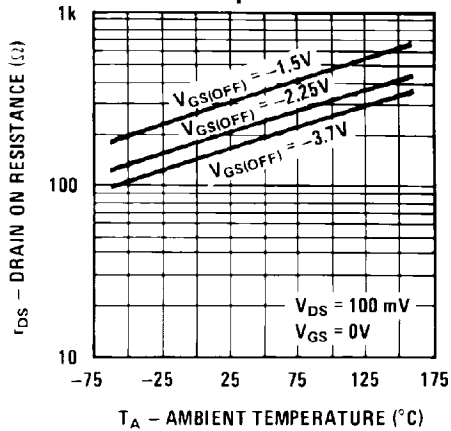
N-Channel General Purpose Amplifier

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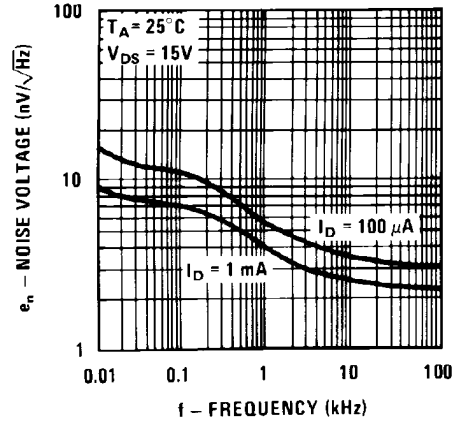
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Typical Characteristics (continued)

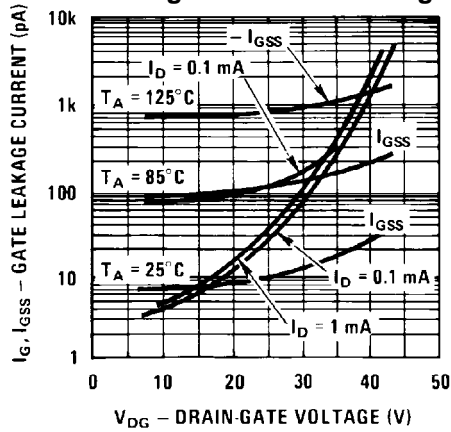
Channel Resistance vs. Temperature



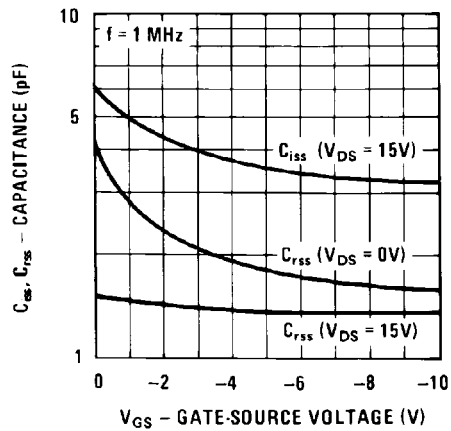
Noise Voltage vs. Frequency



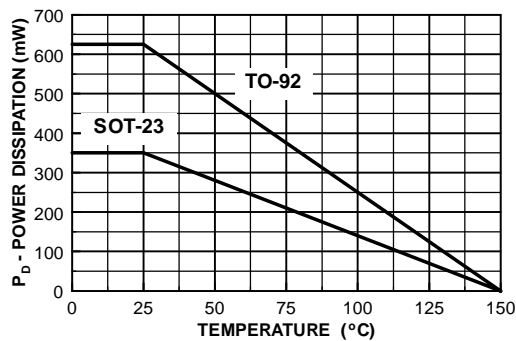
Leakage Current vs. Voltage



Capacitance vs. Voltage



Power Dissipation vs. Ambient Temperature



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