multicomp



SPC-F005.DWG

REVISIONS

DOC. NO. SPC-F005 * Effective: 7/8/02 * DCP No: 1398

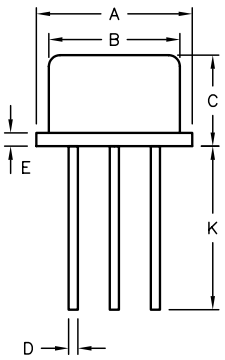
| DCP # | REV | DESCRIPTION | DRAWN | DATE | CHECKD | DATE | APPRVD | DATE |
|---|---|---|---|---|---|---|---|---|
| 1885 | A | RELEASED | BYF | 02/03/06 | HO | 2/6/06 | JWM | 2/6/06 |

RoHS Compliant

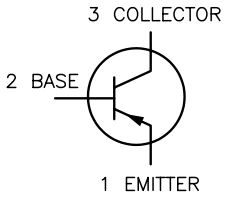
**Description**:
A silicon PNP transistor in a TO-39 type case designed primarily for amplifier and switching applications. This device features high breakdown voltage, low leakage current, low capacity, and beta useful over an extremely wide current range.

**Absolute Maximum Ratings**:
- Collector-Base Voltage, $V_{CBO}$ = 80V
- Collector-Emitter Voltage, $V_{CEO}$ = 80V
- Emitter-Base Voltage, $V_{EBO}$ = 5V
- Continuous Collector Current, $I_C$ = 1A
- Total Device Dissipation ($T_A$ = +25°C), $P_D$ = 0.8W
  Derate above 25°C = 4.56mW/°C
- Total Device Dissipation ($T_C$ = +25°C), $P_D$ = 4W
  Derate above 25°C = 22.8mW/°C
- Operating Junction Temperature Range, $T_J$= -65°C to +200°C
- Storage Temperature Range, $T_{stg}$ = -65°C to +200°C
- Thermal Resistance, Junction-to-Case, $R_{thJC}$ = 20°C/W
- Thermal Resistance, Junction-to-Ambient, $R_{thJA}$ = 140°C/W
- Lead Temperature(During Soldering 1/16"from case, 60sec max),$T_L$ = 300°C

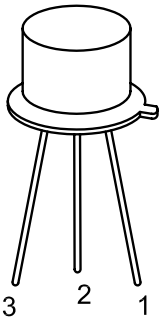
| Dim | Min | Max |
|---|---|---|
| A | 8.50 | 9.39 |
| B | 7.74 | 8.50 |
| C | 6.09 | 6.60 |
| D | 0.40 | 0.53 |
| E | – | 0.88 |
| F | 2.41 | 2.66 |
| G | 4.82 | 5.33 |
| H | 0.71 | 0.86 |
| J | 0.73 | 1.02 |
| K | 12.70 | – |
| L | 42° | 48° |

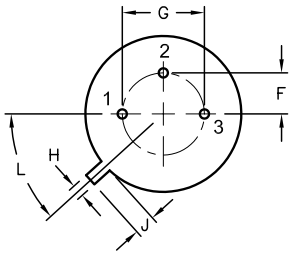



**PNP**




STYLE 1
PIN 1. EMITTER
2. BASE
3. COLLECTOR




DISCLAIMER:
ALL STATEMENTS AND TECHNICAL INFORMATION CONTAINED HEREIN ARE BASED UPON INFORMATION AND/OR TESTS WE BELIEVE TO BE ACCURATE AND RELIABLE. SINCE CONDITIONS OF USE ARE BEYOND OUR CONTROL, THE USER SHALL DETERMINE THE SUITABILITY OF THE PRODUCT FOR THE INTENDED USE AND ASSUME ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH.

TOLERANCES:
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.

| | |
|---|---|
| DRAWN BY: | DATE: |
| BASAM YOUSIF | 02/03/06 |
| CHECKED BY: | DATE: |
| HISHAM ODISH | 2/6/06 |
| APPROVED BY: | DATE: |
| JEEF MCVICKER | 2/6/06 |

DRAWING TITLE: Power Transistor, Silicon, TO-39, PNP

| SIZE | DWG. NO. | ELECTRONIC FILE | REV |
|---|---|---|---|
| A | 2N4033 | 35C0710.DWG | A |

SCALE: NTS | U.O.M.: MILLIMETERS | SHEET: 1 OF 2

**Electrical Characteristics:** ($T_A$ = +25°C unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Max | Unit |
|---|---|---|---|---|---|
| **OFF Characteristics** | | | | | |
| Collector−Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$ = 10mA, $I_B$ = 0 | 80 | – | V |
| Collector−Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$ = 10μA, $I_E$ = 0 | 80 | – | V |
| Emitter−Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 10μA, $I_C$ = 0 | 5 | – | V |
| Collector Cut−Off Current | $I_{CBO}$ | $V_{CB}$ = 60V, $I_E$ = 0 | – | 50 | nA |
| | | $V_{CB}$ = 60V, $I_E$ = 0, $T_A$ = +150°C | – | 50 | μA |
| Emitter Cut−Off Current | $I_{EBO}$ | $V_{BE}$ = 5V, $I_C$ = 0 | – | 10 | μA |
| **ON Characteristics** | | | | | |
| DC Current Gain | $h_{FE}$ | $V_{CE}$ = 5V, $I_C$ = 100μA | 75 | – | – |
| | | $V_{CE}$ = 5V, $I_C$ = 100mA | 100 | 300 | – |
| | | $V_{CE}$ = 5V, $I_C$ = 100mA, $T_A$ = −55°C | 40 | – | – |
| | | $V_{CE}$ = 5V, $I_C$ = 500mA | 70 | – | – |
| | | $V_{CE}$ = 5V, $I_C$ = 1A | 25 | – | – |
| Collector−Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$ = 150mA, $I_B$ = 15mA | – | 0.15 | V |
| | | $I_C$ = 500mA, $I_B$ = 50mA | – | 0.5 | V |
| Base−Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C$ = 150mA, $I_B$ = 15mA | – | 0.9 | V |
| Base−Emitter ON Voltage | $V_{BE(on)}$ | $V_{CE}$ = 500mV, $I_C$ = 500mA | – | 1.1 | V |
| **Small-Signal Characteristics** | | | | | |
| Output Capacitance | $C_{obo}$ | $V_{CE}$ = 10V, f = 1MHz | – | 20 | pF |
| Input Capacitance | $C_{ibo}$ | $V_{EB}$ = 500mV, f = 1MHz | – | 110 | pF |
| Small−Signal Current Gain | $h_{fe}$ | $V_{CE}$ = 10V, $I_C$ = 50mA, f = 100MHz | 1 | 4 | – |
| **Switching Characteristics** | | | | | |
| Storage Time | $t_s$ | $I_C$ = 500mA, $I_{B1}$ = $I_{B2}$ = 50mA | – | 350 | ns |
| Turn−On Time | $t_{on}$ | $I_C$ = 500mA, $I_{B1}$ = 50mA | – | 100 | ns |
| Fall Time | $t_f$ | $I_C$ = 500mA, $I_{B1}$ = $I_{B2}$ = 50mA | – | 50 | ns |