

### / Descriptions

TO-92                      NPN                      Silicon NPN transistor in a TO-92 Plastic Package.

### / Features

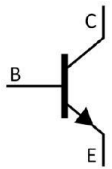
2SA1980

Low  $V_{CE(sat)}$ , low output capacitance, complementary pair with 2SA1980.

### / Applications

General small signal amplifier applications.

### / Equivalent Circuit



### / Pinning



PIN1    Base                      PIN 2    Collector                      PIN 3    Emitter

### / $h_{FE}$ Classifications & Marking

| $h_{FE}$ Classifications<br>Symbol | R      | Y       | G       | L       |
|------------------------------------|--------|---------|---------|---------|
| $h_{FE}$ Range                     | 70~140 | 120~240 | 200~400 | 300~700 |

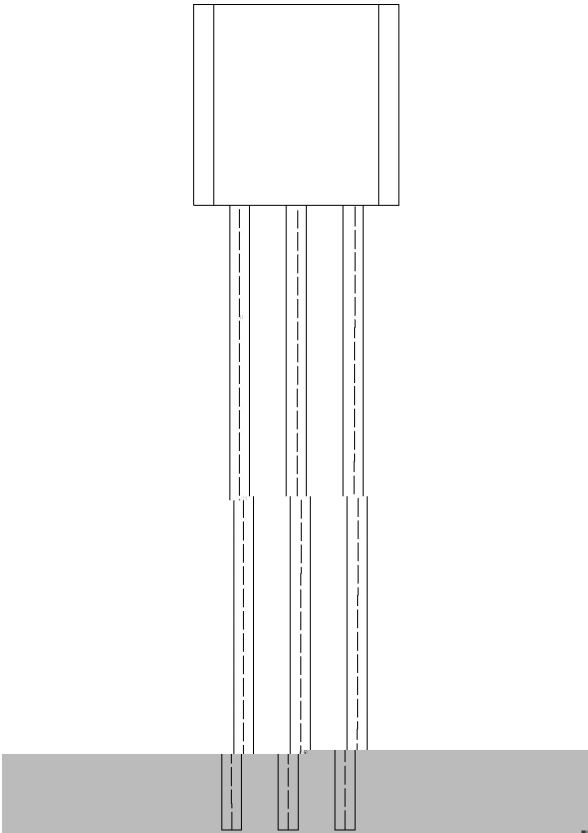
| Parameter                      | Symbol    | Rating  | Unit |
|--------------------------------|-----------|---------|------|
| Collector to Base Voltage      | $V_{CBO}$ | 60      | V    |
| Collector to Emitter Voltage   | $V_{CEO}$ | 50      | V    |
| Emitter to Base Voltage        | $V_{EBO}$ | 5.0     | V    |
| Collector Current - Continuous | $I_C$     | 150     | mA   |
| Collector Power Dissipation    | $P_C$     | 625     | mW   |
| Junction Temperature           | $T_j$     | 150     |      |
| Storage Temperature Range      | $T_{stg}$ | -55 150 |      |

| Parameter                               | Symbol        | Test Conditions                    | Min | Typ | Max  | Unit    |
|-----------------------------------------|---------------|------------------------------------|-----|-----|------|---------|
| Collector to Base Breakdown Voltage     | $V_{CBO}$     | $I_C=100\mu A$ $I_E=0$             | 60  |     |      | V       |
| Collector to Emitter Breakdown Voltage  | $V_{CEO}$     | $I_C=10mA$ $I_B=0$                 | 50  |     |      | V       |
| Emitter to Base Breakdown Voltage       | $V_{EBO}$     | $I_E=10\mu A$ $I_C=0$              | 5.0 |     |      | V       |
| Collector Cut-Off Current               | $I_{CBO}$     | $V_{CB}=60V$ $I_E=0$               |     |     | 0.1  | $\mu A$ |
| Emitter Cut-Off Current                 | $I_{EBO}$     | $V_{EB}=5.0V$ $I_C=0$              |     |     | 0.1  | $\mu A$ |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=6.0V$ $I_C=2.0mA$          | 70  |     | 700  |         |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=100mA$ $I_B=10mA$             |     |     | 0.25 | V       |
| Transition Frequency                    | $f_T$         | $V_{CE}=10V$ $I_C=1.0mA$           | 80  |     |      | MHz     |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=10V$ $I_E=0$<br>$f=1.0MHz$ |     | 2.0 | 3.5  | pF      |

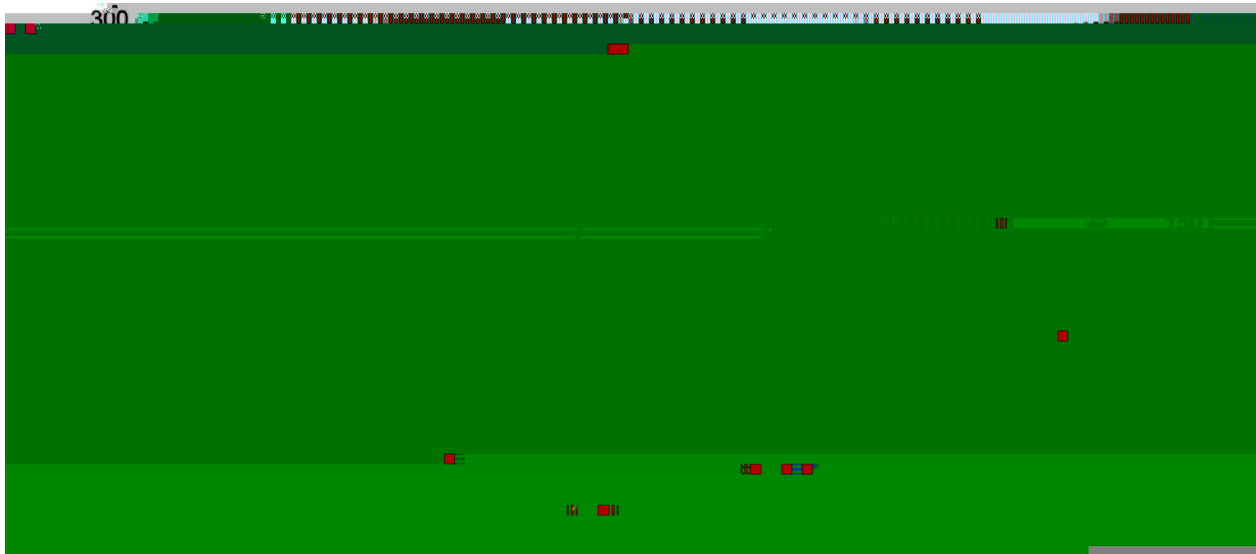
Nois 24.18 re35gure 10(E(NET55.6208001 r0 Tc(V)Tj7)TjETBT0 7.02 273.84 279.9203 )5.-0.0042 Tc(CE)Tj10.5 0 0

/ **Electrical Characteristic Curve**





( ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- |   |       |     |           |                                         |                                      |
|---|-------|-----|-----------|-----------------------------------------|--------------------------------------|
| 1 | 25    | 150 | 60        | 90sec;                                  | 1.Preheating:25~150 , Time:60~90sec. |
| 2 | 255±5 |     | 5±0.5sec; | 2.Peak Temp.:255±5 , Duration:5±0.5sec. |                                      |
| 3 |       | 2   | 10        | /sec.                                   | 3. Cooling Speed: 2~10 /sec.         |

/ Resistance to Soldering Heat Test Conditions

270±5      10±1 sec.      Temp:270±5      Time:10±1 sec

/ Packaging SPEC.

/ BULK

| Package Type | Units |  |  |  |  | Dimension |  | (unit mm3) |
|--------------|-------|--|--|--|--|-----------|--|------------|
|              |       |  |  |  |  |           |  |            |
|              |       |  |  |  |  |           |  |            |
|              |       |  |  |  |  |           |  |            |

/ AMMO

| Package Type | Units |  |  |  |  | Dimension |  | (unit mm3) |
|--------------|-------|--|--|--|--|-----------|--|------------|
|              |       |  |  |  |  |           |  |            |
|              |       |  |  |  |  |           |  |            |
|              |       |  |  |  |  |           |  |            |

/ Notices