



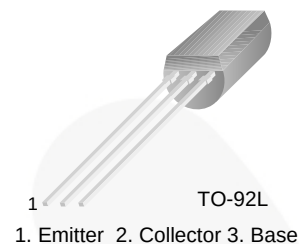
October 2014

## KSA1013

### PNP Epitaxial Silicon Transistor

#### Features

- Color TV Audio Output
- Color TV Vertical Deflection Output



#### Ordering Information

| Part Number | Top Mark | Package  | Packing Method |
|-------------|----------|----------|----------------|
| KSA1013YBU  | A1013    | TO-92 3L | Bulk           |
| KSA1013OBU  |          |          | Ammo           |
| KSA1013YTA  |          |          |                |
| KSA1013OTA  |          |          |                |

#### Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol    | Parameter                 | Value       | Unit             |
|-----------|---------------------------|-------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage    | -160        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage | -160        | V                |
| $V_{EBO}$ | Emitter-Base Voltage      | -6          | V                |
| $I_C$     | Collector Current         | -1          | A                |
| $I_B$     | Base Current              | -0.5        | A                |
| $T_J$     | Junction Temperature      | 150         | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature       | -55 to +150 | $^\circ\text{C}$ |

**Thermal Characteristics<sup>(1)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol          | Parameter                               | Value | Unit                 |
|-----------------|-----------------------------------------|-------|----------------------|
| $P_D$           | Power Dissipation                       | 900   | mW                   |
|                 | Derate Above $T_A = 25^\circ\text{C}$   | 7.2   | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 139   | $^\circ\text{C/W}$   |

**Note:**

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

**Electrical Characteristics**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Symbol        | Parameter                            | Conditions                                              | Min.  | Typ. | Max.  | Unit          |
|---------------|--------------------------------------|---------------------------------------------------------|-------|------|-------|---------------|
| $I_{CBO}$     | Collector Cut-Off Current            | $V_{CB} = -150\text{ V}, I_E = 0$                       |       |      | -1    | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cut-Off Current              | $V_{EB} = -6\text{ V}, I_C = 0$                         |       |      | -1    | $\mu\text{A}$ |
| $BV_{CEO}$    | Collector-Emitter Breakdown Voltage  | $I_C = -10\text{ mA}, I_B = 0$                          | -160  |      |       | V             |
| $h_{FE}$      | DC Current Gain                      | $V_{CE} = -5\text{ V}, I_C = -200\text{ mA}$            | 60    |      | 320   |               |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$             |       |      | -1.5  | V             |
| $V_{BE(on)}$  | Base-Emitter On Voltage              | $V_{CE} = -5\text{ V}, I_C = -5\text{ mA}$              | -0.45 |      | -0.75 | V             |
| $f_T$         | Current Gain Bandwidth Product       | $V_{CE} = -5\text{ V}, I_C = -200\text{ mA}$            | 15    | 50   |       | MHz           |
| $C_{ob}$      | Output Capacitance                   | $V_{CB} = -10\text{ V}, I_E = 0,$<br>$f = 1\text{ MHz}$ |       |      | 35    | pF            |

 **$h_{FE}$  Classification**

| Classification | R        | O         | Y         |
|----------------|----------|-----------|-----------|
| $h_{FE}$       | 60 ~ 120 | 100 ~ 200 | 160 ~ 320 |

