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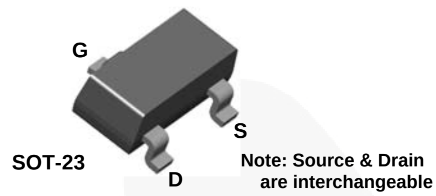
March 2015

MMBF5460 / MMBF5461 / MMBF5462
P-Channel General-Purpose Amplifier

Description

This device is designed primarily for low level audio and general-purpose applications with high impedance signal sources. Sourced from process 89.



Ordering Information

Part Number	Top Mark	Package	Packing Method
MMBF5460	6E	SOT-23 3L	Tape and Reel
MMBF5461	61U	SOT-23 3L	Tape and Reel
MMBF5462	61V	SOT-23 3L	Tape and Reel

Absolute Maximum Ratings(1), (2)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{DG}	Drain-Gate Voltage	-40	V
V_{GS}	Gate-Source Voltage	40	V
I_{GF}	Forward Gate Current	10	mA
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to 150	°C

Notes:
1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation	225	mW
	Derate Above 25°C	1.8	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	556	°C/W

Note:
3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions		Min.	Typ.	Max.	Unit
Off Characteristics							
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	I_G = 10 µA, V_{DS} = 0		40			V
I_{GSS}	Gate Reverse Current	V_{GS} = 20 V, V_{DS} = 0				5.0	nA
		V_{GS} = 20 V, V_{DS} = 0, T_A = 100°C				1.0	µA
$V_{GS(off)}$	Gate-Source Cut-Off Voltage	V_{DS} = 15 V, I_D = 1.0 µA	MMBF5460	0.75		6.0	V
			MMBF5461	1.0		7.5	
			MMBF5462	1.8		9.0	
V_{GS}	Gate-Source Voltage	V_{DS} = 15 V, I_D = 0.1 mA	MMBF5460	0.5		4.0	V
		V_{DS} = 15 V, I_D = 0.2 mA	MMBF5461	0.8		4.5	
		V_{DS} = 15 V, I_D = 0.4 mA	MMBF5462	1.5		6.0	
On Characteristics							
I_{DSS}	Zero-Gate Voltage Drain Current[4]	V_{DS} = 15 V, V_{GS} = 0	MMBF5460	-1.0		-5.0	mA
			MMBF5461	-2.0		-9.0	
			MMBF5462	-4.0		-16.0	
Small Signal Characteristics							
g_{fs}	Forward Transfer Conductance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz	MMBF5460	1000		4000	µmhos
			MMBF5461	1500		5000	
			MMBF5462	2000		6000	
g_{os}	Output Conductance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz				75	µmhos
C_{iss}	Input Capacitance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz			5.0	7.0	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz			1.0	2.0	pF
NF	Noise Figure	V_{DS} = 15 V, V_{GS} = 0, R_G = 1.0 MΩ, f = 100 Hz, BW = 1.0 Hz			1.0	2.5	dB
e_n	Equivalent Short-Circuit Input Noise Voltage	V_{DS} = 15 V, V_{GS} = 0, f = 100 Hz, BW = 1.0 Hz			60	115	$nV/\sqrt{Hz}$

