

# SURFACE MOUNT TRANSISTORS

T-27-09

## NPN TRANSISTORS - SOT-23 PACKAGE

310 mW DISSIPATION RATING (See Note 4)

CHARACTERISTICS @  $T_A$  25°C

OPERATING/STORAGE TEMPERATURE -55°C to +150°C

| Type Number | Marking Code | $V_{CE0}$<br>Volts | $h_{FE}$ @ $V_{CE}/I_C$<br>V/mA | $V_{CE SAT}$ @ $I_C/I_B$<br>max.V mA/mA | $I_{CES}$ @ $V_{CE}$<br>max.nA V | $f_T$ @ $V_{CE}/I_C$<br>MHz V/mA | $C_{OB}$ @ $V_{CB}$<br>max.pF V |
|-------------|--------------|--------------------|---------------------------------|-----------------------------------------|----------------------------------|----------------------------------|---------------------------------|
| IMBT3903    | 1M           | 40                 | 50-150 1/10                     | 0.3 50/5                                | 50 <sup>(2)</sup> 30             | min.250 20/10                    | 5                               |
| IMBT3904    | 1N           | 40                 | 100-300 1/10                    | 0.3 50/5                                | 50 <sup>(2)</sup> 30             | min.300 20/10                    | 4                               |
| IMBT4400    | 6T           | 40                 | 50-150 1/150                    | 0.75 500/50                             | 100 <sup>(3)</sup> 35            | min.200 10/20                    | 6.5                             |
| IMBT4401    | 6U           | 40                 | 100-300 1/150                   | 0.75 500/50                             | 100 <sup>(3)</sup> 35            | min.250 10/20                    | 6.5                             |
| IMBT2222    | 6R           | 30                 | 100-300 10/150                  | 1.6 500/50                              | 10 <sup>(1)</sup> 50             | min.250 20/20                    | 8                               |
| IMBT2222A   | 6S           | 40                 | 100-300 10/150                  | 1.0 500/50                              | 10 <sup>(1)</sup> 60             | min.300 20/20                    | 8                               |

(1)  $I_{CBO}$ (2)  $I_{CEV}$  @  $V_{EB} = 3V$ (3)  $I_{CEV}$  @  $V_{EB} = 0.4V$ (4) MOUNTED ON .7mm THICK CERAMIC SUBSTRATE OF MIN AREA OF 2.5 cm<sup>2</sup> -  $T_{SB} = 50^\circ C$ 

## NPN TRANSISTORS - EUROPEAN TYPES - TO-236 PACKAGE

CHARACTERISTICS @  $T_A$  25°C

| Type Number | Marking Code | $V_{CE0}$<br>Volts | $h_{FE}$ @ $V_{CE}/I_C$<br>V/mA | $V_{CE SAT}$ @ $I_C/I_B$<br>max.V mA/mA | $I_{CES}$ @ $V_{CE}$<br>max.nA V | $f_T$ @ $V_{CE}/I_C$<br>MHz V/mA | $C_{OB}$ @ $V_{CB}$<br>max.pF V |
|-------------|--------------|--------------------|---------------------------------|-----------------------------------------|----------------------------------|----------------------------------|---------------------------------|
| BC817-16    | 6A           | 45                 | 100-250 1/100                   | 0.7 500/50                              | 100 45                           | 100 5/10                         | 12 10                           |
| BC817-25    | 6B           | 45                 | 160-400 1/100                   | 0.7 500/50                              | 100 45                           | 100 5/10                         | 12 10                           |
| BC817-40    | 6C           | 45                 | 250-600 1/100                   | 0.7 500/50                              | 100 45                           | 100 5/10                         | 12 10                           |
| BC846A      | 1A           | 65                 | 110-220 5/2                     | 0.6 100/5                               | 15 80                            | 300 5/10                         | 6 10                            |
| BC846B      | 1B           | 65                 | 200-450 5/2                     | 0.6 100/5                               | 15 80                            | 300 5/10                         | 6 10                            |
| BC847A      | 1E           | 45                 | 110-220 5/2                     | 0.6 100/5                               | 15 50                            | 300 5/10                         | 6 10                            |
| BC847B      | 1F           | 45                 | 200-450 5/2                     | 0.6 100/5                               | 15 50                            | 300 5/10                         | 6 10                            |
| BC847C      | 1G           | 45                 | 420-800 5/2                     | 0.6 100/5                               | 15 50                            | 300 5/10                         | 6 10                            |
| BC848A      | 1J           | 30                 | 110-220 5/2                     | 0.6 100/5                               | 15 30                            | 300 5/10                         | 6 10                            |
| BC848B      | 1K           | 30                 | 200-450 5/2                     | 0.6 100/5                               | 15 30                            | 300 5/10                         | 6 10                            |
| BC848C      | 1L           | 30                 | 420-800 5/2                     | 0.6 100/5                               | 15 30                            | 300 5/10                         | 6 10                            |

## PNP TRANSISTORS - SOT-23 PACKAGE

310 mW DISSIPATION RATING (See Note 4)

