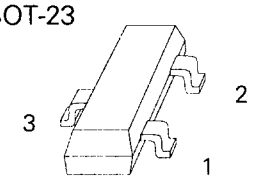
# Transistors

## General Purpose and Switching

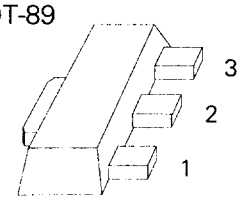
For complete package outlines, refer to pages PO-1 through PO-6

| Type | | Maximum Ratings | | | Characteristics ($T_A$=25°C) | | | | | | | | | Case | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N=NPN P=PNP | | $V_{CEO}$ | $I_C$ | $P_t$ | $f_T$ | $I_{CBO}$ at $I_{CEX}$ at | $V_{CBO}$ $V_{CEX}$ | $h_{FE}$ at | $I_C$ | $V_{CE}$ | $V_{CE(sat)}$ at $I_C$ | | $I_B$ | Style | Lead Code | Leaded. Equiv. |
| | | V | mA | mW | MHz | nA | V | | mA | V | V | mA | mA | | | |
| BC807 | P | 45 | 1000 | 330 | 200 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 8 | BC327 |
| BC807W | P | 45 | 1000 | 330 | 200 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT323 | 8 | BC327 |
| BC808 | P | 25 | 1000 | 330 | 200 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 8 | BC328 |
| BC808W | P | 25 | 1000 | 330 | 200 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT323 | 8 | BC328 |
| BC817 | N | 45 | 1000 | 330 | 170 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 7 | BC337 |
| BC817W | N | 45 | 1000 | 330 | 170 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT323 | 7 | BC337 |
| BC818 | N | 25 | 1000 | 330 | 170 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 7 | BC338 |
| BC818W | N | 25 | 1000 | 330 | 170 | ≤ 100 | 25 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT323 | 7 | BC338 |
| BC846 | N | 65 | 200 | 330 | 250 | ≤ 15 | 30 | 110-450* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC546 |
| BC846W | N | 65 | 200 | 330 | 250 | ≤ 15 | 30 | 110-450* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 7 | BC546 |
| BC847 | N | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 110-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC547 |
| BC847W | N | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 110-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 7 | BC547 |
| BC848 | N | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 110-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC548 |
| BC848W | N | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 110-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 7 | BC548 |
| BC849 | N | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 200-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC549 |
| BC849W | N | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 200-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 7 | BC549 |
| BC850 | N | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 200-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC550 |
| BC850W | N | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 200-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 7 | BC550 |
| BC856 | P | 65 | 200 | 330 | 250 | ≤ 15 | 30 | 125-475* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 8 | BC556 |
| BC856W | P | 65 | 200 | 330 | 250 | ≤ 15 | 30 | 125-475* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 8 | BC556 |
| BC857 | P | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 8 | BC557 |
| BC857W | P | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 8 | BC557 |
| BC858 | P | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 8 | BC558 |
| BC858W | P | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 8 | BC558 |
| BC859 | P | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 8 | BC559 |
| BC859W | P | 30 | 200 | 330 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 8 | BC559 |
| BC860 | P | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 220-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 8 | BC560 |
| BC860W | P | 45 | 200 | 330 | 250 | ≤ 15 | 30 | 220-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT323 | 8 | BC560 |
| BCP51 | P | 45 | 1500 | 1500 | 125 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT223 | 21 | BC636 |
| BCP52 | P | 60 | 1500 | 1500 | 125 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT223 | 21 | BC638 |
| BCP53 | P | 80 | 1500 | 1500 | 125 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT223 | 21 | BC648 |
| BCP54 | N | 45 | 1500 | 1500 | 100 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT223 | 22 | BC635 |
| BCP55 | N | 60 | 1500 | 1500 | 100 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT223 | 22 | BC637 |
| BCP56 | N | 80 | 1500 | 1500 | 100 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT223 | 22 | BC639 |
| BCP68 | N | 20 | 2000 | 1500 | 100 | ≤ 100 | 25 | 63-400 | 500 | 1 | ≤ 0.50 | 1000 | 100 | SOT223 | 22 | BC368 |
| BCP69 | P | 20 | 2000 | 1500 | 100 | ≤ 100 | 35 | 63-400 | 500 | 1 | ≤ 0.50 | 1000 | 100 | SOT223 | 21 | BC369 |
| BCW60 | N | 32 | 200 | 330 | 250 | ≤ 20 | 32 | 120-630* | 2 | 5 | ≤ 0.25 | 10 | 0.25 | SOT23 | 7 | BCX58 |
| BCW61 | P | 32 | 200 | 330 | 170 | ≤ 20 | 32 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 7 | BCX73 |
| BCW66 | N | 45 | 1000 | 330 | 170 | ≤ 20 | 45 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 7 | BCX74 |
| BCW67 | P | 32 | 1000 | 330 | 200 | ≤ 20 | 32 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 8 | BCX75 |
| BCW68 | P | 45 | 1000 | 330 | 200 | ≤ 20 | 45 | 100-630* | 100 | 1 | ≤ 0.70 | 500 | 50 | SOT23 | 8 | BCX76 |
| BCX41 | N | 125 | 1000 | 330 | 100 | ≤ 100 | 100 | ≥ 63 | 100 | 1 | ≤ 0.90 | 300 | 30 | SOT23 | 7 | - |
| BCX42 | P | 125 | 1000 | 330 | 150 | ≤ 100 | 100 | ≥ 63 | 100 | 1 | ≤ 0.90 | 300 | 30 | SOT23 | 8 | - |
| BCX51 | P | 45 | 1500 | 1000 | 125 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT89 | 23 | BC636 |
| BCX52 | P | 60 | 1500 | 1000 | 125 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT89 | 23 | BC638 |
| BCX53 | P | 80 | 1500 | 1000 | 125 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT89 | 23 | BC640 |
| BCX54 | N | 45 | 1500 | 1000 | 100 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT89 | 10 | BC635 |

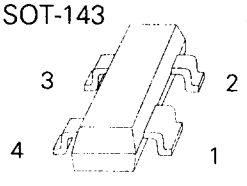
SOT-23



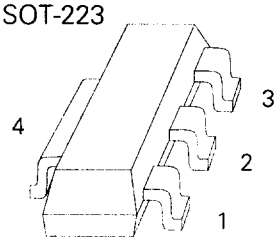

SOT-89



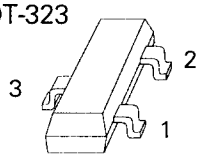

SOT-143




SOT-223




SOT-323



# Transistors

## General Purpose and Switching - continued

For complete package outlines, refer to pages PO-1 through PO-6

| Type | | Maximum Ratings | | | Characteristics ($T_A$=25°C) | | | | | | | | | Case | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N=NPN P=PNP | | $V_{CEO}$ V | $I_C$ mA | $P_t$ mW | $f_T$ MHz | $I_{CBO}$ at $I_{CEX}$ nA | $V_{CBO}$ at $V_{CEX}$ V | $h_{FE}$ at | $I_C$ mA | $V_{CE}$ V | $V_{CE(sat)}$ at $I_C$ V | mA | $I_B$ mA | Style | Lead Code | Leaded. Equiv. |
| BCX55 | N | 60 | 1500 | 1000 | 100 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT89 | 10 | BC637 |
| BCX56 | N | 80 | 1500 | 1000 | 100 | ≤ 100 | 30 | 40-250* | 150 | 2 | ≤ 0.50 | 500 | 50 | SOT89 | 10 | BC639 |
| BCX68 | N | 20 | 2000 | 1000 | 100 | ≤ 100 | 25 | 63-400* | 500 | 1 | ≤ 0.50 | 1000 | 100 | SOT89 | 10 | BC368 |
| BCX69 | P | 20 | 2000 | 1000 | 100 | ≤ 100 | 25 | 63-400* | 500 | 1 | ≤ 0.50 | 1000 | 100 | SOT89 | 23 | BC369 |
| BCX70 | N | 45 | 200 | 330 | 250 | ≤ 20 | 45 | 120-630* | 2 | 5 | ≤ 0.25 | 10 | 0.25 | SOT23 | 7 | BCX59 |
| BCX71 | P | 45 | 200 | 330 | 250 | ≤ 20 | 45 | 120-630* | 2 | 5 | ≤ 0.25 | 10 | 0.25 | SOT23 | 8 | BCX79 |
| BSS63 | P | 100 | 1000 | 330 | 150 | ≤ 100 | 80 | ≥ 30 | 10 | 5 | ≤ 0.25 | 25 | 2.50 | SOT23 | 8 | - |
| BSS64 | N | 80 | 1000 | 330 | 100 | ≤ 100 | 80 | 80 | 10 | 1 | ≤ 0.70 | 4 | 0.40 | SOT23 | 7 | - |
| BSS79 | N | 40 | 1000 | 330 | 250 | ≤ 10 | 60 | 40-300* | 150 | 10 | ≤ 1.30 | 500 | 50 | SOT23 | 7 | - |
| BSS80 | P | 40 | 1000 | 330 | 250 | ≤ 10 | 50 | 40-300* | 150 | 10 | ≤ 1.60 | 500 | 50 | SOT23 | 8 | - |
| BSS81 | N | 35 | 1000 | 330 | 250 | ≤ 10 | 60 | 40-300* | 150 | 10 | ≤ 1.30 | 500 | 50 | SOT23 | 7 | - |
