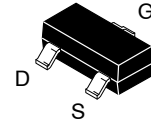


# N-Channel RF Amplifier

## MMBF5484, MMBF5485, MMBF5486

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



NOTE: Source & Drain are interchangeable

SOT-23  
CASE 318-08

### ABSOLUTE MAXIMUM RATINGS\* (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Rating	Value	Unit
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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

\*These rating are limiting values above which the serviceability of any semiconductor device may be impaired.

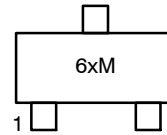
1. These rating are based on a maximum junction temperature of 150°C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### THERMAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Characteristic	Max	Unit
		*MMBF5484-5486	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	225	mW
		1.8	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	-	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	556	°C/W

\*Device mounted on FR-4 PCB 1.6" x 1.6" x 0.06".

### MARKING DIAGRAM



6x = Device Code (x = B, M, H)  
M = Date Code

### ORDERING INFORMATION

Device	Package	Shipping†
MMBF5484	SOT-23 (Pb-Free)	3000 Tape & Reel
MMBF5484		
MMBF5484		

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MMBF5484, MMBF5485, MMBF5486

## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>							
V <sub>(BR)GSS</sub>	Gate-Source Breakdown Voltage	I <sub>G</sub> = -1.0 μA, V <sub>DS</sub> = 0	-25	-	-	V	
I <sub>GSS</sub>	Gate Reverse Current	V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0 V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0, T <sub>A</sub> = 100°C	-	-	-1.0 -0.2	nA μA	
V <sub>GS(off)</sub>	Gate-Source Cutoff Voltage	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 10 nA	5484 5485 5486	-0.3 -0.5 -2.0	-	-3.0 -4.0 -6.0	V V V

## ON CHARACTERISTICS

I <sub>DSS</sub>	Zero-Gate Voltage Drain Current*	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0	5484 5485 5486	1.0 4.0 8.0	- - -	5.0 10 20	mA mA mA
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## SMALL SIGNAL CHARACTERISTICS

g <sub>fs</sub>	Forward Transfer Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz	5484 5485 5486	3000 3500 4000	- - -	6000 7000 8000	μmhos μmhos μmhos		
Re(y <sub>is</sub> )	Input Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz	5484	-	-	100	μmhos		
		V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 kHz	5485 / 5486	-	-	1000	μmhos		
g <sub>os</sub>	Output Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz	5484 5485 5486	- - -	- - -	50 60 75	μmhos μmhos μmhos		
		Re(y <sub>os</sub> )	Output Conductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz	5484	-	-	75	μmhos
				V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz	5485 / 5486	-	-	100	μmhos
Re(y <sub>fs</sub> )	Forward Transconductance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz	5484	2500	-	-	μmhos		
		V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz	5485	3000	-	-	μmhos		
			5486	3500	-	-	μmhos		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz	-	-	-	5.0	pF		
C <sub>rss</sub>	Reverse Transfer Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz	-	-	-	1.0	pF		
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz	-	-	-	2.0	pF		
NF	Noise Figure	V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 100 MHz	5484	-	-	3.0	dB		
		V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 400 MHz	5484	-	4.0	-	dB		
		V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 100 MHz	5485 / 5486	-	-	2.0	dB		
		V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 400 MHz	5485 / 5486	-	-	4.0	dB		

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

TYPICAL CHARACTERISTICS

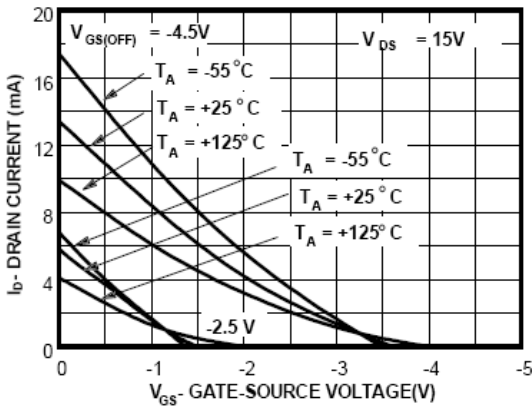


Figure 1. Transfer Characteristics

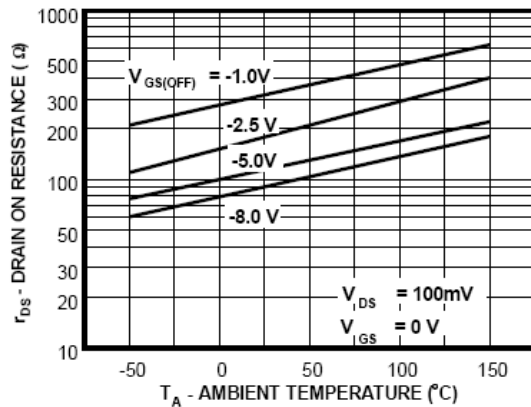


Figure 2. Channel Resistance vs. Temperature

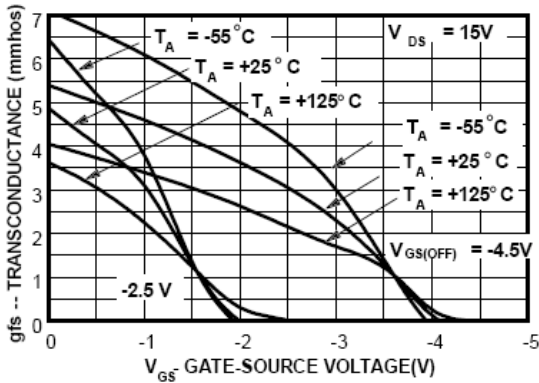


Figure 3. Transconductance Characteristics

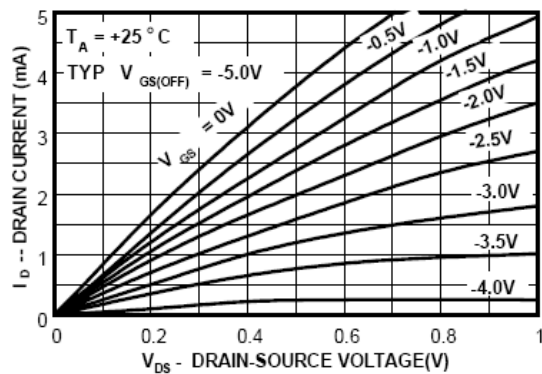


Figure 4. Common Drain-Source Characteristics

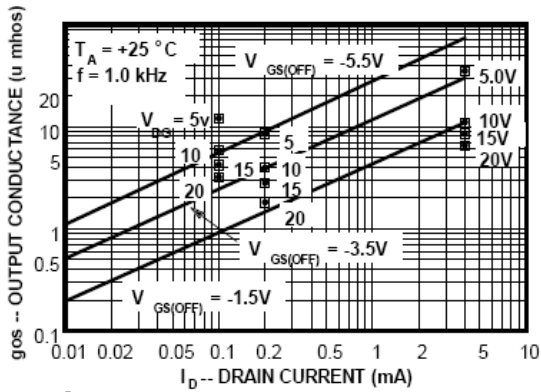


Figure 5. Output Conductance vs. Drain Current

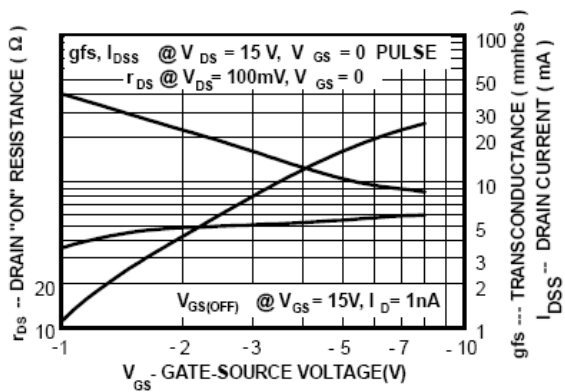


Figure 6. Transconductance Parameter Interactions

# MMBF5484, MMBF5485, MMBF5486

## TYPICAL CHARACTERISTICS (continued)

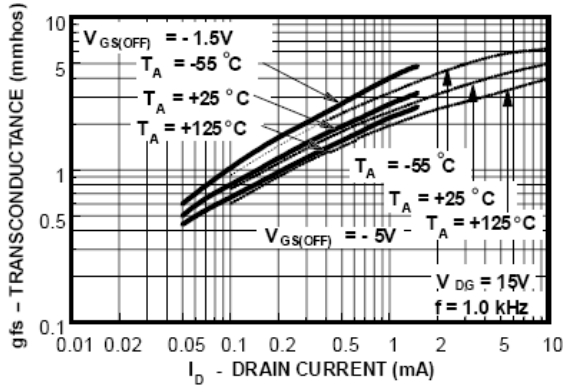


Figure 7. Transconductance vs. Drain Current

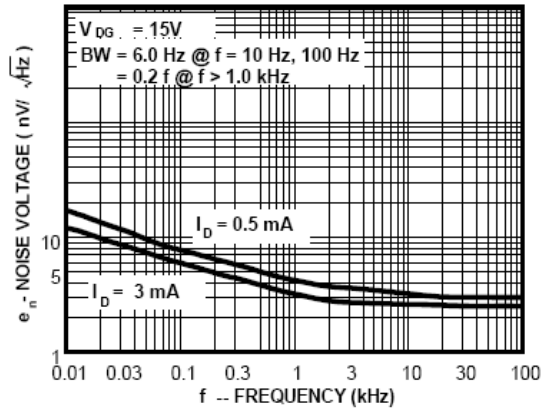


Figure 8. Noise Voltage vs. Frequency

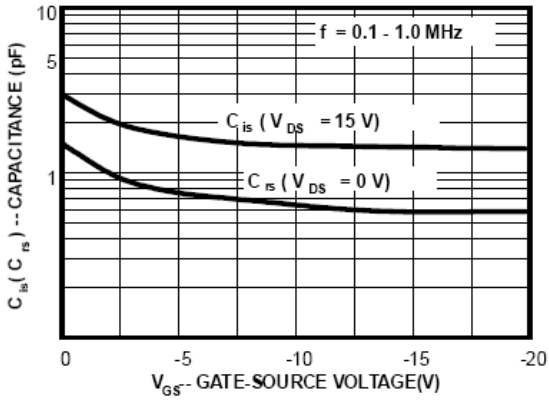


Figure 9. Capacitance vs. Voltage

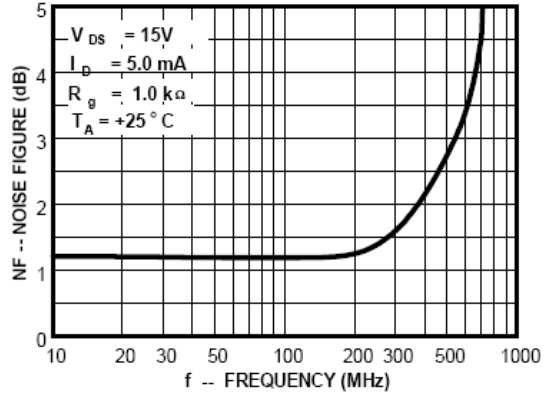


