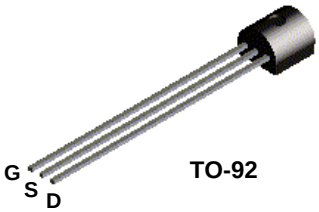
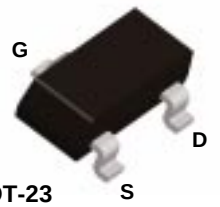
FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

2N5484 2N5485 2N5486 MMBF5484 MMBF5485 MMBF5486



TO-92



SOT-23

Mark: 6B / 6M / 6H

N-Channel RF Amplifier

This device is designed primarily for electronic switching applications such as low On Resistance analog switching. Sourced from Process 50.

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
		2N5484	*MMBF5484	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	225 1.8	mW 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."

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N-Channel RF Amplifier
(continued)

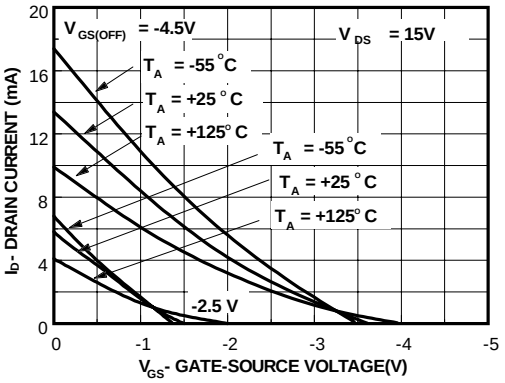
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	I_G = - 1.0 µA, V_{DS} = 0	- 25			V
I_{GSS}	Gate Reverse Current	V_{GS} = - 20 V, V_{DS} = 0			- 1.0	nA
		V_{GS} = - 20 V, V_{DS} = 0, T_A = 100°C			- 0.2	µA
$V_{GS(off)}$	Gate-Source Cutoff Voltage	V_{DS} = 15 V, I_D = 10 nA **2N5484**	- 0.3		- 3.0	V
		2N5485	- 0.5		- 4.0	V
		2N5486	- 2.0		- 6.0	V
ON CHARACTERISTICS						
I_{DSS}	Zero-Gate Voltage Drain Current*	V_{DS} = 15 V, V_{GS} = 0 **2N5484**	1.0		5.0	mA
		2N5485	4.0		10	mA
		2N5486	8.0		20	mA
SMALL SIGNAL CHARACTERISTICS						
g_{fs}	Forward Transfer Conductance	V_{DS} = 15, V_{GS} = 0, f = 1.0 kHz				
		2N5484	3000		6000	µmhos
		2N5485	3500		7000	µmhos
		2N5486	4000		8000	µmhos
$Re(y_{is})$	Input Conductance	V_{DS} = 15, V_{GS} = 0, f = 100 MHz				
		2N5484			100	µmhos
		V_{DS} = 15, V_{GS} = 0, f = 400 MHz				
		2N5485 / 2N5486			1000	µmhos
g_{os}	Output Conductance	V_{DS} = 15, V_{GS} = 0, f = 1.0 kHz				
		2N5484			50	µmhos
		2N5485			60	µmhos
		2N5486			75	µmhos
$Re(y_{os})$	Output Conductance	V_{DS} = 15, V_{GS} = 0, f = 100 MHz				
		2N5484			75	µmhos
		V_{DS} = 15, V_{GS} = 0, f = 400 MHz				
		2N5485 / 2N5486			100	µmhos
$Re(y_{fs})$	Forward Transconductance	V_{DS} = 15, V_{GS} = 0, f = 100 MHz				
		2N5484	2500			µmhos
		V_{DS} = 15, V_{GS} = 0, f = 400 MHz				
		2N5485	3000			µmhos
		2N5486	3500			µmhos
C_{iss}	Input Capacitance	V_{DS} = 15, V_{GS} = 0, f = 1.0 MHz			5.0	pF
C_{rss}	Reverse Transfer Capacitance	V_{DS} = 15, V_{GS} = 0, f = 1.0 MHz			1.0	pF
C_{oss}	Output Capacitance	V_{DS} = 15, V_{GS} = 0, f = 1.0 MHz			2.0	pF
NF	Noise Figure	V_{DS}= 15 V, R_G = 1.0 kΩ,				
		f = 100 MHz **2N5484**			3.0	dB
		V_{DS}= 15 V, R_G = 1.0 kΩ,				
		f = 400 MHz **2N5484**		4.0		dB
		V_{DS}= 15 V , R_G = 1.0 kΩ,				
		f = 100 MHz **2N5485 / 2N5486**			2.0	dB
		V_{DS}= 15 V, R_G = 1.0 kΩ,				
		f = 400 MHz **2N5485 / 2N5486**			4.0	dB

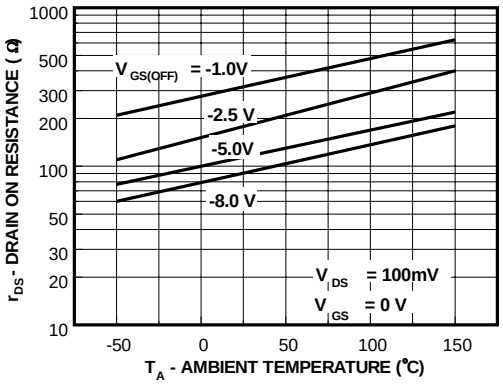
*Pulse Test: Pulse Width £ 300 ms, Duty Cycle £ 2%

Typical Characteristics

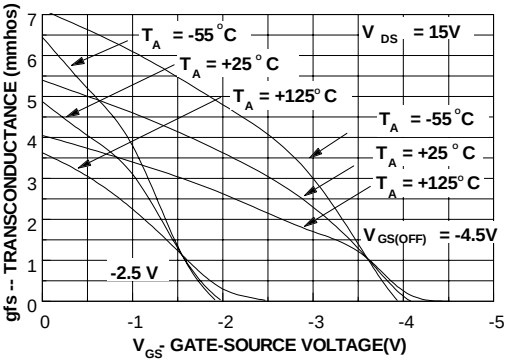
Transfer Characteristics



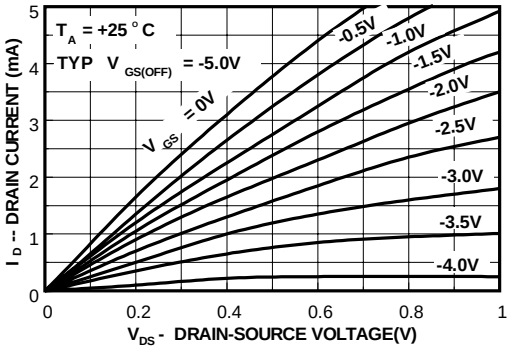
Channel Resistance vs Temperature



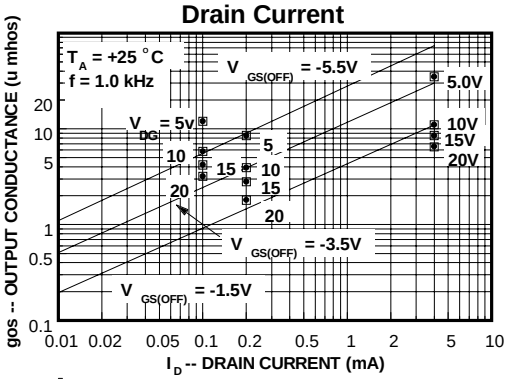
Transconductance Characteristics



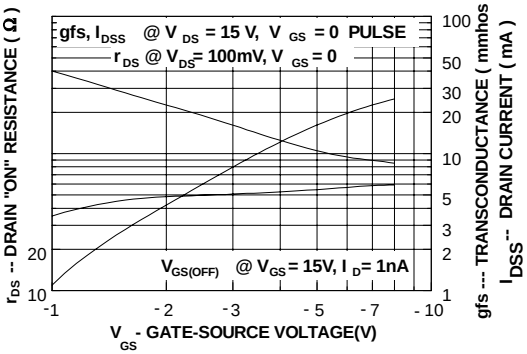
Common Drain-Source Characteristics



Output Conductance vs Drain Current

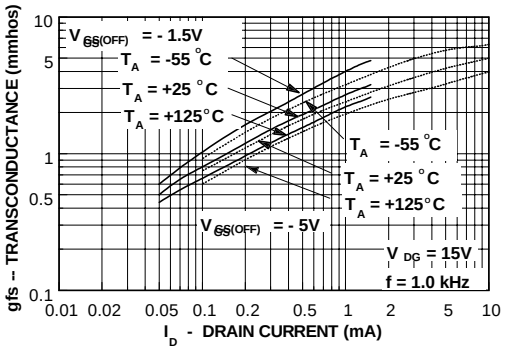


