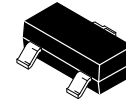


Switch – N-Channel

MMBF5103



SOT-23
CASE 318-08

Features

- This Device is Designed for Low Level Analog Switching, Sample and Hold Circuits and Chopper Stabilized Amplifiers
- Sourced from Process 51
- See J111 for Characteristics
- This is a Pb-Free and Halide Free Device

ABSOLUTE MAXIMUM RATINGS

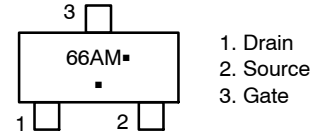
(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Notes 1 and 2)

| Symbol | Parameter | Value | Unit |
|----------------|--|------------|------------------|
| V_{DG} | Drain–Gate Voltage | 40 | V |
| V_{GS} | Gate–Source Voltage | –40 | V |
| I_{GF} | Forward Gate Current | 50 | 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.

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

MARKING DIAGRAM



66A = Specific Device Code
M = Date Code
■ = Pb-Free Package

ORDERING INFORMATION

| Device | Package | Shipping |
|----------|-----------------------------------|-----------------------|
| MMBF5103 | SOT-23 (Pb-Free / Halide Free) | 3000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

THERMAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Note 3)

| Symbol | Parameter | Value | Unit |
|-----------------|---|-------|---------------------------|
| P_D | Total Device Dissipation | 350 | mW |
| | Derate Above 25°C | 2.8 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 357 | $^\circ\text{C}/\text{W}$ |

3. Device mounted on FR-4 PCB 36 mm × 18 mm × 1.5 mm; mounting pad for the collector lead minimum 6 cm².

ELECTRICAL CHARACTERISTICS (Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

| Symbol | Parameter | Test Conditions | Min | Max | Unit |
|--------|-----------|-----------------|-----|-----|------|
|--------|-----------|-----------------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | |
|---------------|-------------------------------|---|------|------|----|
| $V_{(BR)GSS}$ | Gate–Source Breakdown Voltage | $I_G = 1.0 \mu\text{A}, V_{DS} = 0$ | –40 | – | V |
| I_{GSS} | Gate Reverse Current | $V_{GS} = -15 \text{ V}, V_{DS} = 0$ | – | –200 | pA |
| | | $V_{GS} = -15 \text{ V}, V_{DS} = 0, T_A = 125^\circ\text{C}$ | – | –500 | nA |
| $V_{GS(off)}$ | Gate–Source Cut–Off Voltage | $V_{DS} = 20 \text{ V}, I_D = 1.0 \text{ nA}$ | –1.2 | –2.7 | V |
| $V_{GS(f)}$ | Gate–Source Forward Voltage | $I_G = 1.0 \text{ mA}, V_{DS} = 0$ | – | 1.0 | V |

ON CHARACTERISTICS

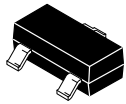
| | | | | | |
|-----------|--|-------------------------------------|----|----|----|
| I_{DSS} | Zero–Gate Voltage Drain Current (Note 4) | $V_{DS} = 15 \text{ V}, V_{GS} = 0$ | 10 | 40 | mA |
|-----------|--|-------------------------------------|----|----|----|

SMALL SIGNAL CHARACTERISTICS

| | | | | | |
|-----------|------------------------------|--|---|-----|----|
| C_{iss} | Input Capacitance | $V_{DS} = 15 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$ | – | 16 | pF |
| C_{rss} | Reverse Transfer Capacitance | $V_{GS} = -15 \text{ V}, f = 1.0 \text{ MHz}$ | – | 6.0 | pF |

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.

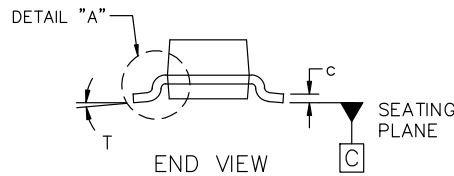
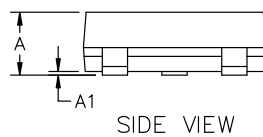
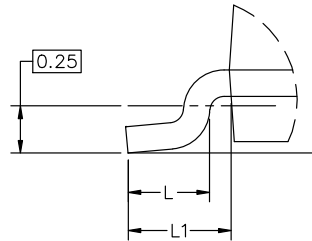
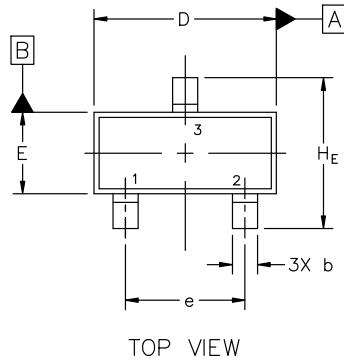
4. Pulse test with $PW = 300 \mu\text{s}$, 1% duty cycle.



SCALE 4:1

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

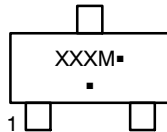
DATE 14 AUG 2024



| 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° |

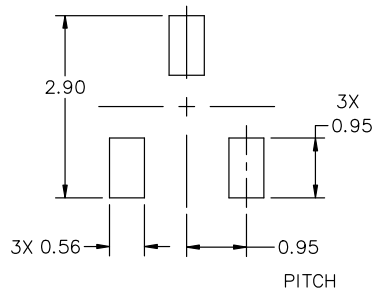
NOTES:

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.


RECOMMENDED MOUNTING FOOTPRINT

* 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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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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