

**BC160****BC161**

PNP SILICON AF MEDIUM POWER AMPLIFIERS &amp; SWITCHES

THE BC160, BC161 ARE PNP SILICON PLANAR EPITAXIAL TRANSISTORS RECOMMENDED FOR AF DRIVERS AND OUTPUTS, AS WELL AS FOR SWITCHING APPLICATIONS UP TO 1 AMPERE. THE BC160, BC161 ARE COMPLEMENTARY TO THE NPN TYPE BC140, BC141 RESPECTIVELY.

CASE T0-39



C E B

ABSOLUTE MAXIMUM RATINGS

Collector-Emitter Voltage ( $V_{BE}=0$ )  
 Collector-Emitter Voltage ( $I_B=0$ )  
 Emitter-Base Voltage  
 Collector Current  
 Total Power Dissipation (@  $T_C \leq 45^\circ\text{C}$ )  
 (@  $T_A \leq 45^\circ\text{C}$ )  
 Operating Junction & Storage Temperature

$-V_{CES}$   
 $-V_{CEO}$   
 $-V_{EBO}$   
 $-I_C$   
 $P_{tot}$

| BC160 | BC161        |
|-------|--------------|
| 40V   | 60V          |
| 40V   | 60V          |
| 5V    | 5V           |
|       | 1A           |
|       | 3.7W         |
|       | 650mW        |
|       | -55 to 175°C |

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

| PARAMETER                            | SYMBOL                        | BC160 |      |     | BC161 |      |     | UNIT          | TEST CONDITIONS                                    |
|--------------------------------------|-------------------------------|-------|------|-----|-------|------|-----|---------------|--|
|                                      |                               | MIN   | TYP  | MAX | MIN   | TYP  | MAX |               |  |
| Collector-Emitter Breakdown Voltage  | $-BV_{CES}$                   | 40    |      |     | 60    |      |     | V             | $-I_C=0.1\text{mA}$ $V_{BE}=0$                     |
| Collector-Emitter Breakdown Voltage  | $-LV_{CEO} *$                 | 40    |      |     | 60    |      |     | V             | $-I_C=50\text{mA}$ $I_B=0$                         |
| Emitter-Base Breakdown Voltage       | $-BV_{EBO}$                   | 5     |      |     | 5     |      |     | V             | $-I_E=0.1\text{mA}$ $I_C=0$                        |
| Collector Cutoff Current             | $-I_{CES}$                    |       | 100  |     |       | 100  |     | nA            | $V_{CE}=V_{CES}$                                   |
|                                      |                               |       | 100  |     |       | 100  |     | $\mu\text{A}$ | $V_{CE}=V_{CES}$ $T_A=150^\circ\text{C}$           |
| Collector-Emitter Saturation Voltage | $-V_{CE}(\text{sat}) *$       |       | 1    |     |       | 1    |     | V             | $-I_C=1\text{A}$ $-I_B=0.1\text{A}$                |
| Base-Emitter Voltage                 | $-V_{BE} *$                   |       | 1.7  |     |       | 1.7  |     | V             | $-I_C=1\text{A}$ $-V_{CE}=1\text{V}$               |
| D.C. Current Gain                    | $H_{FE} *$                    | 40    | 250  |     | 40    | 250  |     |               | $-I_C=100\text{mA}$ $-V_{CE}=1\text{V}$            |
|                                      |                               | 40    | 100  |     | 40    | 100  |     |               |  |
|                                      |                               | 63    | 160  |     | 63    | 160  |     |               |  |
|                                      |                               | 100   | 250  |     | 100   | 250  |     |               |  |
| HFE Matched Pair Ratio               | $\frac{H_{FE} 1}{H_{FE} 2} *$ |       | 1.41 |     |       | 1.41 |     |               | $-I_C=100\text{mA}$ $-V_{CE}=1\text{V}$            |
|                                      |                               |       |      |     |       |      |     |               |  |
| Current Gain-Bandwidth Product       | $f_T$                         | 50    | 140  |     | 50    | 140  |     | MHz           | $-I_C=50\text{mA}$ $-V_{CE}=10\text{V}$            |
| Collector-Base Capacitance           | $C_{ob}$                      |       | 18   | 30  |       | 18   | 30  | pF            | $-V_{CB}=10\text{V}$ $I_E=0$<br>$f=1\text{MHz}$    |
| Emitter-Base Capacitance             | $C_{ib}$                      |       | 180  |     |       | 180  |     | pF            | $-V_{EB}=0.5\text{V}$ $I_C=0$<br>$f=1\text{MHz}$   |
| Turn-On Time                         | $t_{on}$                      |       | 500  |     |       | 500  |     | nS            | $-I_C=100\text{mA}$ $-I_B=5\text{mA}$              |
| Turn-Off Time                        | $t_{off}$                     |       | 650  |     |       | 650  |     | nS            | $-I_C=100\text{mA}$<br>$-I_{B1}=I_{B2}=5\text{mA}$ |

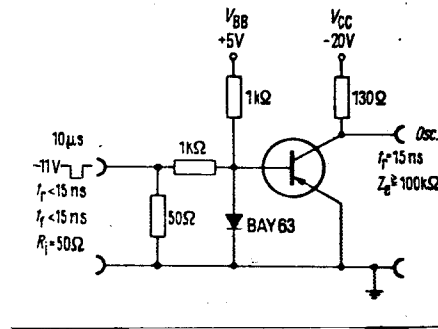
\* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%

**MICRO ELECTRONICS LTD.**

38 HUNG TO ROAD, KWUN TONG, HONG KONG. TELEX 43510  
 KWUN TONG P. O. BOX 69477 CABLE ADDRESS "MICROTRON"  
 TELEPHONE:- 3-430181-6 3-893369, 3-892429  
 FAX: 3-410321

BC160 . BC161

SWITCHING TIME TEST CIRCUIT ( $t_{on}$ ,  $t_{off}$ )



TYPICAL CHARACTERISTICS

