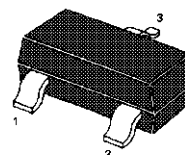


# MMBT9014B / MMBT9014C / MMBT9014D

NPN Silicon Epitaxial Planar Transistors  
for switching and AF amplifier applications.

As complementary types the PNP transistor  
MMBT9015B, MMBT9015C and  
MMBT9015D are recommended.

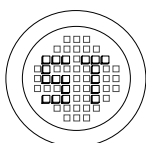


1. Base 2. Emitter 3. Collector

SOT-23 Plastic Package

Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

|                           | Symbol           | Value       | Unit             |
|---------------------------|------------------|-------------|------------------|
| Collector Base Voltage    | $V_{\text{CBO}}$ | 50          | V                |
| Collector Emitter Voltage | $V_{\text{CEO}}$ | 45          | V                |
| Emitter Base Voltage      | $V_{\text{EBO}}$ | 5           | V                |
| Collector Current         | $I_{\text{C}}$   | 100         | mA               |
| Power Dissipation         | $P_{\text{tot}}$ | 200         | mW               |
| Junction Temperature      | $T_{\text{j}}$   | 150         | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{\text{s}}$   | -55 to +150 | $^\circ\text{C}$ |



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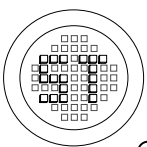
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# MMBT9014B / MMBT9014C / MMBT9014D

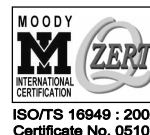
## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

|                                                                                                        | Symbol                                                                  | Min.              | Typ.        | Max.              | Unit        |
|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------|-------------|-------------------|-------------|
| DC Current Gain<br>at $V_{CE}=5\text{V}$ , $I_C=2\text{mA}$                                            | MMBT9014B<br>$h_{FE}$<br>MMBT9014C<br>$h_{FE}$<br>MMBT9014D<br>$h_{FE}$ | 110<br>200<br>420 | -<br>-<br>- | 220<br>450<br>800 | -<br>-<br>- |
| Collector Base Breakdown Voltage<br>at $I_C=100\mu\text{A}$                                            | $V_{(BR)CBO}$                                                           | 50                | -           | -                 | V           |
| Collector Emitter Breakdown Voltage<br>at $I_C=1\text{mA}$                                             | $V_{(BR)CEO}$                                                           | 45                | -           | -                 | V           |
| Emitter Base Breakdown Voltage<br>at $I_E=100\mu\text{A}$                                              | $V_{(BR)EBO}$                                                           | 5                 | -           | -                 | V           |
| Collector Cutoff Current<br>at $V_{CB}=50\text{V}$                                                     | $I_{CBO}$                                                               | -                 | -           | 50                | nA          |
| Emitter Cutoff Current<br>at $V_{EB}=5\text{V}$                                                        | $I_{EBO}$                                                               | -                 | -           | 50                | nA          |
| Collector Saturation Voltage<br>at $I_C=100\text{mA}$ , $I_B=5\text{mA}$                               | $V_{CE(sat)}$                                                           | -                 | -           | 600               | mV          |
| Gain Bandwidth Product<br>at $V_{CE}=5\text{V}$ , $I_C=10\text{mA}$                                    | $f_T$                                                                   | -                 | 300         | -                 | MHz         |
| Output Capacitance<br>at $V_{CB}=10\text{V}$ , $f=1\text{MHz}$                                         | $C_{OB}$                                                                | -                 | 3.5         | 6                 | pF          |
| Noise Figure<br>at $V_{CE}=5\text{V}$ , $I_C=200\mu\text{A}$ , $f=1\text{KHz}$ , $R_G=2\text{K}\Omega$ | NF                                                                      | -                 | 2           | 10                | dB          |



**SEMTECH ELECTRONICS LTD.**

(Subsidiary of Semtech International Holdings Limited, a company  
listed on the Hong Kong Stock Exchange, Stock Code: 724)



Dated : 20/10/2005