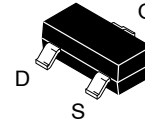


# N-Channel RF Amplifier

## 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.

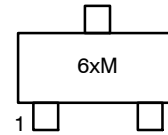
1. These rating are based on a maximum junction temperature of 150°C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### 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 ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit	
<b>OFF CHARACTERISTICS</b>							
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -1.0 \mu\text{A}, V_{DS} = 0$	-25	-	-	V	
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -20 \text{ V}, V_{DS} = 0$ $V_{GS} = -20 \text{ V}, V_{DS} = 0, T_A = 100^\circ\text{C}$	-	-	-1.0 -0.2	nA $\mu\text{A}$	
$V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = 15 \text{ V}, I_D = 10 \text{ nA}$	5484 5485 5486	-0.3 -0.5 -2.0	-	-3.0 -4.0 -6.0	V V V

## ON CHARACTERISTICS

$I_{DSS}$	Zero-Gate Voltage Drain Current*	$V_{DS} = 15 \text{ V}, V_{GS} = 0$	5484 5485 5486	1.0 4.0 8.0	- - -	5.0 10 20	mA mA mA
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## SMALL SIGNAL CHARACTERISTICS

$g_{fs}$	Forward Transfer Conductance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$	5484 5485 5486	3000 3500 4000	- - -	6000 7000 8000	$\mu\text{mhos}$ $\mu\text{mhos}$ $\mu\text{mhos}$		
$Re(y_{is})$	Input Conductance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 100 \text{ MHz}$	5484	-	-	100	$\mu\text{mhos}$		
		$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 400 \text{ kHz}$	5485 / 5486	-	-	1000	$\mu\text{mhos}$		
$g_{os}$	Output Conductance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ kHz}$	5484 5485 5486	- - -	- - -	50 60 75	$\mu\text{mhos}$ $\mu\text{mhos}$ $\mu\text{mhos}$		
		$Re(y_{os})$	Output Conductance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 100 \text{ MHz}$	5484	-	-	75	$\mu\text{mhos}$
				$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 400 \text{ MHz}$	5485 / 5486	-	-	100	$\mu\text{mhos}$
$Re(y_{fs})$	Forward Transconductance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 100 \text{ MHz}$	5484	2500	-	-	$\mu\text{mhos}$		
		$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 400 \text{ MHz}$	5485	3000	-	-	$\mu\text{mhos}$		
			5486	3500	-	-	$\mu\text{mhos}$		
$C_{iss}$	Input Capacitance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$	-	-	-	5.0	pF		
$C_{rss}$	Reverse Transfer Capacitance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$	-	-	-	1.0	pF		
$C_{oss}$	Output Capacitance	$V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$	-	-	-	2.0	pF		
NF	Noise Figure	$V_{DS} = 15 \text{ V}, R_G = 1.0 \text{ k}\Omega, f = 100 \text{ MHz}$	5484	-	-	3.0	dB		
		$V_{DS} = 15 \text{ V}, R_G = 1.0 \text{ k}\Omega, f = 400 \text{ MHz}$	5484	-	4.0	-	dB		
		$V_{DS} = 15 \text{ V}, R_G = 1.0 \text{ k}\Omega, f = 100 \text{ MHz}$	5485 / 5486	-	-	2.0	dB		
		$V_{DS} = 15 \text{ V}, R_G = 1.0 \text{ k}\Omega, f = 400 \text{ MHz}$	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

