

# MAXIMUM RATINGS

| Rating                         | Symbol    | Value | Unit |
|--------------------------------|-----------|-------|------|
| Collector-Emitter Voltage      | $V_{CEO}$ | 40    | Vdc  |
| Collector-Base Voltage         | $V_{CBO}$ | 60    | Vdc  |
| Emitter-Base Voltage           | $V_{EBO}$ | 5.0   | Vdc  |
| Collector Current — Continuous | $I_C$     | 800   | mA   |

# THERMAL CHARACTERISTICS

| Characteristic                                                                                               | Symbol          | Max         | Unit                 |
|--------------------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------|
| Total Device Dissipation FR-5 Board,*<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$         | $P_D$           | 225         | mW                   |
|                                                                                                              |                 | 1.8         | mW/ $^\circ\text{C}$ |
| Thermal Resistance Junction to Ambient                                                                       | $R_{\theta JA}$ | 556         | $^\circ\text{C/W}$   |
| Total Device Dissipation<br>Alumina Substrate,** $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 300         | mW                   |
|                                                                                                              |                 | 2.4         | mW/ $^\circ\text{C}$ |
| Thermal Resistance Junction to Ambient                                                                       | $R_{\theta JA}$ | 417         | $^\circ\text{C/W}$   |
| Junction and Storage Temperature                                                                             | $T_J, T_{stg}$  | -55 to +150 | $^\circ\text{C}$     |

\*FR-5 = 1.0 x 0.75 x 0.062 in.

\*\*Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

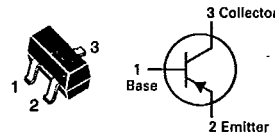
# DEVICE MARKING

BSS80BL = CH; BSS80CL = CJ

6367254 0085943 2  
MOTOROLA SC XSTRS/R F

# BSS80BL, CL

CASE 318-03, STYLE 6  
SOT-23 (TO-236AB)



GENERAL PURPOSE  
TRANSISTORS  
PNP SILICON

# ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted.)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

# OFF CHARACTERISTICS

|                                                                                                                   |               |     |          |                     |
|-------------------------------------------------------------------------------------------------------------------|---------------|-----|----------|---------------------|
| Collector-Emitter Breakdown Voltage<br>( $I_C = 10\text{ mA}$ )                                                   | $V_{(BR)CEO}$ | 40  | —        | Vdc                 |
| Collector-Base Breakdown Voltage<br>( $I_C = 10\text{ }\mu\text{A}$ )                                             | $V_{(BR)CBO}$ | 60  | —        | Vdc                 |
| Emitter-Base Breakdown Voltage<br>( $I_E = 10\text{ }\mu\text{A}$ )                                               | $V_{(BR)EBO}$ | 5.0 | —        | Vdc                 |
| Collector Cutoff Current<br>( $V_{CB} = 50\text{ Vdc}$ )<br>( $V_{CB} = 50\text{ Vdc}, T_A = 150^\circ\text{C}$ ) | $I_{CBO}$     | —   | 10<br>10 | nA<br>$\mu\text{A}$ |
| Emitter Cutoff Current<br>( $V_{BE} = 3.0\text{ Vdc}$ )                                                           | $I_{EBO}$     | —   | 10       | nA                  |

# ON CHARACTERISTICS

|                                                                                                                                        |                    |               |           |            |        |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|-----------|------------|--------|
| DC Current Gain<br>( $I_C = 150\text{ mA}, V_{CE} = 10\text{ Vdc}$ )                                                                   | BSS80BL<br>BSS80CL | $h_{FE}$      | 40<br>100 | 120<br>300 | —<br>— |
| Collector-Emitter Saturation Voltage<br>( $I_C = 150\text{ mA}, I_B = 15\text{ mA}$ )<br>( $I_C = 500\text{ mA}, I_B = 50\text{ mA}$ ) |                    | $V_{CE(sat)}$ | —<br>—    | 0.4<br>1.6 | Vdc    |

# SMALL-SIGNAL CHARACTERISTICS

|                                                                                                          |           |     |     |     |
|----------------------------------------------------------------------------------------------------------|-----------|-----|-----|-----|
| Current-Gain — Bandwidth Product<br>( $I_C = 50\text{ mA}, V_{CE} = 20\text{ Vdc}, f = 100\text{ MHz}$ ) | $f_T$     | 200 | —   | MHz |
| Output Capacitance<br>( $V_{CB} = 10\text{ Vdc}, f = 1.0\text{ MHz}$ )                                   | $C_{obo}$ | —   | 8.0 | pF  |

# SWITCHING CHARACTERISTICS

|                                                                                                             |       |   |    |    |
|-------------------------------------------------------------------------------------------------------------|-------|---|----|----|
| Delay Time<br>( $I_{B1} \approx I_{B2} \approx 15\text{ mA}, V_{CC} = 30\text{ V}, I_C = 150\text{ mA}$ )   | $t_d$ | — | 10 | ns |
| Rise Time                                                                                                   | $t_r$ | — | 40 | ns |
| Storage Time<br>( $I_{B1} \approx I_{B2} \approx 15\text{ mA}, V_{CC} = 30\text{ V}, I_C = 150\text{ mA}$ ) | $t_s$ | — | 80 | ns |
| Fall Time                                                                                                   | $t_f$ | — | 30 | ns |

(1) Pulse Test: Pulse Width  $\leq 300\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .