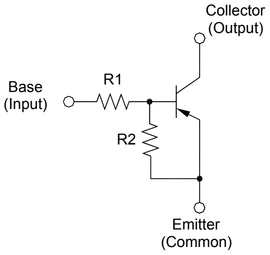
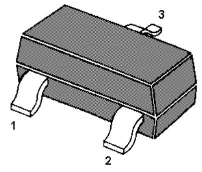
# MMDTB234

## PNP Silicon Epitaxial Planar Transistor

for switching and interface circuit and drive
circuit applications





1. Base 2. Emitter 3. Collector
TO-236 Plastic Package

### Features

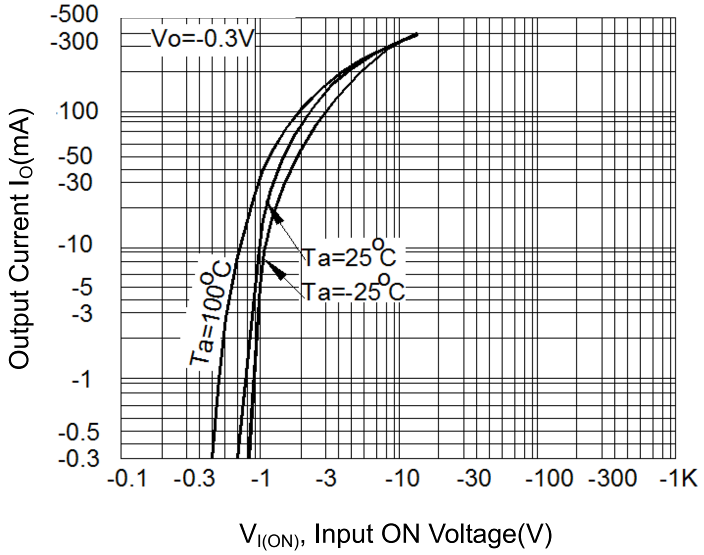
- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

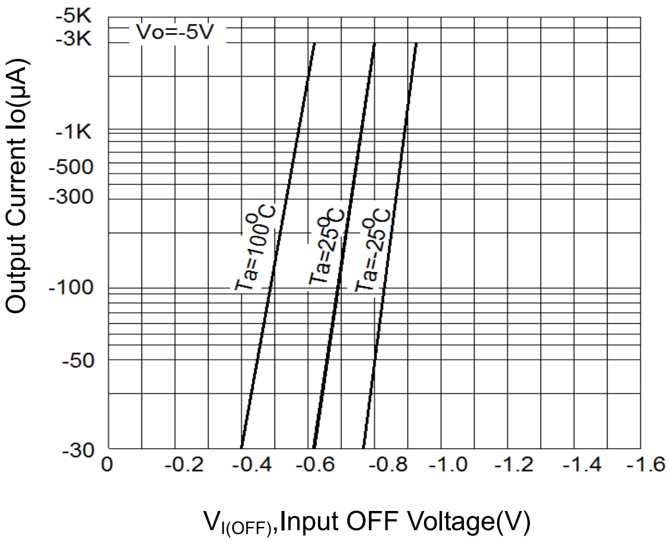
### Absolute Maximum Ratings ($T_a$ = 25 °C)

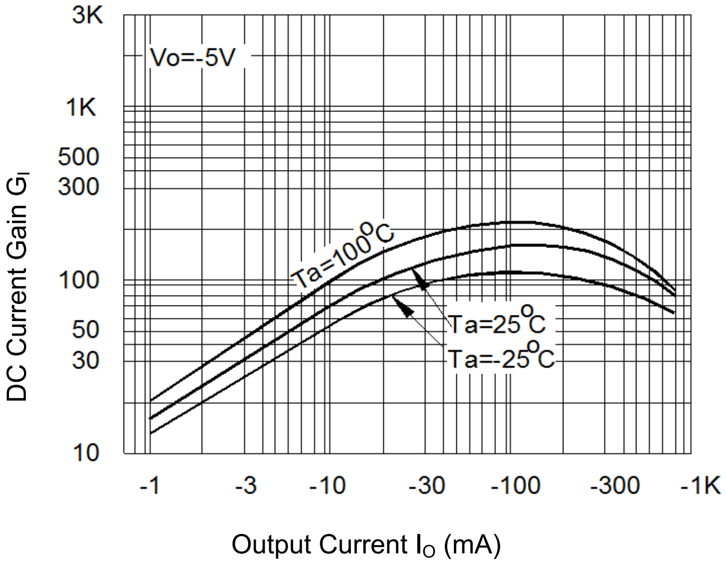
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Output Voltage | $-V_O$ | 50 | V |
| Input Voltage | $-V_I$ | - 5 to + 12 | V |
| Output Current | $-I_O$ | 500 | mA |
| Power Dissipation | $P_{tot}$ | 200 | mW |
| Junction Temperature | $T_j$ | 150 | °C |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 150 | °C |