## Typical Performance Characteristics

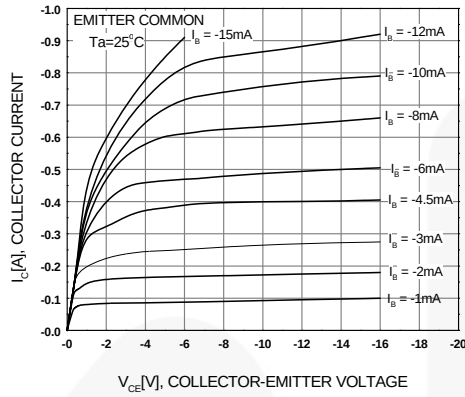


Figure 1. Static Characteristic

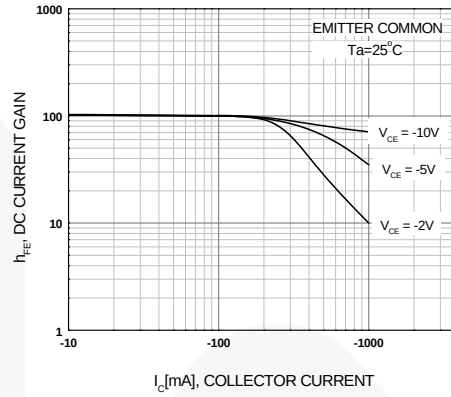


Figure 2. DC Current Gain

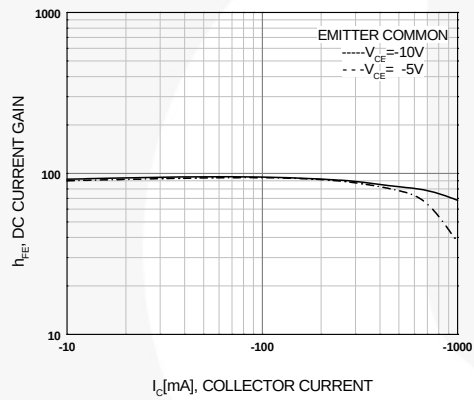


Figure 3. DC Current Gain

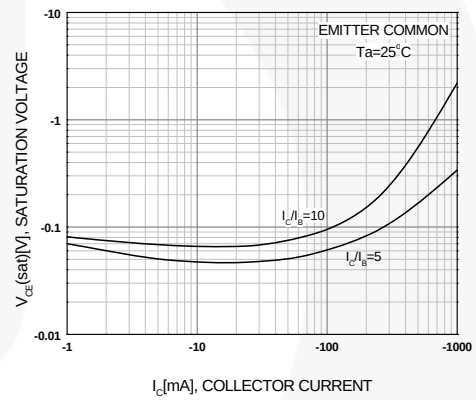


Figure 4. Collector-Emitter Saturation Voltage

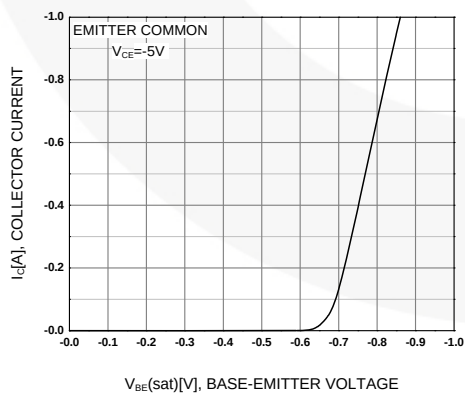


Figure 5. Base-Emitter On Voltage

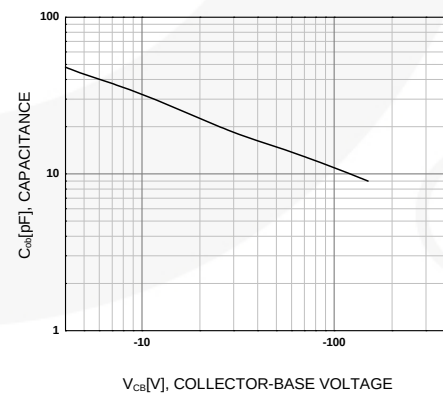


Figure 6. Collector Output Capacitance

# Typical Performance Characteristics (Continued)

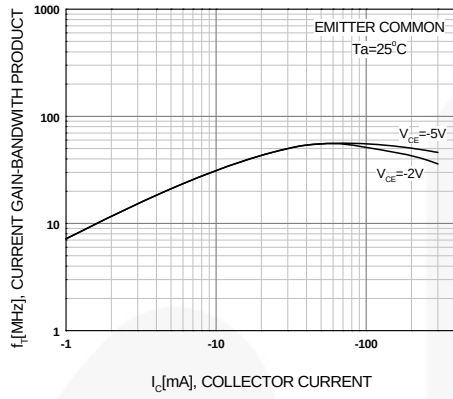


Figure7. Current Gain Bandwidth Product

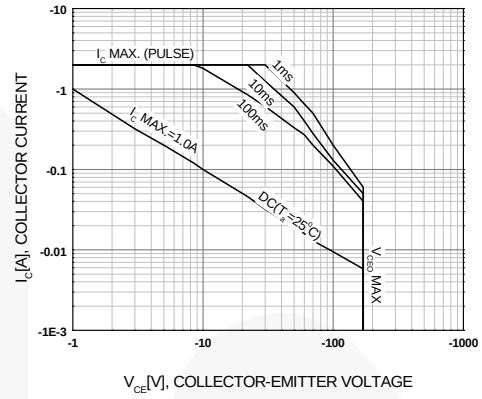
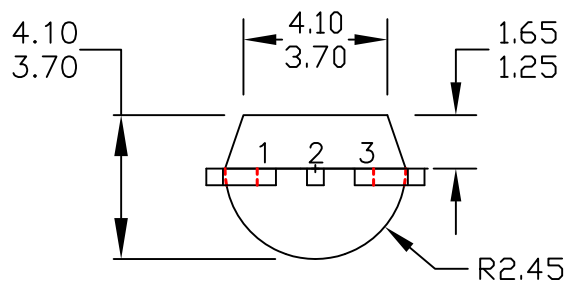
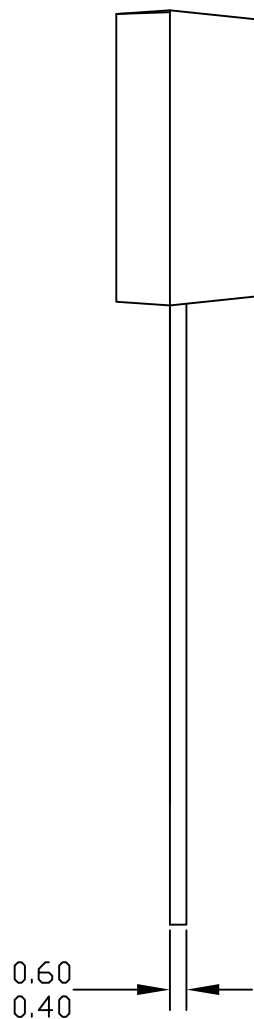
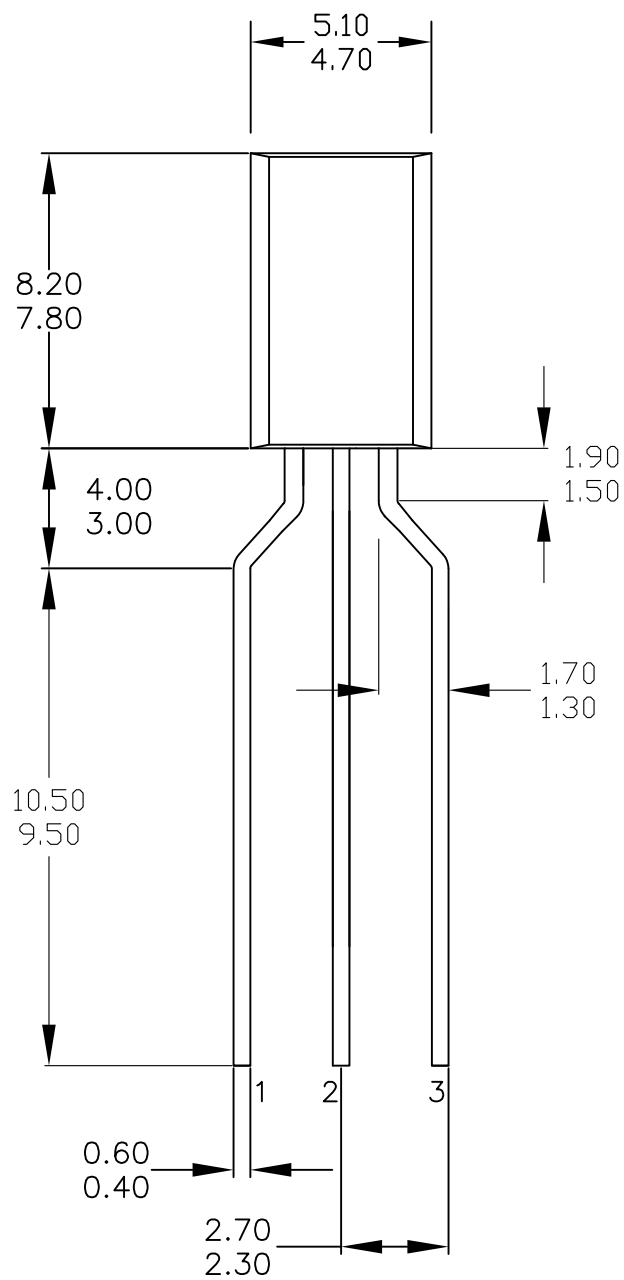
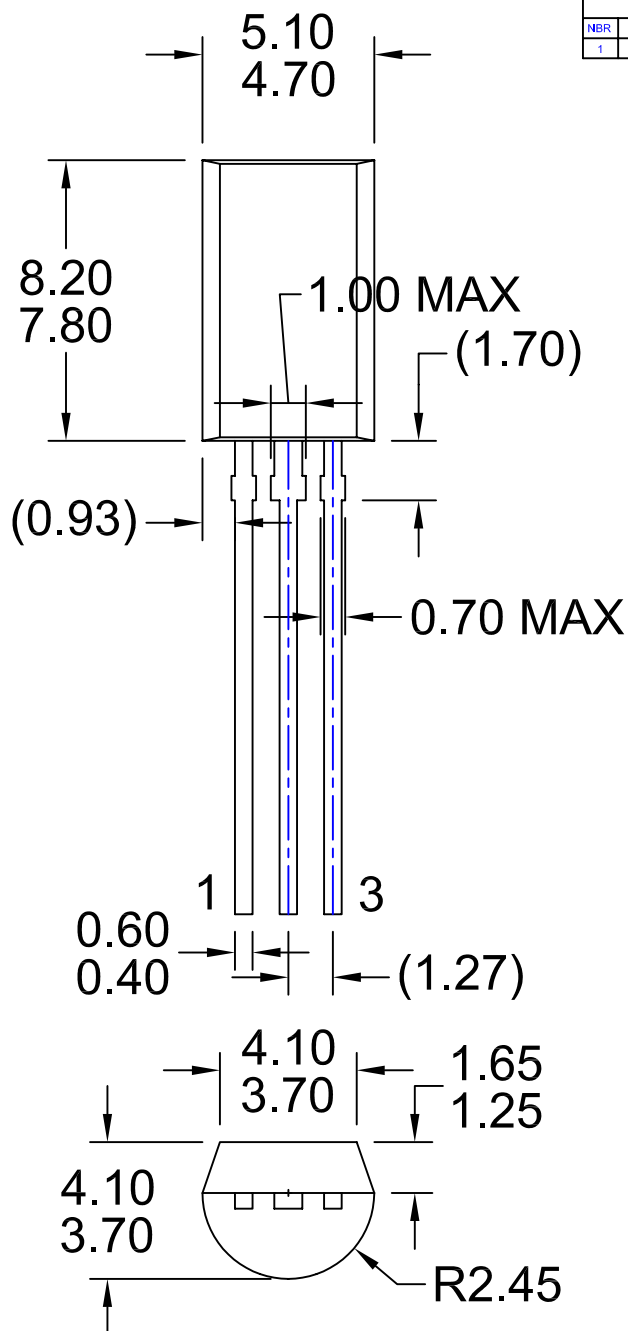