Figure 10. Noise Figure Frequency

COMMON SOURCE CHARACTERISTICS

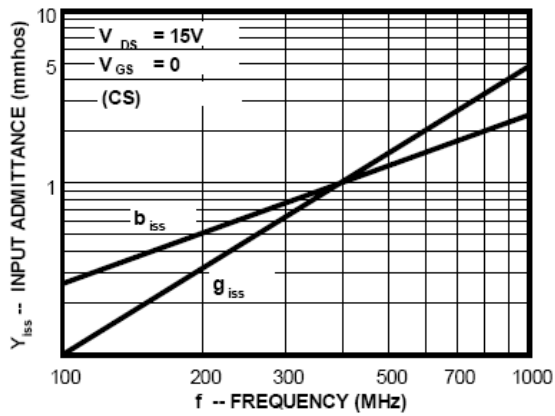


Figure 11. Input Admittance

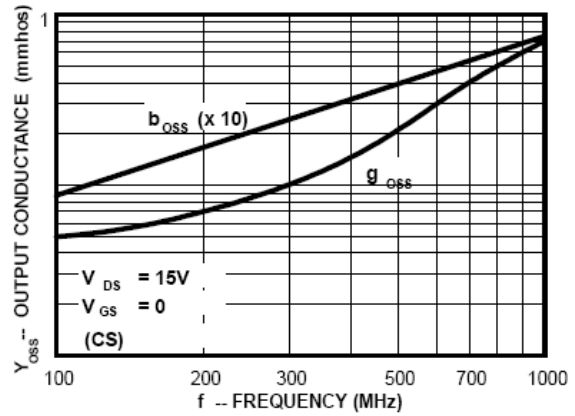


Figure 12. Output Admittance

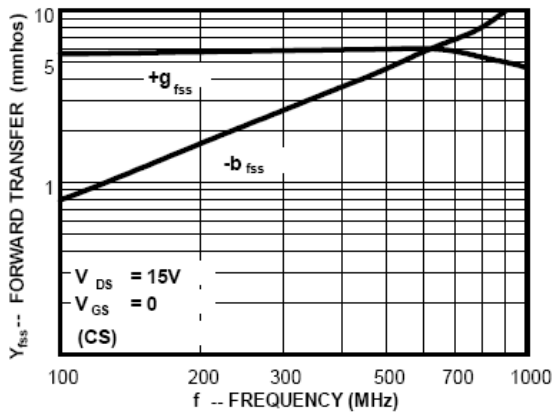


Figure 13. Forward Transadmittance

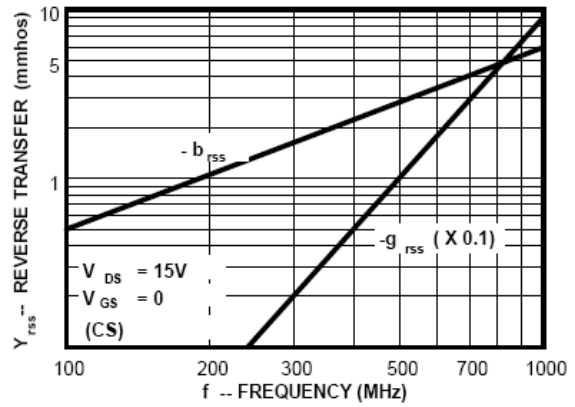


Figure 14. Reverse Transadmittance

COMMON GATE CHARACTERISTICS

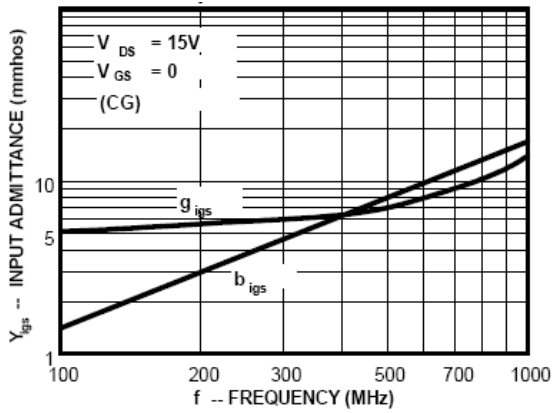


Figure 15. Input Admittance

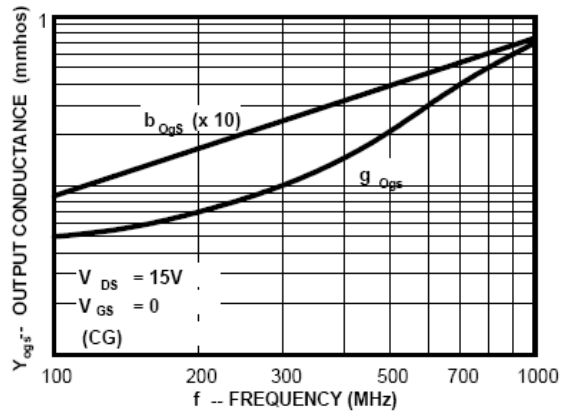


Figure 16. Output Admittance

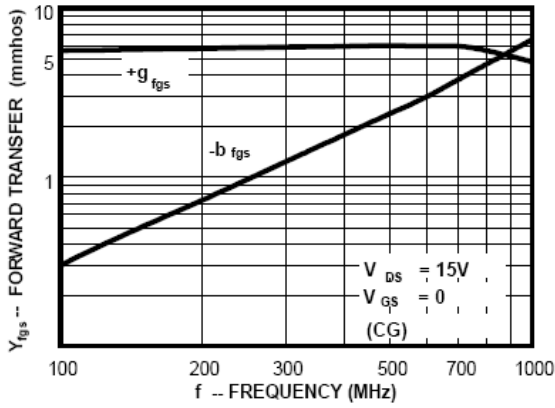


Figure 17. Forward Transadmittance

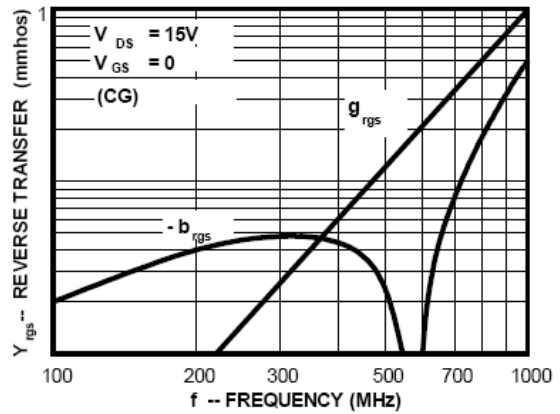


Figure 18. Reverse Transadmittance

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



**SOT-23 (TO-236)**  
CASE 318  
ISSUE AT

DATE 01 MAR 2023

SCALE 4:1



**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
H <sub>E</sub>	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	---	10°	0°	---	10°