Transconductance Parameter Interactions

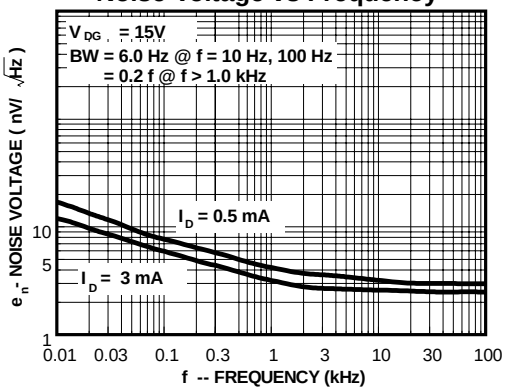


Typical Characteristics (continued)

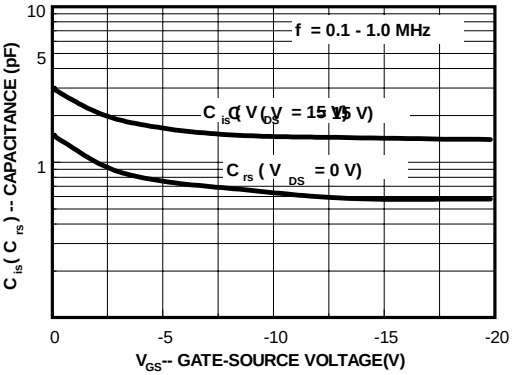
Transconductance vs Drain Current



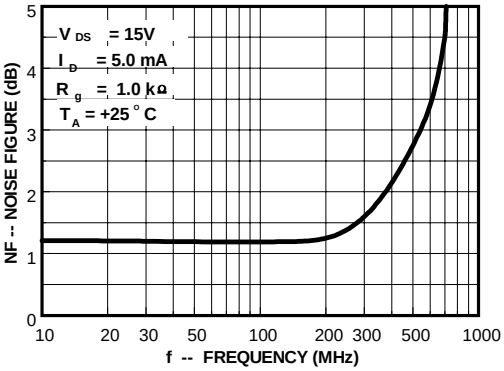
Noise Voltage vs Frequency



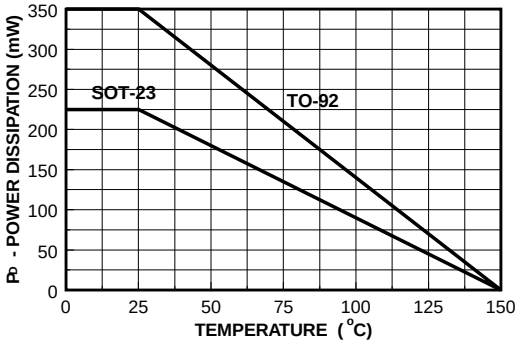
Capacitance vs Voltage



Noise Figure Frequency



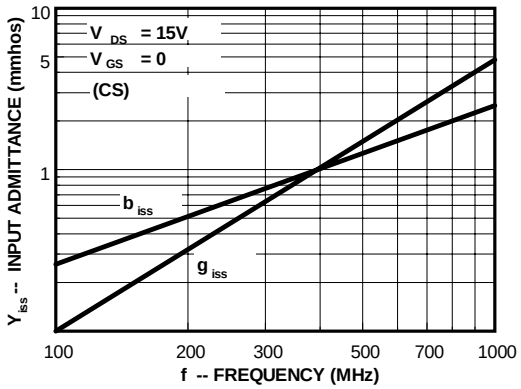
Power Dissipation vs Ambient Temperature



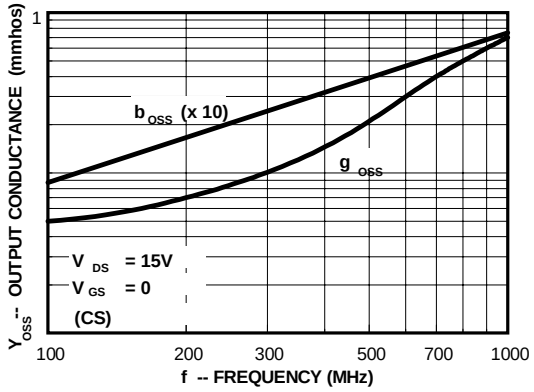
N-Channel RF Amplifier
(continued)