| BSS82 | P | 60 | 1000 | 330 | 250 | ≤ 10 | 50 | 40-300* | 150 | 10 | ≤ 1.60 | 500 | 50 | SOT23 | 8 | - |
| PZT2222 | N | 30 | 600 | 1500 | 200 | ≤ 20 | 50 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT223 | 22 | - |
| PZT2222A | N | 40 | 600 | 1500 | 200 | ≤ 10 | 50 | 100-300 | 150 | 10 | ≤ 0.30 | 150 | 15 | SOT223 | 22 | - |
| PZT2907 | P | 40 | 600 | 1500 | 200 | ≤ 20 | 50 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT223 | 21 | - |
| PZT2907A | P | 60 | 600 | 1500 | 200 | ≤ 10 | 50 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT223 | 21 | - |
| PZT3904 | N | 40 | 200 | 1500 | 300 | ≤ 50 | 30 | 100-300 | 10 | 1 | ≤ 0.30 | 50 | 5 | SOT223 | 22 | - |
| PZT3906 | P | 40 | 200 | 1500 | 250 | ≤ 50 | 30 | 100-300 | 10 | 1 | ≤ 0.40 | 50 | 5 | SOT223 | 21 | - |
| SMBT2222 | N | 30 | 600 | 330 | 250 | ≤ 10 | 50 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT23 | 7 | - |
| SMBT2222A | N | 40 | 600 | 330 | 300 | ≤ 10 | 60 | 100-300 | 150 | 10 | ≤ 0.30 | 150 | 15 | SOT23 | 7 | - |
| SMBT2907 | P | 40 | 600 | 330 | 200 | ≤ 20 | 50 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT23 | 8 | - |
| SMBT2907A | P | 60 | 600 | 330 | 200 | ≤ 10 | 50 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT23 | 8 | - |
| SMBT3904 | N | 40 | 200 | 330 | 300 | ≤ 50 | 30 | 100-300 | 10 | 1 | ≤ 0.30 | 50 | 5 | SOT23 | 7 | - |
| SMBT3906 | P | 40 | 200 | 330 | 250 | ≤ 50 | 30 | 100-300 | 10 | 1 | ≤ 0.40 | 50 | 5 | SOT23 | 8 | - |
| SMBT4124 | N | 25 | 200 | 330 | 300 | ≤ 50 | 20 | 120-360 | 2 | 1 | ≤ 0.30 | 50 | 5 | SOT23 | 7 | - |
| SMBT4126 | P | 25 | 200 | 330 | 250 | ≤ 50 | 20 | 120-360 | 2 | 1 | ≤ 0.40 | 50 | 5 | SOT23 | 8 | - |
| SMBT5086 | P | 50 | 50 | 330 | 40 | ≤ 50 | 35 | ≥ 150 | 10 | 5 | ≤ 0.30 | 10 | 1 | SOT23 | 8 | BC212 |
| SMBT5087 | P | 50 | 50 | 330 | 40 | ≤ 50 | 35 | ≥ 250 | 10 | 5 | ≤ 0.30 | 10 | 1 | SOT23 | 8 | BC212 |
| SMBT6428 | N | 50 | 200 | 330 | 100 | ≤ 10 | 30 | ≥ 250 | 10 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC182 |