### Characteristics at $T_a$ = 25 °C

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| DC Current Gain<br>at $-V_{CE}$ = 5 V, $-I_C$ = 50 mA | $G_I$ | 56 | - | - | - |
| Output Cutoff Current<br>at $-V_O$ = 50 V | $-I_{O(OFF)}$ | - | - | 0.5 | µA |
| Input Current<br>at $-V_I$ = 5 V | $-I_I$ | - | - | 0.5 | mA |
| Output Voltage<br>at $-I_O$ = 50 mA,$-I_I$ = 2.5 mA | $-V_{O(ON)}$ | - | - | 0.3 | V |
| Input Voltage (on)<br>at $-V_O$ = 0.3 V, $-I_O$ = 20 mA | $-V_{I(on)}$ | - | - | 2 | V |
| Input Voltage (off)<br>at $-V_O$ = 5 V, $-I_O$ = 100 µA | $-V_{I(off)}$ | 0.3 | - | - | V |
| Transition Frequency<br>at $-V_O$ = 10 V, $-I_O$ = 5 mA, f = 100 MHz | $f_T$ | - | 200 | - | MHz |
| Input Resistance | $R_1$ | 1.54 | 2.2 | 2.86 | KΩ |
| Resistance Ratio | $R_2 / R_1$ | 3.6 | 4.5 | 5.5 | - |

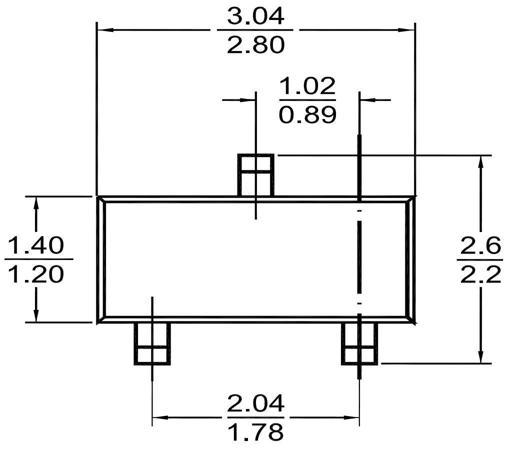

Vo=-0.3V
Output Current $I_O$(mA)
-500
-300
100
-50
-30
-10
-5
-3
-1
-0.5
-0.3
-0.1
-0.3
-1
-3
-10
-30
-100
-300
-1K
Ta=25°C
Ta=-25°C
Ta=100°C
$V_{I(ON)}$, Input ON Voltage(V)

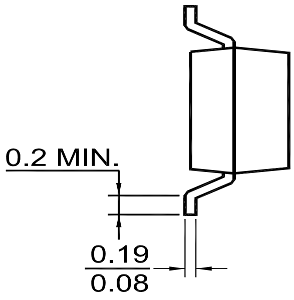

Vo=-5V
Output Current Io(μA)
-5K
-3K
-1K
-500
-300
-100
-50
-30
0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-1.4
-1.6
Ta=100°C
Ta=25°C
Ta=-25°C
$V_{I(OFF)}$,Input OFF Voltage(V)

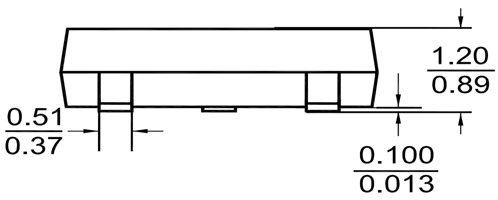

Vo=-5V
DC Current Gain $G_I$
3K
1K
500
300
100
50
30
10
-1
-3
-10
-30
-100
-300
-1K
Ta=100°C
Ta=25°C
Ta=-25°C
Output Current $I_O$ (mA)

## PACKAGE OUTLINE

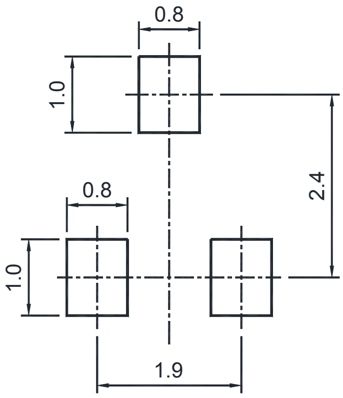
### Plastic surface mounted package (Dimensions in mm) TO-236







### Recommended Soldering Footprint



### Packing information

| Package | Tape Width (mm) | Pitch | | Reel Size | | Per Reel Packing Quantity |
|---|---|---|---|---|---|---|
| | | mm | inch | mm | inch | |
| TO-236 | 8 | 4 ± 0.1 | 0.157 ± 0.004 | 178 | 7 | 3,000 |