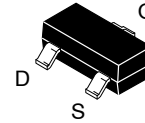


N-Channel RF Amplifier

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_A = 25°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 | °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.

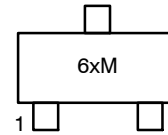
1. These rating are based on a maximum junction temperature of 150°C.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

THERMAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Symbol | Characteristic | Max | Unit |
|------------------|---|----------------|-------|
| | | *MMBF5484-5486 | |
| P _D | Total Device Dissipation Derate above 25°C | 225 | mW |
| | | 1.8 | mW/°C |
| R _{θJC} | Thermal Resistance, Junction to Case | - | °C/W |
| R _{θJA} | 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°C unless otherwise noted)

| Symbol | Parameter | Test Condition | Min | Typ | Max | Unit | |
|----------------------------|-------------------------------|--|----------------------|----------------------|--------------|----------------------|-------------|
| 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 V _{GS} = -20 V, V _{DS} = 0, T _A = 100°C | - | - | -1.0 -0.2 | nA μA | |
| V _{GS(off)} | Gate-Source Cutoff Voltage | V _{DS} = 15 V, I _D = 10 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 V, V _{GS} = 0 | 5484 5485 5486 | 1.0 4.0 8.0 | - - - | 5.0 10 20 | mA mA mA |
|------------------|----------------------------------|---|----------------------|-------------------|-------------|-----------------|----------------|