| SMBT6429 | N | 45 | 200 | 330 | 100 | ≤ 10 | 30 | ≥ 500 | 10 | 5 | ≤ 0.60 | 100 | 5 | SOT23 | 7 | BC182 |
| SMBTA05 | N | 60 | 500 | 330 | 100 | ≤ 100 | 60 | ≥ 100 | 100 | 1 | ≤ 0.25 | 100 | 10 | SOT23 | 7 | - |
| SMBTA06 | N | 80 | 500 | 330 | 100 | ≤ 100 | 80 | ≥ 100 | 100 | 1 | ≤ 0.25 | 100 | 10 | SOT23 | 7 | - |
| SMBTA20 | N | 40 | 200 | 330 | 125 | ≤ 100 | 30 | 40-400 | 5 | 10 | ≤ 0.25 | 10 | 1 | SOT23 | 7 | - |
| SMBTA55 | P | 60 | 500 | 330 | 100 | ≤ 100 | 60 | ≥ 100 | 100 | 1 | ≤ 0.25 | 100 | 10 | SOT23 | 8 | - |
| SMBTA56 | P | 80 | 500 | 330 | 100 | ≤ 100 | 80 | ≥ 100 | 100 | 1 | ≤ 0.25 | 100 | 10 | SOT23 | 8 | - |
| SMBTA70 | P | 40 | 200 | 330 | 125 | ≤ 100 | 30 | 40-400 | 5 | 10 | ≤ 0.25 | 10 | 1 | SOT23 | 8 | - |
| SXT2222A | N | 40 | 600 | 1000 | 300 | ≤ 10 | 60 | 100-300 | 150 | 10 | ≤ 0.30 | 150 | 15 | SOT89 | 10 | - |
| SXT2907A | P | 60 | 600 | 1000 | 200 | ≤ 10 | 60 | 100-300 | 150 | 10 | ≤ 0.40 | 150 | 15 | SOT89 | 23 | - |
| SXT3904 | N | 40 | 200 | 1000 | 300 | ≤ 50 | 30 | 100-300 | 10 | 1 | ≤ 0.30 | 50 | 5 | SOT89 | 10 | - |
| SXT3906 | P | 40 | 200 | 1000 | 250 | ≤ 50 | 30 | 100-300 | 10 | 1 | ≤ 0.40 | 50 | 5 | SOT89 | 23 | - |

***Available in $h_{FE}$ sub groups. See foldout for description.**

## Current-Mirror Transistors

| Type | | Maximum Ratings | | | Characteristics ($T_A$=25°C) | | | | | | | | | Case | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N=NPN P=PNP | | $V_{CEO}$ V | $I_C$ mA | $P_t$ mW | $f_T$ MHz | $I_{CBO}$ at $I_{CEX}$ nA | $V_{CBO}$ at $V_{CEX}$ V | $h_{FE}$ at | $I_C$ mA | $V_{CE}$ V | $V_{CE(sat)}$ at $I_C$ V | mA | $I_B$ mA | Style | Lead Code | Leaded. Equiv. |
| BCV61 | N | 30 | 200 | 300 | 250 | ≤ 15 | 30 | 110-800* | 2 | 5 | ≤ 0.60 | 100 | 5 | SOT143 | 24 | - |
| BCV62 | P | 30 | 200 | 300 | 250 | ≤ 15 | 30 | 125-800* | 2 | 5 | ≤ 0.65 | 100 | 5 | SOT143 | 25 | - |