

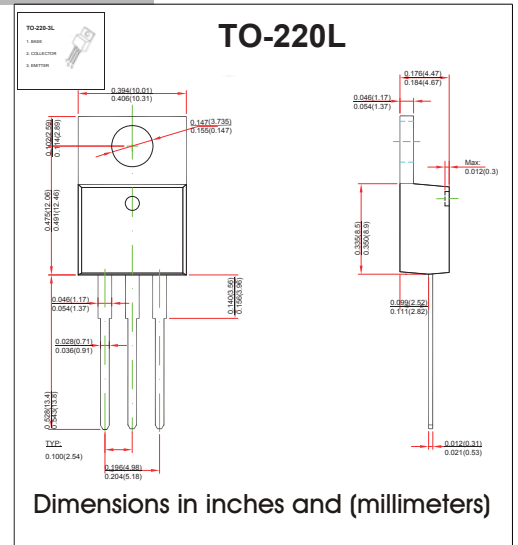
## TO-220L Plastic-Encapsulate Transistors

### FEATURES

- High Current Switching Applications
- Low Collector Saturation Voltage
- High Speed Switching Time
- TRANSISTOR (PNP)

### MECHANICAL DATA

- Case style: TO-220L molded plastic
- Mounting position: any



### MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

| Symbol          | Parameter                              | Value    | Unit |
|-----------------|--|----------|------|
| $V_{CB0}$       | Collector-Base Voltage                 | -60      | V    |
| $V_{CE0}$       | Collector-Emitter Voltage              | -50      | V    |
| $V_{EB0}$       | Emitter-Base Voltage                   | -5       | V    |
| $I_C$           | Collector Current -Continuous          | -5       | A    |
| $P_C$           | Collector Power Dissipation            | 2        | W    |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | 62.5     | °C/W |
| $T_j$           | Junction Temperature                   | 150      | °C   |
| $T_{stg}$       | Storage Temperature Range              | -55~+150 | °C   |

#### PACKAGE INFORMATION

| Device  | Package | Shipping     |
|---------|---------|--------------|
| 2SA1012 | TO-220L | 50/Tape&Reel |

| Parameter                            | Symbol          | Test conditions                                       | Min | Typ | Max  | Unit    |
|--------------------------------------|-----------------|---|-----|-----|------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$   | $I_C = -0.1mA, I_E = 0$                               | -60 |     |      | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}^*$ | $I_C = -10mA, I_B = 0$                                | -50 |     |      | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$   | $I_E = -100\mu A, I_C = 0$                            | -5  |     |      | V       |
| Collector cut-off current            | $I_{CBO}$       | $V_{CB} = -50V, I_E = 0$                              |     |     | -1   | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$       | $V_{EB} = -5V, I_C = 0$                               |     |     | -1   | $\mu A$ |
| DC current gain                      | $h_{FE(1)}$     | $V_{CE} = -1V, I_C = -1A$                             | 70  |     | 240  |         |
|                                      | $h_{FE(2)}^*$   | $V_{CE} = -1V, I_C = -3A$                             | 30  |     |      |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}^*$ | $I_C = -3A, I_B = -150mA$                             |     |     | -0.4 | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}^*$ | $I_C = -3A, I_B = -150mA$                             |     |     | -1.2 | V       |
| Transition frequency                 | $f_T$           | $V_{CE} = -4V, I_C = -1A$                             |     | 60  |      | MHz     |
| Collector output capacitance         | $C_{ob}$        | $V_{CB} = -10V, I_E = 0, f = 1MHz$                    |     | 170 |      | pF      |
| Turn-on Time                         | $t_{on}$        | $V_{CC} = -30V, I_C = -3A, I_{B1} = -I_{B2} = -0.15A$ |     | 0.1 |      | $\mu s$ |
| Storage Time                         | $t_s$           |   | 1.0 |     |      |         |
| Fall Time                            | $t_f$           |   | 0.1 |     |      |         |

\*Pulse test:  $t_p \leq 300\mu s, \delta \leq 0.02$ .

#### CLASSIFICATION of $h_{FE(1)}$

| Rank  | O      | Y       |
|-------|--------|---------|
| Range | 70-140 | 120-240 |