SMALL SIGNAL CHARACTERISTICS

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

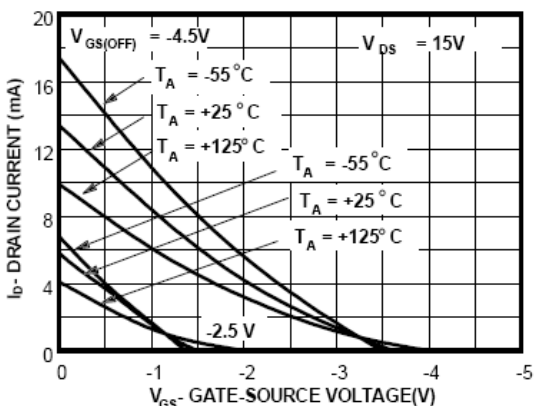


Figure 1. Transfer Characteristics

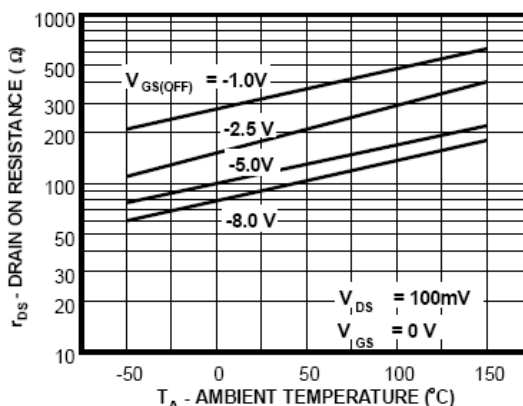


Figure 2. Channel Resistance vs. Temperature

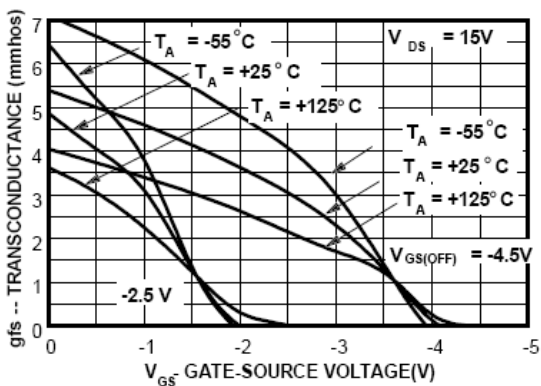


Figure 3. Transconductance Characteristics

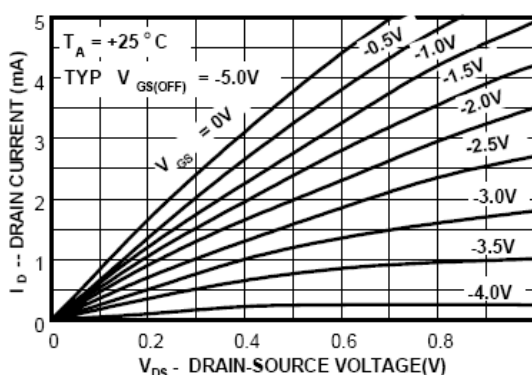


Figure 4. Common Drain-Source Characteristics

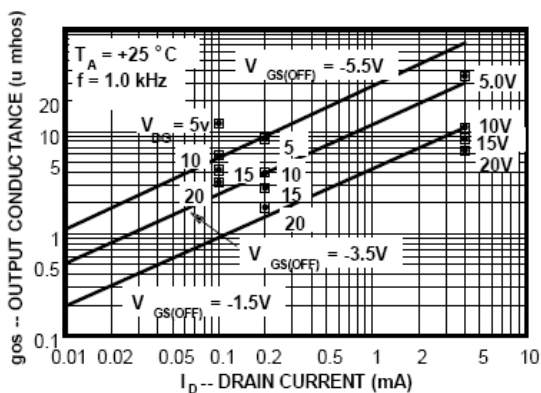


Figure 5. Output Conductance vs. Drain Current

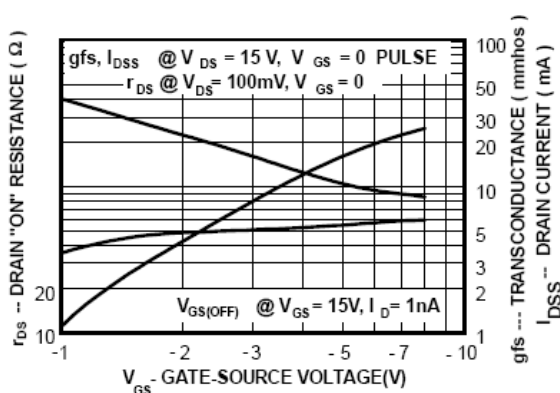


Figure 6. Transconductance Parameter Interactions

MMBF5484, MMBF5485, MMBF5486

TYPICAL CHARACTERISTICS (continued)