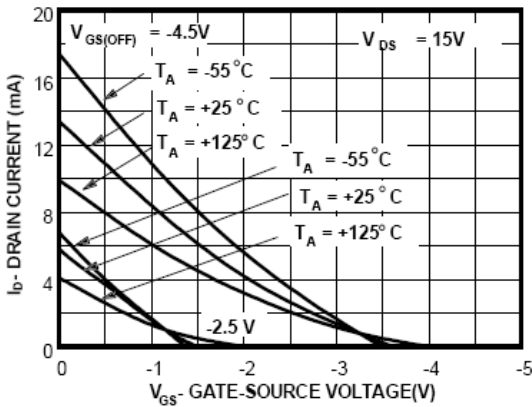


Figure 1. Transfer Characteristics

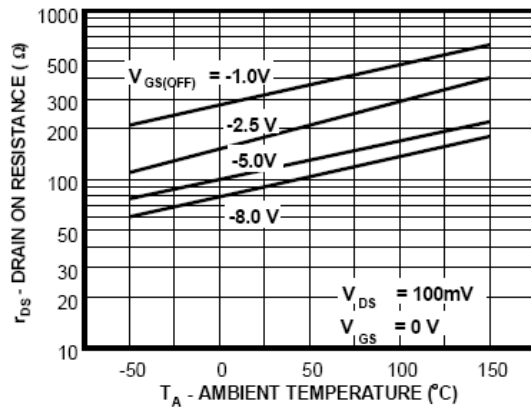


Figure 2. Channel Resistance vs. Temperature

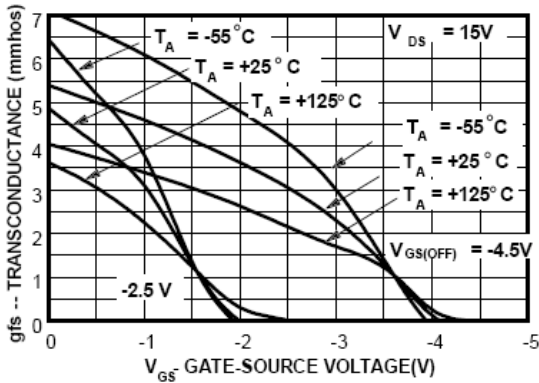


Figure 3. Transconductance Characteristics

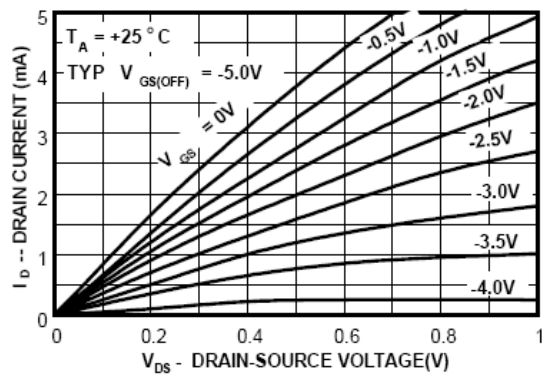


Figure 4. Common Drain-Source Characteristics

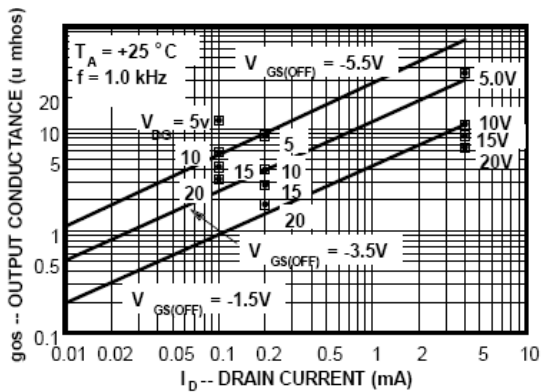


Figure 5. Output Conductance vs. Drain Current

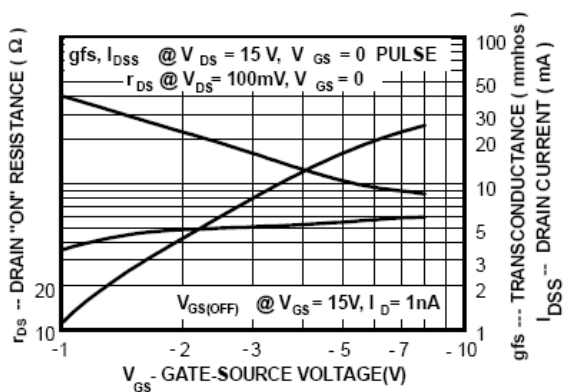


Figure 6. Transconductance Parameter Interactions

# MMBF5484, MMBF5485, MMBF5486

## TYPICAL CHARACTERISTICS (continued)

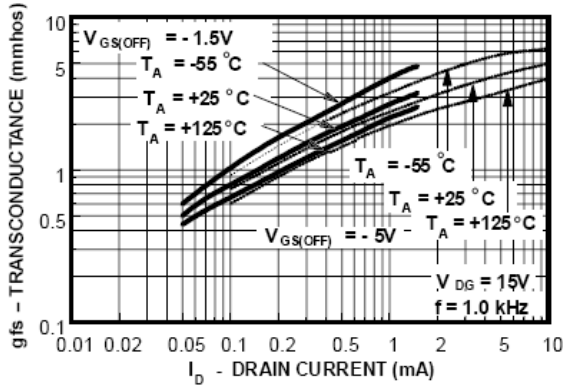


Figure 7. Transconductance vs. Drain Current

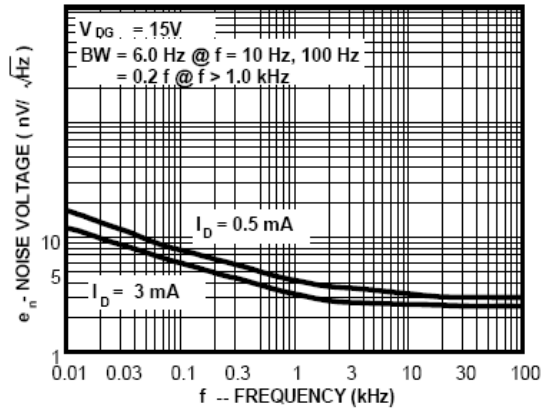


Figure 8. Noise Voltage vs. Frequency

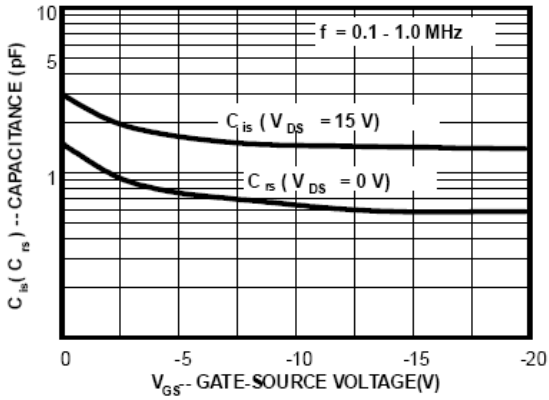


Figure 9. Capacitance vs. Voltage

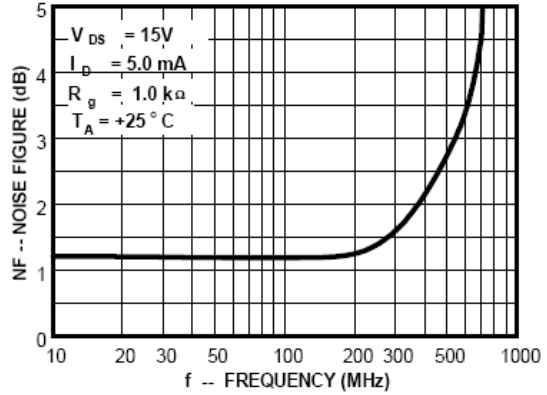


Figure 10. Noise Figure Frequency

COMMON SOURCE CHARACTERISTICS

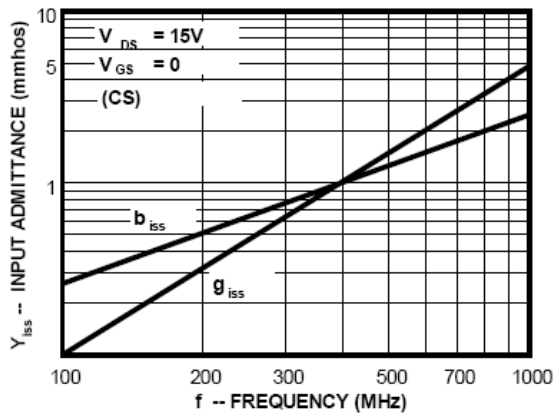


Figure 11. Input Admittance

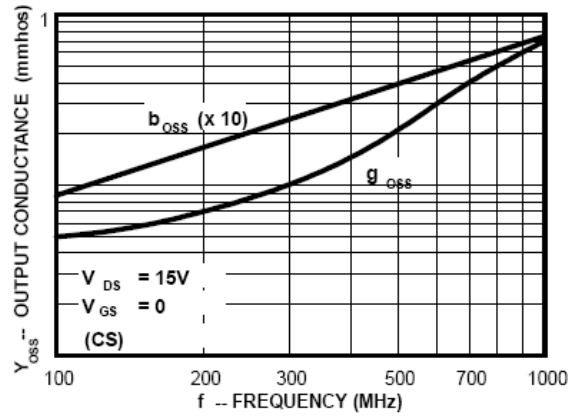


Figure 12. Output Admittance

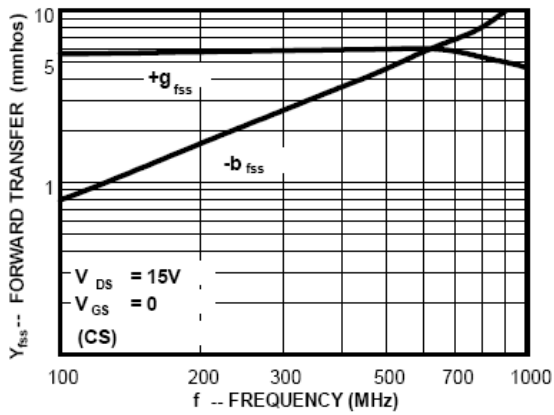


Figure 13. Forward Transadmittance

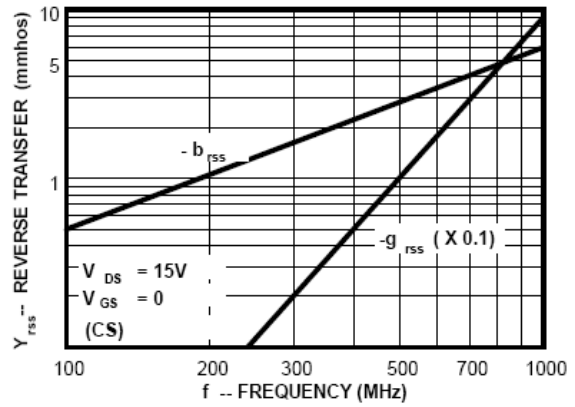


Figure 14. Reverse Transadmittance

COMMON GATE CHARACTERISTICS

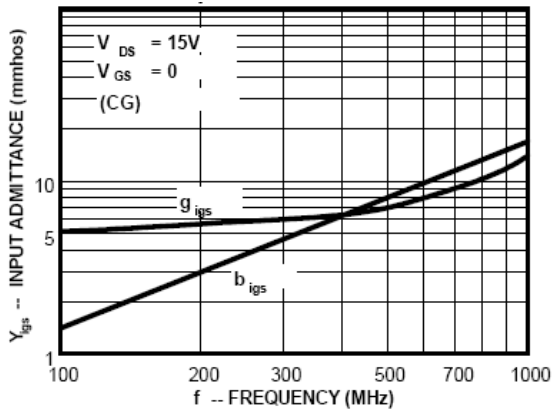


Figure 15. Input Admittance

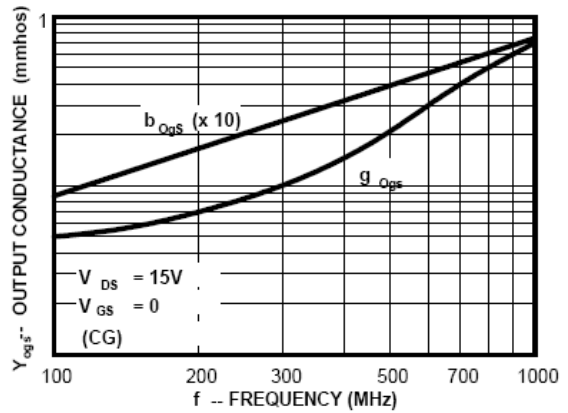


Figure 16. Output Admittance

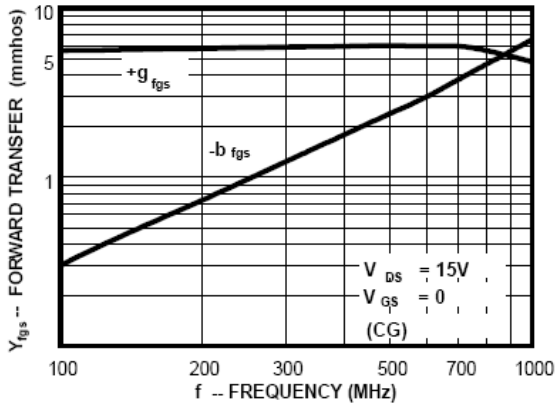


Figure 17. Forward Transadmittance

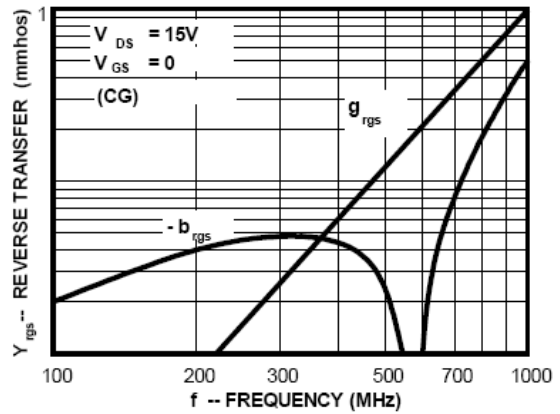


Figure 18. Reverse Transadmittance

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

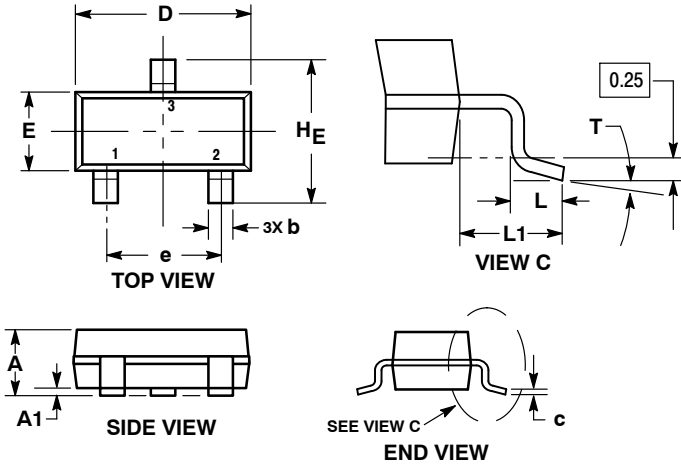
ON Semiconductor®



