

MSB709-RT1

Preferred Device

PNP General Purpose Amplifier Transistor Surface Mount

Features

- Pb-Free Package is Available

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

| Rating | Symbol | Value | Unit |
|--------------------------------|---------------|-------|------|
| Collector – Base Voltage | $V_{(BR)CBO}$ | -60 | Vdc |
| Collector – Emitter Voltage | $V_{(BR)CEO}$ | -45 | Vdc |
| Emitter – Base Voltage | $V_{(BR)EBO}$ | -7.0 | Vdc |
| Collector Current – Continuous | I_C | -100 | mAdc |
| Collector Current – Peak | $I_{C(P)}$ | -200 | mAdc |

THERMAL CHARACTERISTICS

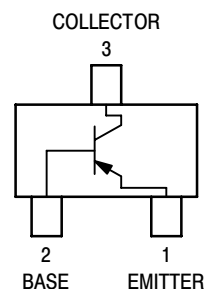
| Characteristic | Symbol | Max | Unit |
|----------------------|-----------|------------|------------------|
| Power Dissipation | P_D | 200 | mW |
| Junction Temperature | T_J | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -55 ~ +150 | $^\circ\text{C}$ |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.



ON Semiconductor®

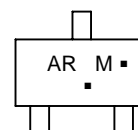
<http://onsemi.com>



MARKING DIAGRAM



SC-59
CASE 318D



AR = Specific Device Code
M = Date Code
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

MSB709-RT1

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

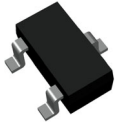
| Characteristic | Symbol | Min | Max | Unit |
|---|----------------------|------|------|------------------|
| Collector – Emitter Breakdown Voltage (I _C = 2.0 mA _{dc} , I _B = 0) | V _{(BR)CEO} | -45 | – | V _{dc} |
| Collector – Base Breakdown Voltage (I _C = 10 μA _{dc} , I _E = 0) | V _{(BR)CBO} | -60 | – | V _{dc} |
| Emitter – Base Breakdown Voltage (I _E = 10 μA _{dc} , I _E = 0) | V _{(BR)EBO} | -7.0 | – | V _{dc} |
| Collector – Base Cutoff Current (V _{CB} = 45 V _{dc} , I _E = 0) | I _{CBO} | – | -0.1 | μA _{dc} |
| Collector – Emitter Cutoff Current (V _{CE} = 10 V _{dc} , I _B = 0) | I _{CEO} | – | -100 | nA _{dc} |
| DC Current Gain (Note 1) (V _{CE} = 10 V _{dc} , I _C = 2.0 mA _{dc}) | h _{FE1} | 210 | 340 | – |
| Collector – Emitter Saturation Voltage (I _C = 100 mA _{dc} , I _B = 10 mA _{dc}) | V _{CE(sat)} | – | -0.5 | V _{dc} |

1. Pulse Test: Pulse Width ≤ 300 μs, D.C. ≤ 2%.

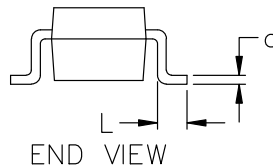
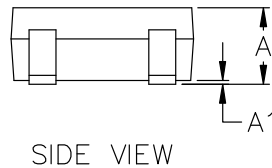
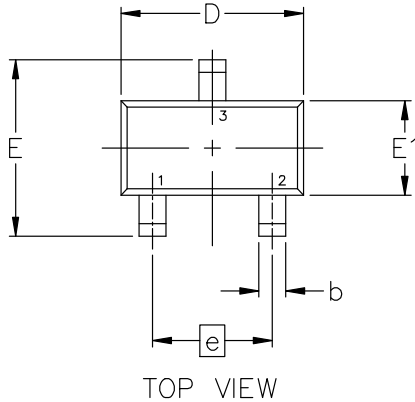
ORDERING INFORMATION

| Device | Package | Shipping [†] |
|-------------|--------------------|-----------------------|
| MSB-709RT1 | SC-59 | 3000 Units / Reel |
| MSB-709RT1G | SC-59 (Pb-Free) | 3000 Units / Reel |

[†]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.


SC-59-3 2.90x1.50x1.15, 1.90P
CASE 318D
ISSUE J

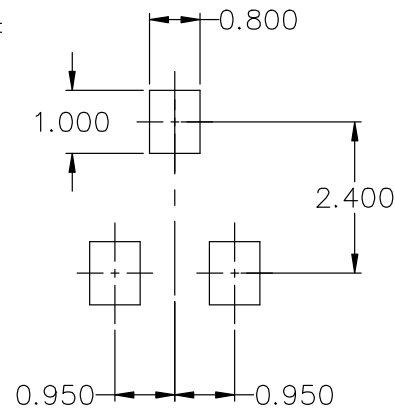
DATE 15 FEB 2024



NOTES:

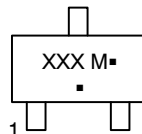
- DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
- ALL DIMENSIONS ARE IN MILLIMETERS.

| DIM | MILLIMETERS | | |
|-----|-------------|------|------|
| | MIN. | NOM. | MAX. |
| A | 1.00 | 1.15 | 1.30 |
| A1 | 0.01 | 0.06 | 0.10 |
| b | 0.35 | 0.43 | 0.50 |
| c | 0.09 | 0.14 | 0.18 |
| D | 2.70 | 2.90 | 3.10 |
| E | 2.50 | 2.80 | 3.00 |
| E1 | 1.30 | 1.50 | 1.70 |
| e | 1.90 BSC | | |
| L | 0.20 | 0.40 | 0.60 |



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.

GENERIC MARKING DIAGRAM*


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

(*Note: Microdot may be in either location)

*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.

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

STYLE 2:
PIN 1. ANODE
2. N.C.
3. CATHODE

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

STYLE 4:
PIN 1. CATHODE
2. N.C.
3. ANODE

STYLE 5:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE/CATHODE

| | | |
|-------------------------|--------------------------------------|--|
| DOCUMENT NUMBER: | 98ASB42664B | Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red. |
| DESCRIPTION: | SC-59-3 2.90x1.50x1.15, 1.90P | PAGE 1 OF 1 |

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales