



## TO-92L Plastic-Encapsulate Transistors

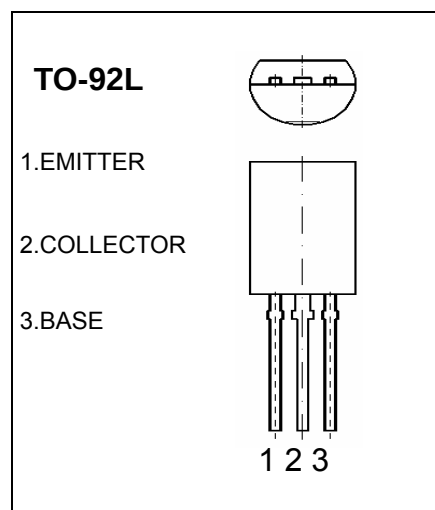
### KSC2331 TRANSISTOR (NPN)

#### FEATURE

- Complement to KSA931
- High collector-Base Voltage:  $V_{CBO}=80V$
- Collector current:  $I_C=700mA$
- Collector dissipation:  $P_C=1W$

#### MAXIMUM RATINGS ( $T_A=25^{\circ}C$ unless otherwise noted)

| Symbol    | Parameter                     | Value   | Units       |
|-----------|-------------------------------|---------|-------------|
| $V_{CBO}$ | Collector-Base Voltage        | 80      | V           |
| $V_{CEO}$ | Collector-Emitter Voltage     | 60      | V           |
| $V_{EBO}$ | Emitter-Base Voltage          | 8       | V           |
| $I_C$     | Collector Current -Continuous | 700     | mA          |
| $P_C$     | Collector Power Dissipation   | 1       | W           |
| $T_J$     | Junction Temperature          | 150     | $^{\circ}C$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^{\circ}C$ |



#### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}C$ unless otherwise specified)

| Parameter                            | Symbol        | Test conditions             | MIN | TYP | MAX | UNIT    |
|--------------------------------------|---------------|-----------------------------|-----|-----|-----|---------|
| Collector-base breakdown voltage     | $V(BR)_{CBO}$ | $I_C=100\mu A, I_E=0$       | 80  |     |     | V       |
| Collector-emitter breakdown voltage  | $V(BR)_{CEO}$ | $I_C=10mA, I_B=0$           | 60  |     |     | V       |
| Emitter-base breakdown voltage       | $V(BR)_{EBO}$ | $I_E=10\mu A, I_C=0$        | 8   |     |     | V       |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=60V, I_E=0$         |     |     | 0.1 | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=5V, I_C=0$          |     |     | 0.1 | $\mu A$ |
| DC current gain                      | $h_{FE}$      | $V_{CE}=2V, I_C=50mA$       | 40  |     | 240 |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=500mA, I_B=50mA$       |     |     | 0.7 | V       |
| Base-emitter voltage                 | $V_{BE(sat)}$ | $I_C=500mA, I_B=50mA$       |     |     | 1.2 | V       |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10V, I_E=0, f=1MHz$ |     | 8   |     | pF      |
| Transition frequency                 | $f_T$         | $V_{CE}=10V, I_C=50mA$      | 30  |     |     | MHz     |

#### CLASSIFICATION OF $h_{FE}$

| Rank  | R     | O      | Y       |
|-------|-------|--------|---------|
| Range | 40-80 | 70-140 | 120-240 |

## Typical Characteristics

**KSC2331**

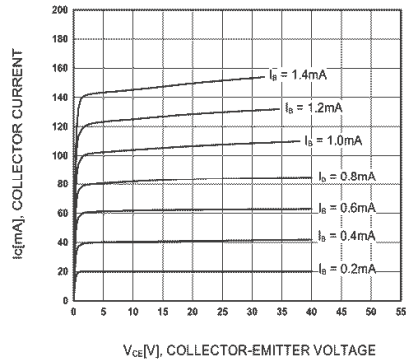


Figure 1. Static Characteristic

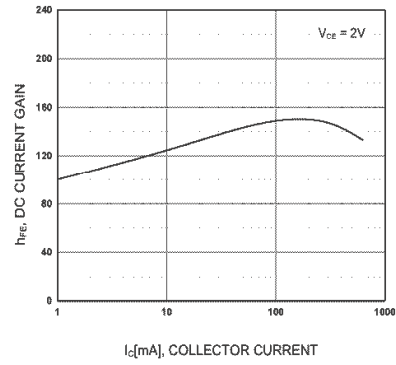


Figure 2. DC current Gain

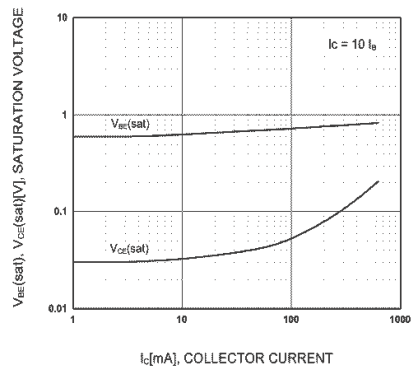


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

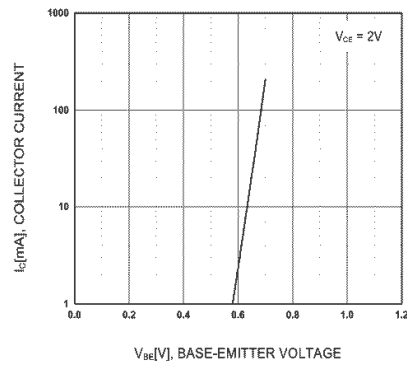


Figure 4. Base-Emitter On Voltage

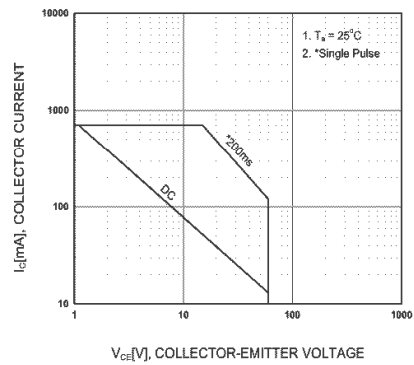


Figure 5. Safe Operating Area

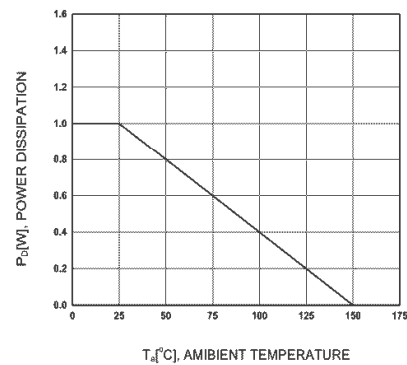


Figure 6. Power Derating