**GENERIC MARKING DIAGRAM\***



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



**RECOMMENDED MOUNTING FOOTPRINT**

\* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**STYLES ON PAGE 2**

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**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**



**SOT-23 (TO-236)**  
**CASE 318**  
**ISSUE AT**

DATE 01 MAR 2023

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| STYLE 1 THRU 5:<br>CANCELLED                            | STYLE 6:<br>PIN 1. BASE<br>2. EMITTER<br>3. COLLECTOR | STYLE 7:<br>PIN 1. EMITTER<br>2. BASE<br>3. COLLECTOR       | STYLE 8:<br>PIN 1. ANODE<br>2. NO CONNECTION<br>3. CATHODE  |   |   |
| STYLE 9:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE      | STYLE 10:<br>PIN 1. DRAIN<br>2. SOURCE<br>3. GATE     | STYLE 11:<br>PIN 1. ANODE<br>2. CATHODE<br>3. CATHODE-ANODE | STYLE 12:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. ANODE       | STYLE 13:<br>PIN 1. SOURCE<br>2. DRAIN<br>3. GATE           | STYLE 14:<br>PIN 1. CATHODE<br>2. GATE<br>3. ANODE          |
| STYLE 15:<br>PIN 1. GATE<br>2. CATHODE<br>3. ANODE      | STYLE 16:<br>PIN 1. ANODE<br>2. CATHODE<br>3. CATHODE | STYLE 17:<br>PIN 1. NO CONNECTION<br>2. ANODE<br>3. CATHODE | STYLE 18:<br>PIN 1. NO CONNECTION<br>2. CATHODE<br>3. ANODE | STYLE 19:<br>PIN 1. CATHODE<br>2. ANODE<br>3. CATHODE-ANODE | STYLE 20:<br>PIN 1. CATHODE<br>2. ANODE<br>3. GATE          |
| STYLE 21:<br>PIN 1. GATE<br>2. SOURCE<br>3. DRAIN       | STYLE 22:<br>PIN 1. RETURN<br>2. OUTPUT<br>3. INPUT   | STYLE 23:<br>PIN 1. ANODE<br>2. ANODE<br>3. CATHODE         | STYLE 24:<br>PIN 1. GATE<br>2. DRAIN<br>3. SOURCE           | STYLE 25:<br>PIN 1. ANODE<br>2. CATHODE<br>3. GATE          | STYLE 26:<br>PIN 1. CATHODE<br>2. ANODE<br>3. NO CONNECTION |
| STYLE 27:<br>PIN 1. CATHODE<br>2. CATHODE<br>3. CATHODE | STYLE 28:<br>PIN 1. ANODE<br>2. ANODE<br>3. ANODE     |   |   |   |   |

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