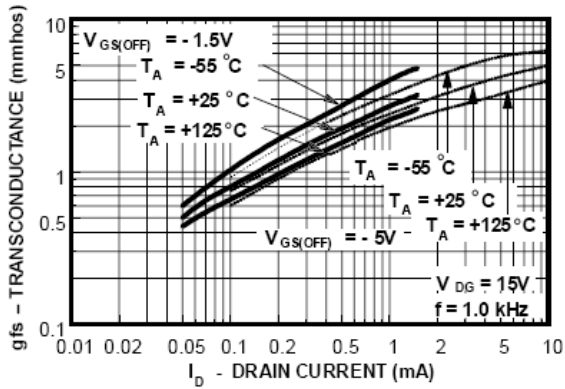


Figure 7. Transconductance vs. Drain Current

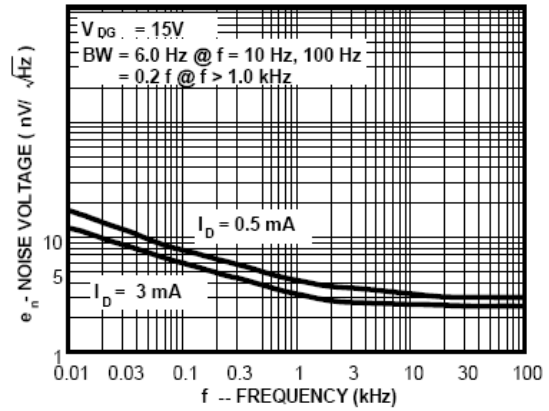


Figure 8. Noise Voltage vs. Frequency

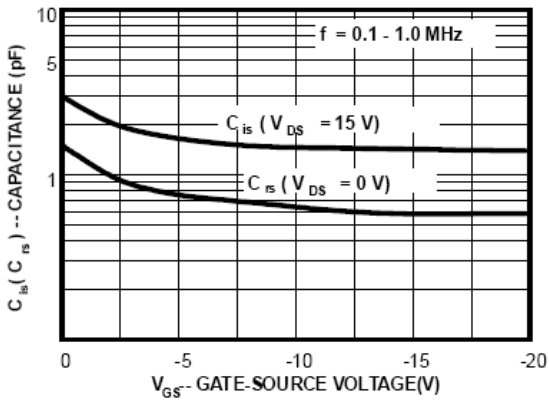


Figure 9. Capacitance vs. Voltage

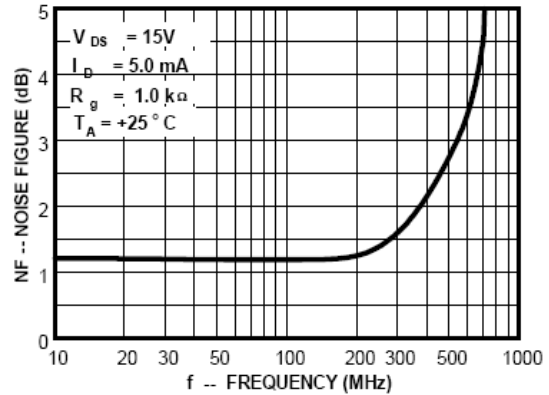


Figure 10. Noise Figure Frequency

MMBF5484, MMBF5485, MMBF5486

COMMON SOURCE CHARACTERISTICS

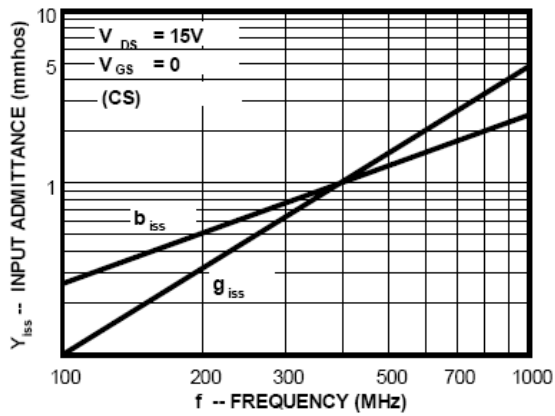


Figure 11. Input Admittance

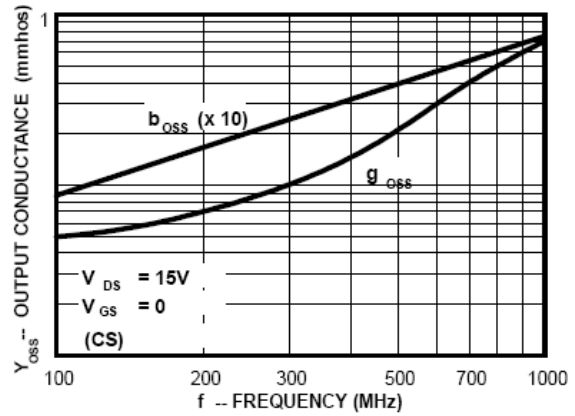


Figure 12. Output Admittance

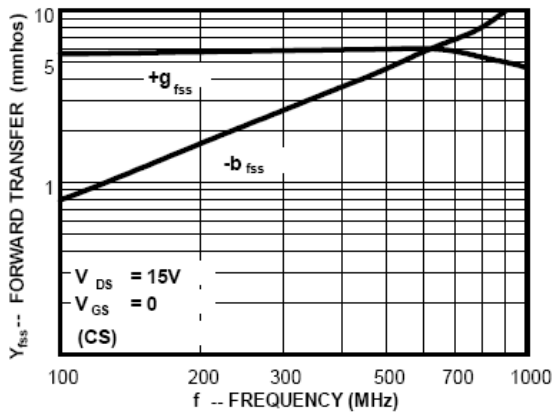


Figure 13. Forward Transadmittance

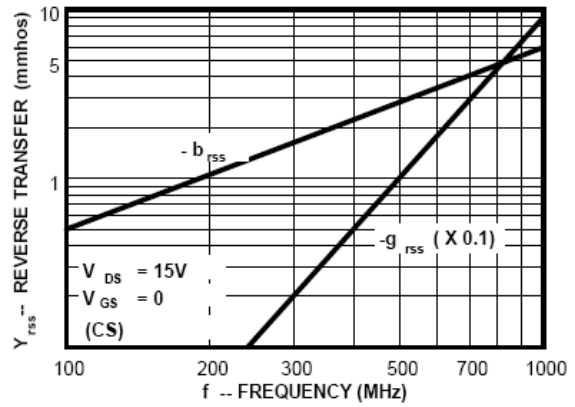


Figure 14. Reverse Transadmittance

COMMON GATE CHARACTERISTICS

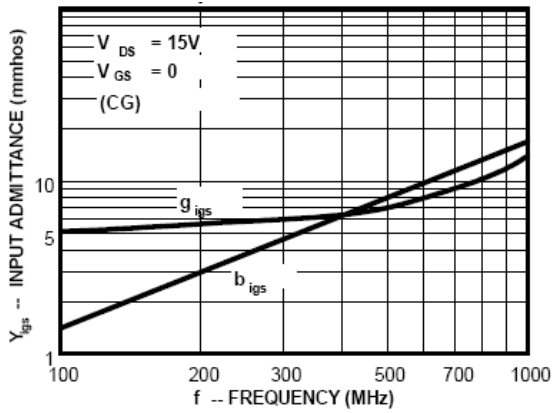


Figure 15. Input Admittance

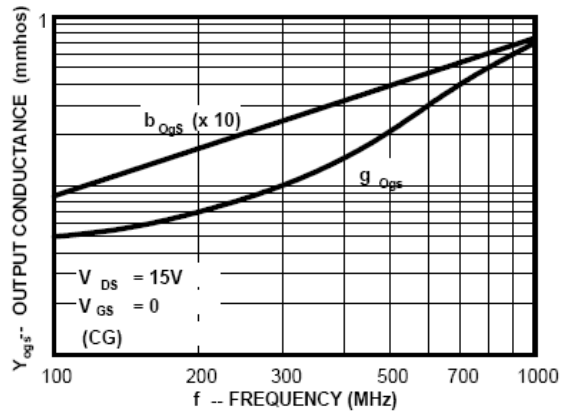


Figure 16. Output Admittance

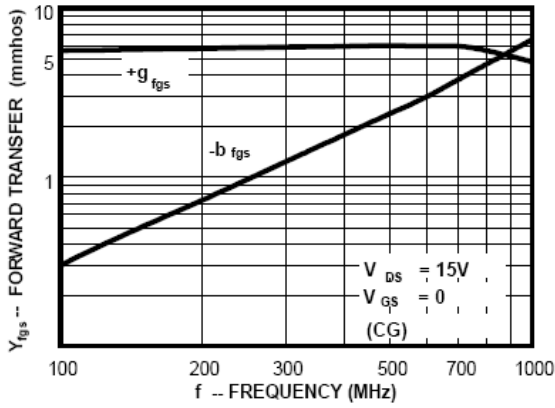


Figure 17. Forward Transadmittance

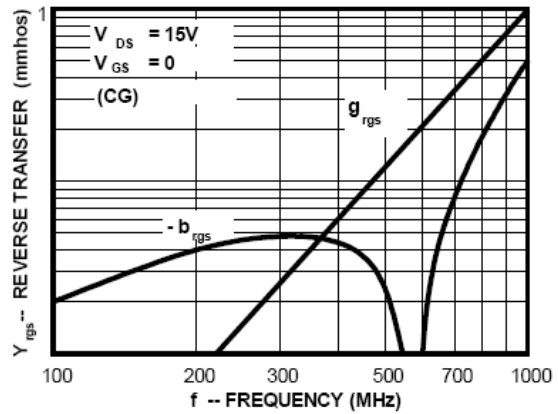


Figure 18. Reverse Transadmittance

MECHANICAL CASE OUTLINE

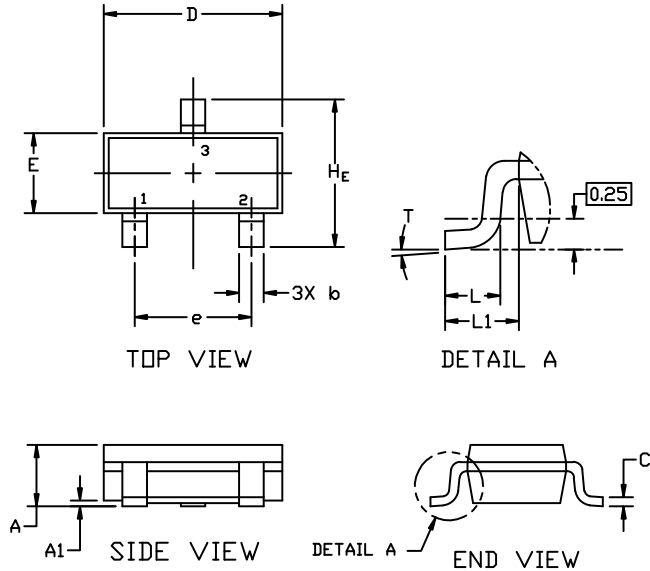
PACKAGE DIMENSIONS



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

DATE 01 MAR 2023

SCALE 4:1

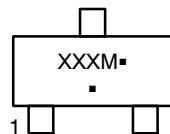


NOTES:

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 _E | 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:
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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