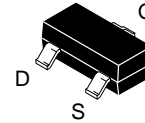


# N-Channel RF Amplifier

## 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**

### ABSOLUTE MAXIMUM RATINGS\* ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Rating	Value	Unit
$V_{DG}$	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	$^\circ\text{C}$

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.

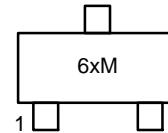
- These rating are based on a maximum junction temperature of  $150^\circ\text{C}$ .
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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

Symbol	Characteristic	Max	Unit
		*MMBF5484-5486	
$P_D$	Total Device Dissipation Derate above $25^\circ\text{C}$	225 1.8	mW mW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	—	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	556	$^\circ\text{C}/\text{W}$

\*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
MMBF5485		
MMBF5486		

†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
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### OFF CHARACTERISTICS

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
		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 5486	3000 3500	-	-	μmhos 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

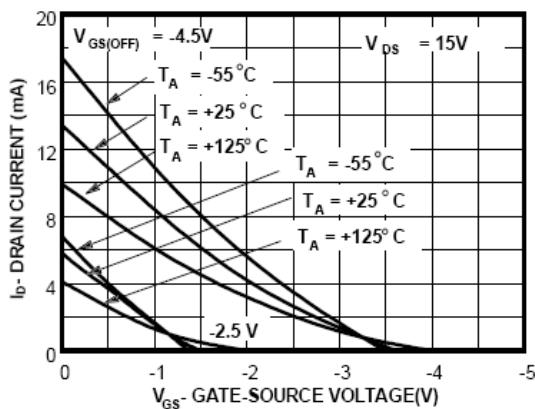


Figure 1. Transfer Characteristics

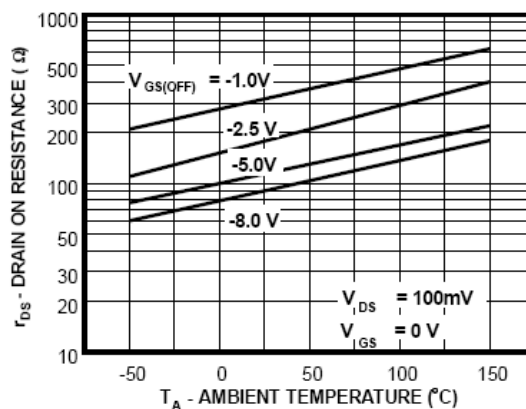


Figure 2. Channel Resistance vs. Temperature

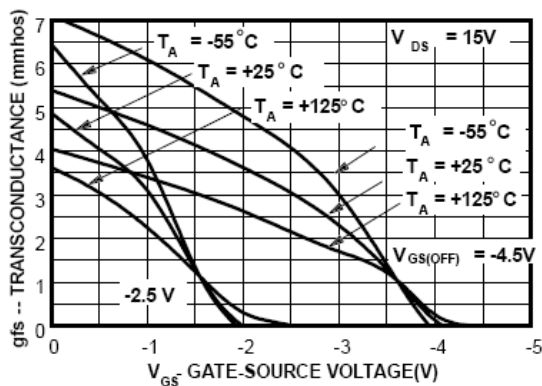


Figure 3. Transconductance Characteristics

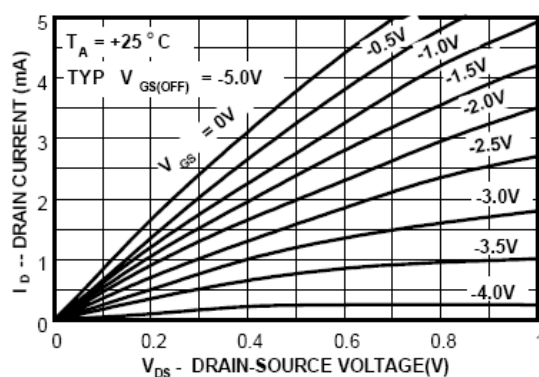


Figure 4. Common Drain-Source Characteristics

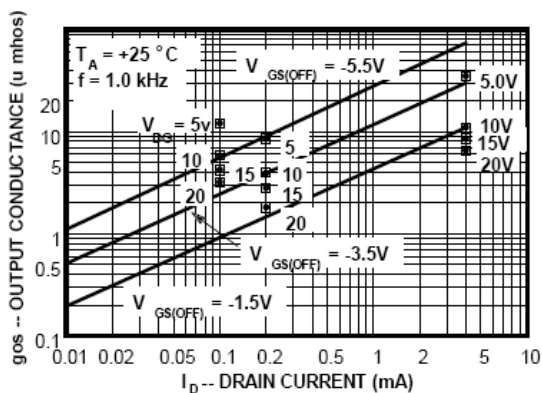


Figure 5. Output Conductance vs. Drain Current

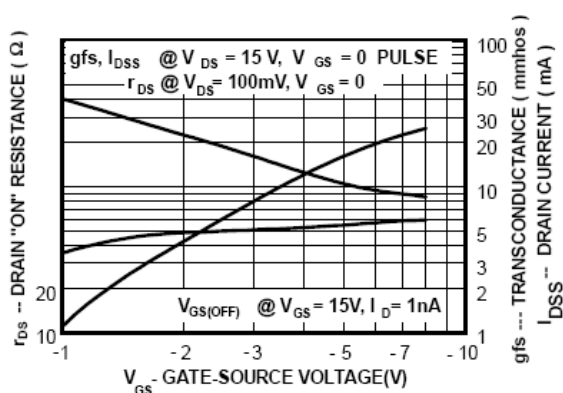


Figure 6. Transconductance Parameter Interactions

TYPICAL CHARACTERISTICS (CONTINUED)