Note:
4. Pulse test: pulse width ≤ 300 ms, duty cycle ≤ 2.0%

Typical Performance Characteristics

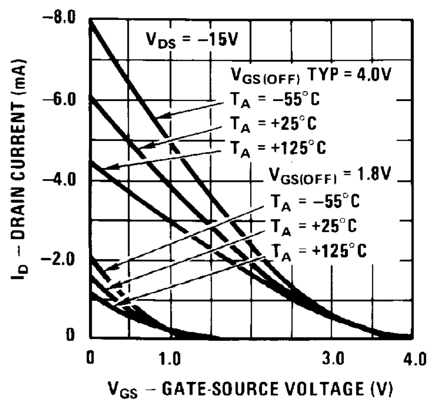


Figure 1. Transfer Characteristics

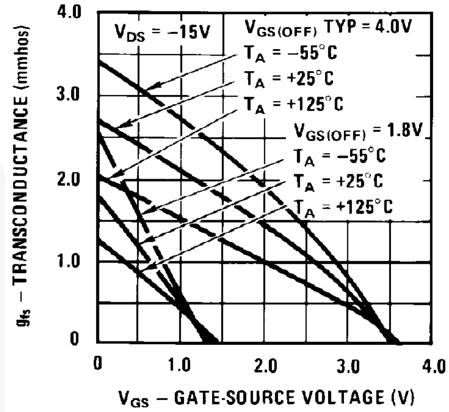


Figure 2. Transfer Characteristics

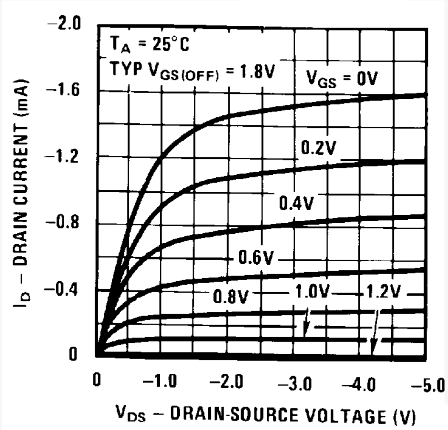


Figure 3. Common Drain-Source

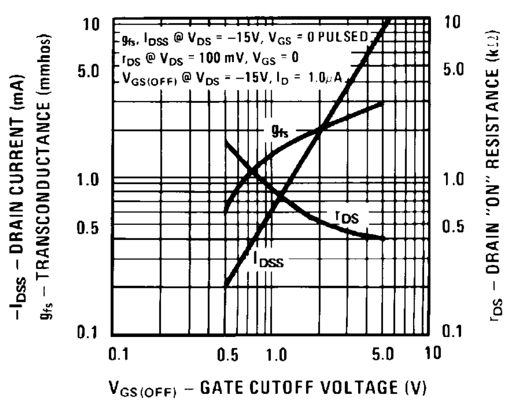


Figure 4. Parameter Interactions

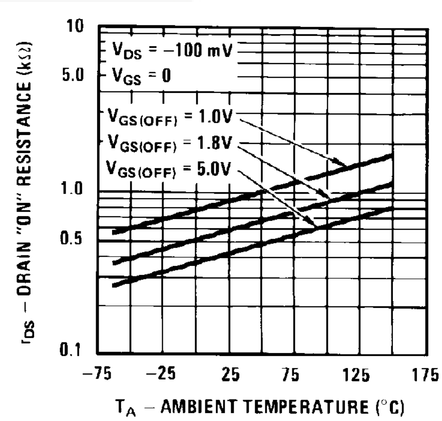


Figure 5. Leakage Current vs. Voltage

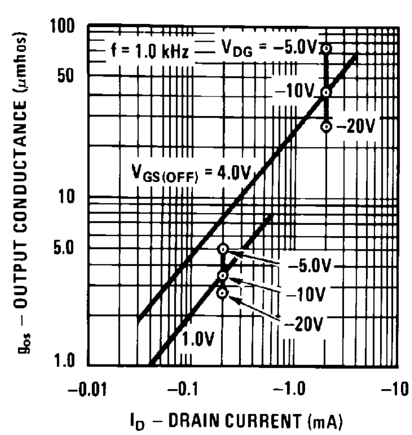


Figure 6. Output Conductance vs. Drain Current

Typical Performance Characteristics (Continued)

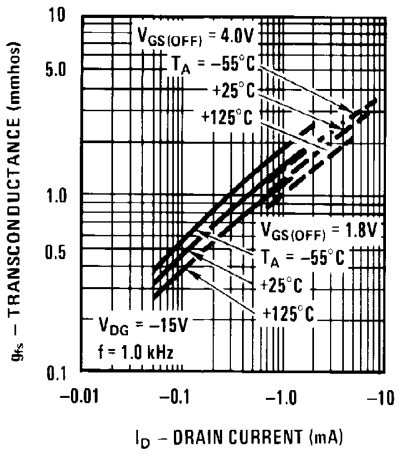


Figure 7. Transconductance vs. Drain Current

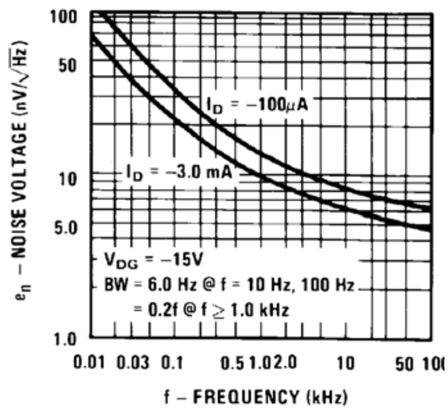


Figure 8. Noise Voltage vs. Frequency

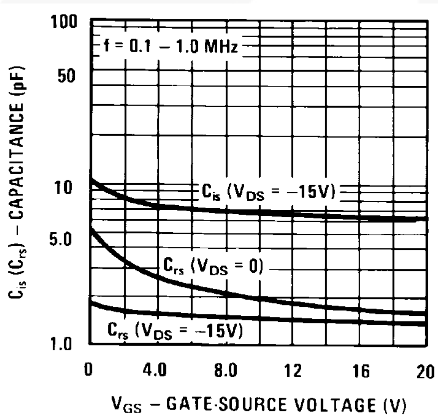


Figure 9. Capacitance vs. Voltage

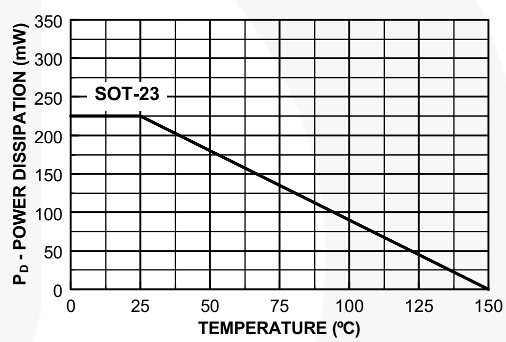


Figure 10. Power Dissipation vs. Ambient Temperature

Physical Dimensions

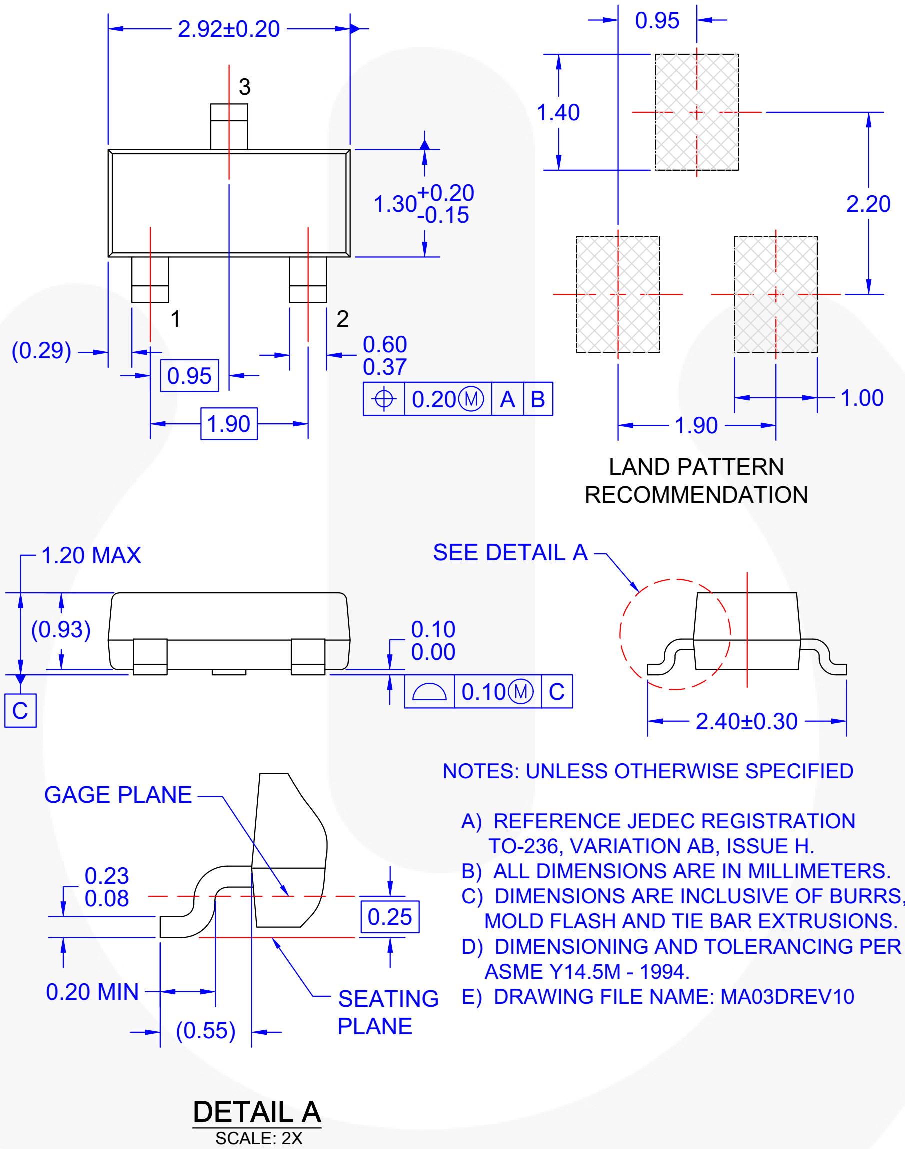


Figure 11. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE

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No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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