**SOT-23 (TO-236)**  
CASE 318-08  
ISSUE AS

DATE 30 JAN 2018

SCALE 4:1

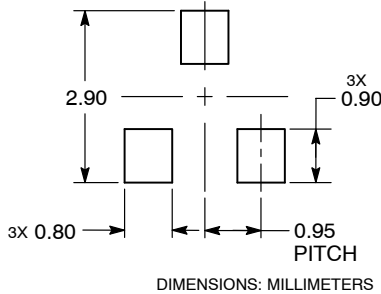


**NOTES:**

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
HE	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	---	10°	0°	---	10°

**RECOMMENDED SOLDERING FOOTPRINT**



**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.

STYLE 1 THRU 5:  
CANCELLED

STYLE 6:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 7:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

STYLE 8:  
PIN 1. ANODE  
2. NO CONNECTION  
3. CATHODE

STYLE 9:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 10:  
PIN 1. DRAIN  
2. SOURCE  
3. GATE

STYLE 11:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE

STYLE 12:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 13:  
PIN 1. SOURCE  
2. DRAIN  
3. GATE

STYLE 14:  
PIN 1. CATHODE  
2. GATE  
3. ANODE

STYLE 15:  
PIN 1. GATE  
2. CATHODE  
3. ANODE

STYLE 16:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE

STYLE 17:  
PIN 1. NO CONNECTION  
2. ANODE  
3. CATHODE

STYLE 18:  
PIN 1. NO CONNECTION  
2. CATHODE  
3. ANODE

STYLE 19:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE-ANODE

STYLE 20:  
PIN 1. CATHODE  
2. ANODE  
3. GATE

STYLE 21:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

STYLE 22:  
PIN 1. RETURN  
2. OUTPUT  
3. INPUT

STYLE 23:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 24:  
PIN 1. GATE  
2. DRAIN  
3. SOURCE

STYLE 25:  
PIN 1. ANODE  
2. CATHODE  
3. GATE

STYLE 26:  
PIN 1. CATHODE  
2. ANODE  
3. NO CONNECTION

STYLE 27:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE

STYLE 28:  
PIN 1. ANODE  
2. ANODE  
3. ANODE

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