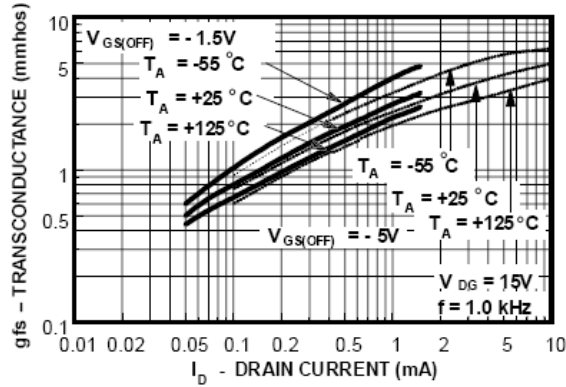


Figure 7. Transconductance vs. Drain Current

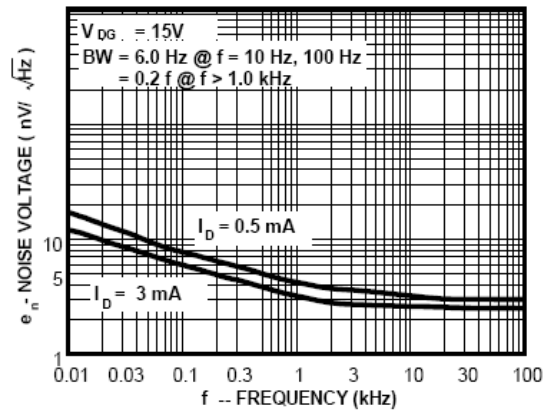


Figure 8. Noise Voltage vs. Frequency

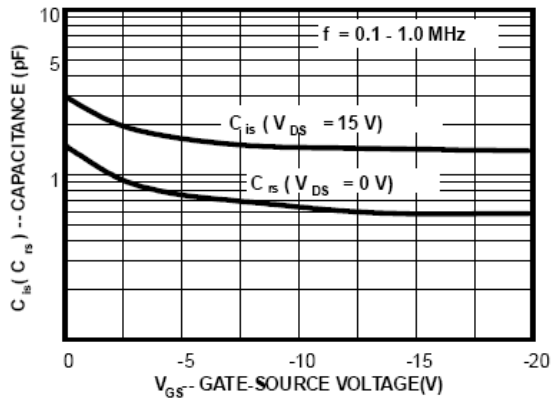


Figure 9. Capacitance vs. Voltage

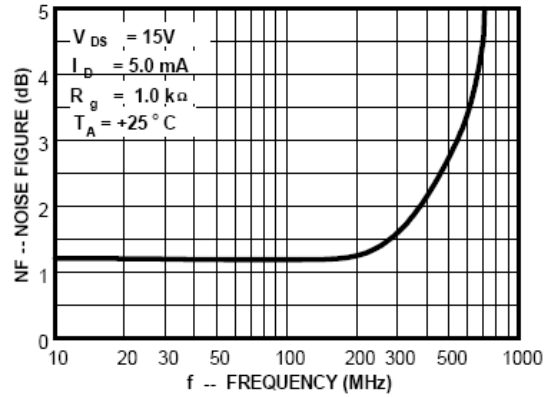


Figure 10. Noise Figure Frequency

COMMON SOURCE CHARACTERISTICS

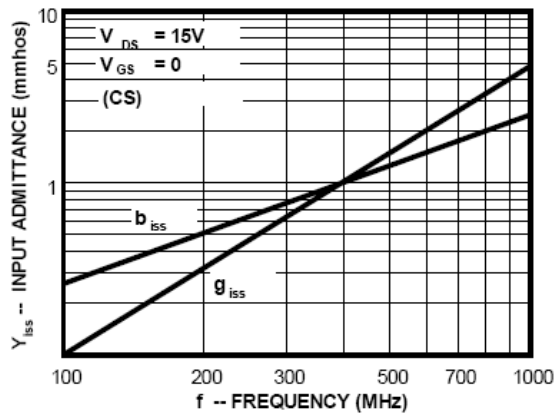


Figure 11. Input Admittance

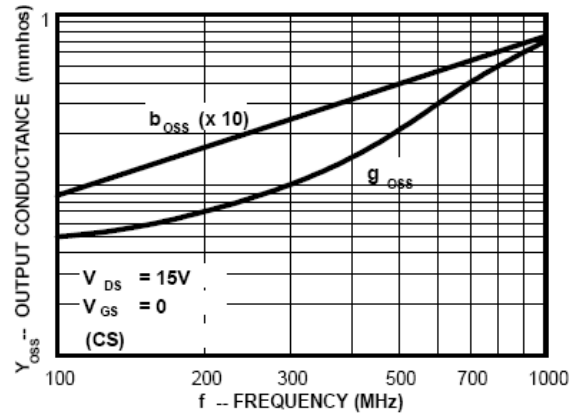


Figure 12. Output Admittance

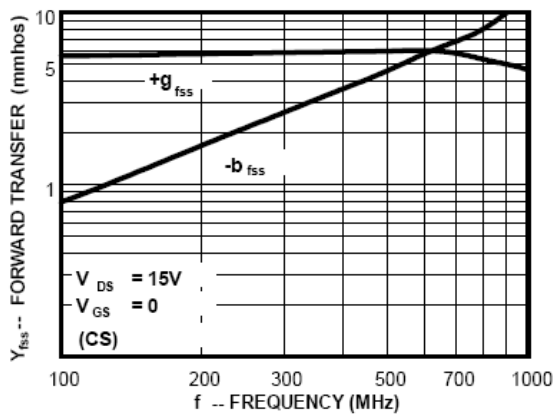


Figure 13. Forward Transadmittance

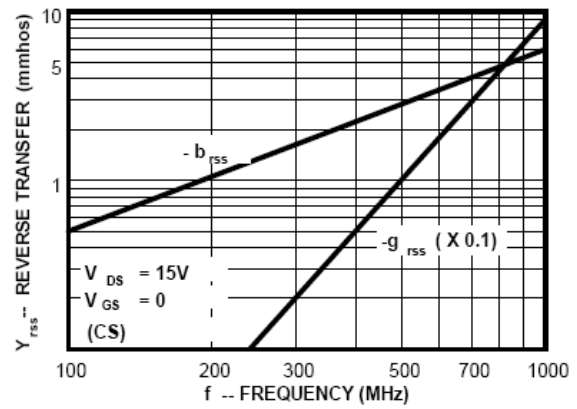


Figure 14. Reverse Transadmittance