Common Source Characteristics

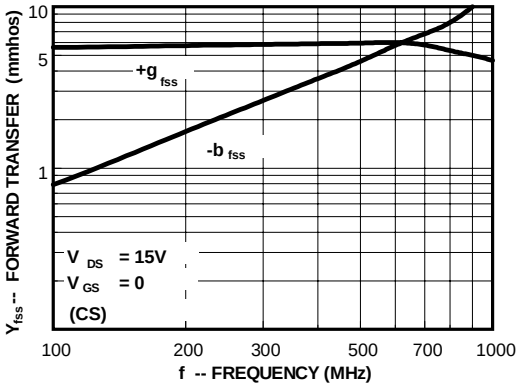
Input Admittance



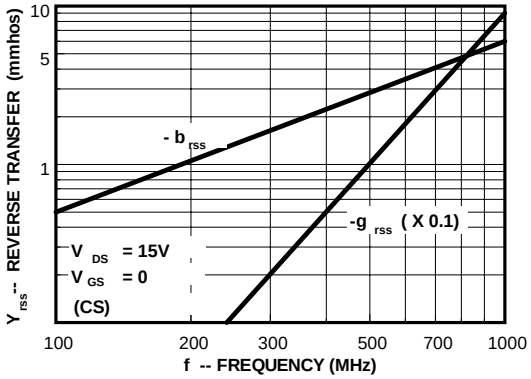
Output Admittance



Forward Transadmittance

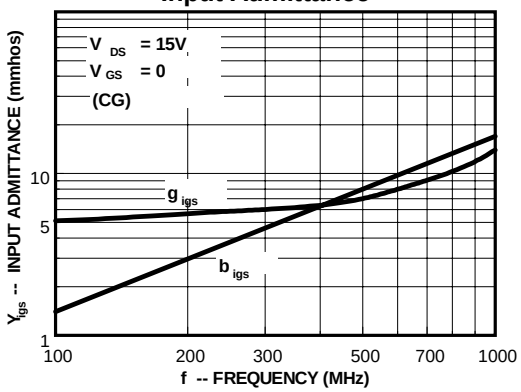


Reverse Transadmittance

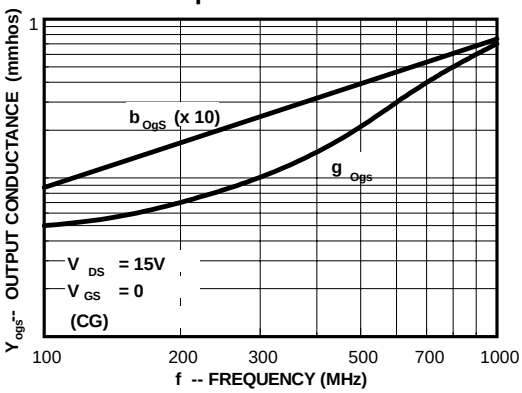


Common Gate Characteristics

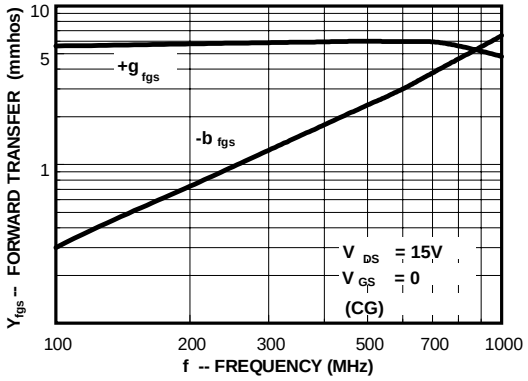
Input Admittance



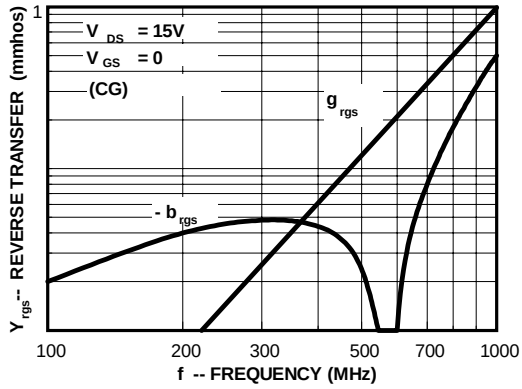
Output Admittance



Forward Transadmittance



Reverse Transadmittance



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