CHARACTERISTICS @  $T_A$  25°C

OPERATING/STORAGE TEMPERATURE -55°C to +150°C

| Type Number | Marking Code | $V_{CE0}$<br>Volts | $h_{FE}$ @ $V_{CE}/I_C$<br>V/mA | $V_{CE SAT}$ @ $I_C/I_B$<br>max.V mA/mA | $I_{CES}$ @ $V_{CE}$<br>max.nA V | $f_T$ @ $V_{CE}/I_C$<br>MHz V/mA | $C_{OB}$ @ $V_{CB}$<br>max.pF V |
|-------------|--------------|--------------------|---------------------------------|-----------------------------------------|----------------------------------|----------------------------------|---------------------------------|
| IMBT2907    | 5P           | 40                 | 100-300 10/150                  | 1.6 500/50                              | 20 <sup>(1)</sup> 50             | min.200 20/50                    | 8 10                            |
| IMBT2907A   | 5R           | 60                 | 100-300 10/150                  | 1.6 500/50                              | 10 <sup>(1)</sup> 50             | min.200 20/50                    | 8 10                            |
| IMBT3905    | 3M           | 40                 | 50-150 1/10                     | 0.4 50/5                                | 50 <sup>(2)</sup> 30             | min.200 20/10                    | 4.5 5                           |
| IMBT3906    | 3N           | 40                 | 100-300 1/10                    | 0.4 50/5                                | 50 <sup>(2)</sup> 30             | min.250 20/10                    | 4.5 5                           |
| IMBT4402    | 5T           | 40                 | 50-150 1/150                    | 0.75 500/50                             | 100 <sup>(3)</sup> 35            | min.150 10/20                    | 8.5 5                           |
| IMBT4403    | 5U           | 40                 | 100-300 1/150                   | 0.75 500/50                             | 100 <sup>(3)</sup> 35            | min.200 10/20                    | 8.5 5                           |
| IMBTA55     | 5M           | 60                 | min.50 1/100                    | 0.25 100/10                             | 100 <sup>(1)</sup> 60            | min.100 2/10                     | — —                             |
| IMBTA56     | 5N           | 80                 | min.50 1/100                    | 0.25 100/10                             | 100 <sup>(1)</sup> 80            | min.100 2/10                     | — —                             |

(1)  $I_{CBO}$ (2)  $I_{CEV}$  @  $V_{EB} = 3V$ (3)  $I_{CEV}$  @  $V_{EB} = 0.4V$ (4) MOUNTED ON .7mm THICK CERAMIC SUBSTRATE OF MIN AREA OF 2.5 cm<sup>2</sup> -  $T_{SB} = 50^\circ C$ 

## PNP TRANSISTORS - EUROPEAN TYPES - TO-236 PACKAGE

CHARACTERISTICS @  $T_A$  25°C

| Type Number | Marking Code | $V_{CE0}$<br>Volts | $h_{FE}$ @ $V_{CE}/I_C$<br>V/mA | $V_{CE SAT}$ @ $I_C/I_B$<br>max.V mA/mA | $I_{CES}$ @ $V_{CE}$<br>max.nA V | $f_T$ @ $V_{CE}/I_C$<br>MHz V/mA | $C_{OB}$ @ $V_{CB}$<br>max.pF V |
|-------------|--------------|--------------------|---------------------------------|-----------------------------------------|----------------------------------|----------------------------------|---------------------------------|
| BC807-16    | 5A           | 45                 | 100-250 1/100                   | 0.7 500/50                              | 100 45                           | 100 5/10                         | 12 10                           |
| BC807-25    | 5B           | 45                 | 160-400 1/100                   | 0.7 500/50                              | 100 45                           | 100 5/10                         | 12 10                           |
| BC807-40    | 5C           | 45                 | 250-600 1/100                   | 0.7 500/50                              | 100 45                           | 100 5/10                         | 12 10                           |
| BC856A      | 3A           | 65                 | 110-220 5/2                     | 0.65 100/5                              | 15 80                            | 150 5/10                         | 6 10                            |
| BC856B      | 3B           | 65                 | 200-450 5/2                     | 0.65 100/5                              | 15 80                            | 150 5/10                         | 6 10                            |
| BC857A      | 3E           | 45                 | 110-220 5/2                     | 0.65 100/5                              | 15 50                            | 150 5/10                         | 6 10                            |
| BC857B      | 3F           | 45                 | 200-450 5/2                     | 0.65 100/5                              | 15 50                            | 150 5/10                         | 6 10                            |
| BC857C      | 3G           | 45                 | 420-800 5/2                     | 0.65 100/5                              | 15 50                            | 150 5/10                         | 6 10                            |
| BC858A      | 3J           | 30                 | 110-220 5/2                     | 0.65 100/5                              | 15 30                            | 150 5/10                         | 6 10                            |
| BC858B      | 3K           | 30                 | 200-450 5/2                     | 0.65 100/5                              | 15 30                            | 150 5/10                         | 6 10                            |
| BC858C      | 3L           | 30                 | 420-800 5/2                     | 0.65 100/5                              | 15 30                            | 150 5/10                         | 6 10                            |