Figure 8. Safe Operating Area



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- C. ALL DIMENSIONS ARE IN MILLIMETERS.
- D. DRAWING FILENAME: MKT-ZA03LREV1.
- E. FAIRCHILD SEMICONDUCTOR.



| REVISIONS |                   |            |                 |
|-----------|-------------------|------------|-----------------|
| NBR       | DESCRIPTION       | DATE       | BY/SITE         |
| 1         | RECREATED DRAWING | 10 JULY 08 | L.HUEBENER/FSME |

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|                                                                                                                                                               |  |            |  |                                                          |             |                             |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|--|----------------------------------------------------------|-------------|-----------------------------|----------|
| APPROVALS                                                                                                                                                     |  | DATE       |  | <div><div>FAIRCHILD</div><div>SEMICONDUCTOR™</div></div> |             |                             |          |
| DRAWN:<br>L.HUEBENER                                                                                                                                          |  | 10 JULY 08 |  |                                                          |             |                             |          |
| CHECKED:<br>H.ALLEN                                                                                                                                           |  | 10 DEC 08  |  |                                                          |             |                             |          |
| APPROVED:                                                                                                                                                     |  |            |  |                                                          |             |                             |          |
|                                                                                                                                                               |  |            |  | 3LD, TO92L, 8MM TALL BODY                                |             |                             |          |
|                                                                                                                                                               |  |            |  |                                                          |             |                             |          |
| <div><div><div>PROJECTION</div><div></div><div>INCH (MM)</div></div></div> |  |            |  | SCALE<br>1:1                                             | SIZE<br>N/A | DRAWING NUMBER<br>MKT-ZA03H | REV<br>1 |
|                                                                                                                                                               |  |            |  | FORMERLY: N/A                                            |             | SHEET : 1 OF 1              |          |



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