## COMMON GATE CHARACTERISTICS

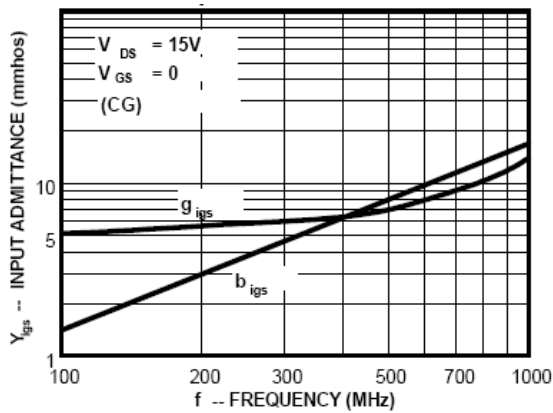


Figure 15. Input Admittance

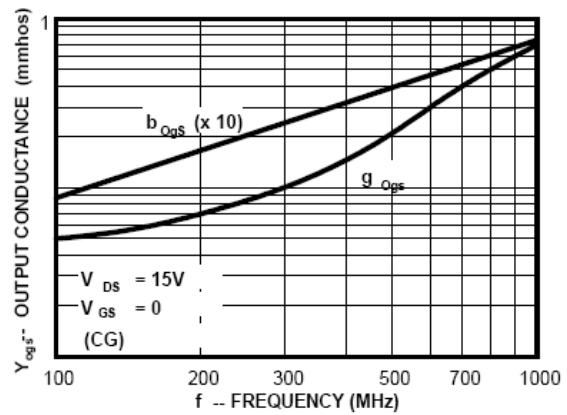


Figure 16. Output Admittance

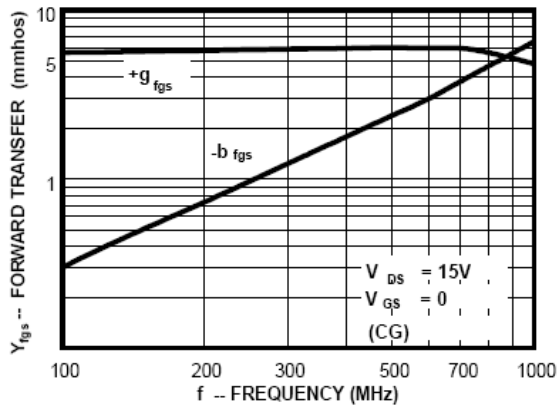


Figure 17. Forward Transadmittance

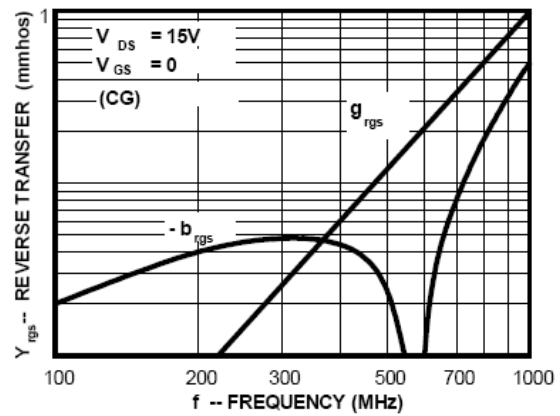
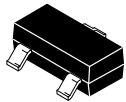


Figure 18. Reverse Transadmittance

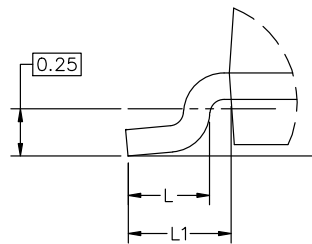


SCALE 4:1

### SOT-23 (TO-236) 2.90x1.30x1.00 1.90P

CASE 318  
ISSUE AU

DATE 14 AUG 2024



MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.89	1.00	1.11
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.04
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.43	0.55
L1	0.35	0.54	0.69
HE	2.10	2.40	2.64
T	0°	---	10°

#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: 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.

#### 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.



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

### STYLES ON PAGE 2

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**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P**  
**CASE 318**  
**ISSUE AU**

DATE 14 AUG 2024

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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