

# PNP Epitaxial Silicon Transistor

## KSA916

### Features

- Audio Power Amplifier
- Driver Stage Amplifier
- Complement to KSC2316

### ABSOLUTE MAXIMUM RATINGS

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

| Symbol    | Parameter                 | Value       | Unit             |
|-----------|---------------------------|-------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage    | -120        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage | -120        | V                |
| $V_{EBO}$ | Emitter-Base Voltage      | -5          | V                |
| $I_C$     | Collector Current         | -800        | mA               |
| $T_J$     | Junction Temperature      | 150         | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature       | -55 to +150 | $^\circ\text{C}$ |

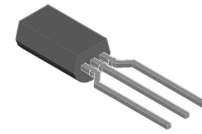
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

(Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.) (Note 1)

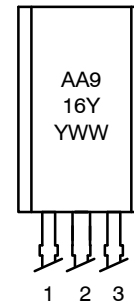
| Symbol          | Parameter                                            | Value | Unit                      |
|-----------------|------------------------------------------------------|-------|---------------------------|
| $P_D$           | Power Dissipation, by $R_{\theta JA}$                | 900   | mW                        |
|                 | Power Dissipation, by $R_{\theta JC}$                | 3     | W                         |
|                 | Derate Above $25^\circ\text{C}$ , by $R_{\theta JA}$ | 7.2   | mW/ $^\circ\text{C}$      |
|                 | Derate Above $25^\circ\text{C}$ , by $R_{\theta JC}$ | 24    | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient              | 130   | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction-to-Case                 | 41    | $^\circ\text{C}/\text{W}$ |

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



TO-92 3 LF  
CASE 135AM

### MARKING DIAGRAM



1: Emitter  
2: Collector  
3: Base

A = Assembly Code  
A916Y = Device Code  
YWW = Date Code

### ORDERING INFORMATION

| Device    | Package                 | Shipping           |
|-----------|-------------------------|--------------------|
| KSA916YTA | TO-92 3 LF<br>(Pb-Free) | 2000 /<br>Fan-Fold |

# KSA916

## ELECTRICAL CHARACTERISTICS

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

| Symbol        | Parameter                            | Conditions                                         | Min. | Typ. | Max. | Unit          |
|---------------|--------------------------------------|----------------------------------------------------|------|------|------|---------------|
| $BV_{CBO}$    | Collector–Base Breakdown Voltage     | $I_C = -1\text{ mA}, I_E = 0$                      | -120 | –    | –    | V             |
| $BV_{CEO}$    | Collector–Emitter Breakdown Voltage  | $I_C = -10\text{ mA}, I_B = 0$                     | -120 | –    | –    | V             |
| $BV_{EBO}$    | Emitter–Base Breakdown Voltage       | $I_E = -1\text{ mA}, I_C = 0$                      | -5   | –    | –    | V             |
| $I_{CBO}$     | Collector Cut–Off Current            | $V_{CB} = -120\text{ V}, I_E = 0$                  | –    | –    | -0.1 | $\mu\text{A}$ |
| $h_{FE1}$     | DC Current Gain                      | $V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$        | 60   | –    | –    |               |
| $h_{FE2}$     | DC Current Gain                      | $V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$       | 80   | –    | 240  |               |
| $V_{CE(sat)}$ | Collector–Emitter Saturation Voltage | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$        | –    | –    | -1   | V             |
| $f_T$         | Current Gain Bandwidth Product       | $V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$       | –    | 120  | –    | MHz           |
| $C_{ob}$      | Output Capacitance                   | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | –    | –    | 40   | pF            |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

## $h_{FE}$ CLASSIFICATION

| Classification | O        | Y         |
|----------------|----------|-----------|
| $h_{FE2}$      | 80 ~ 160 | 120 ~ 240 |

## TYPICAL PERFORMANCE CHARACTERISTICS

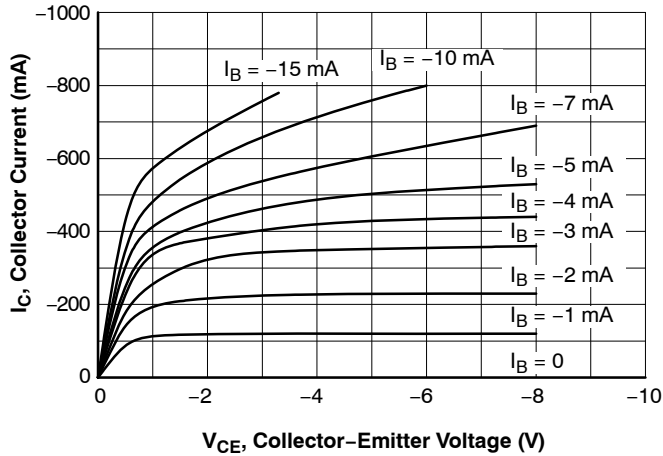


Figure 1. Static Characteristic

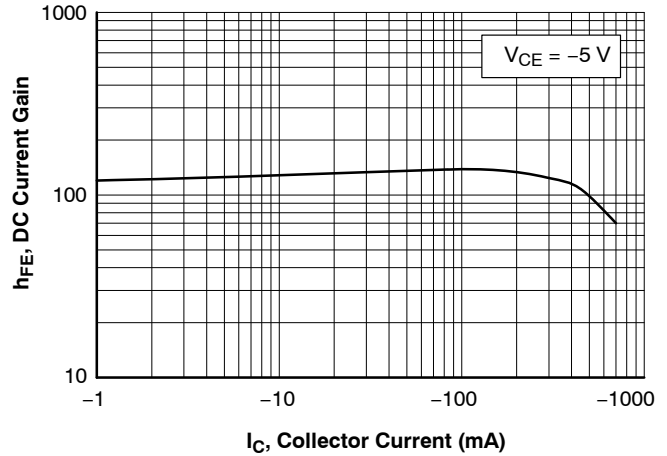


Figure 2. DC Current Gain

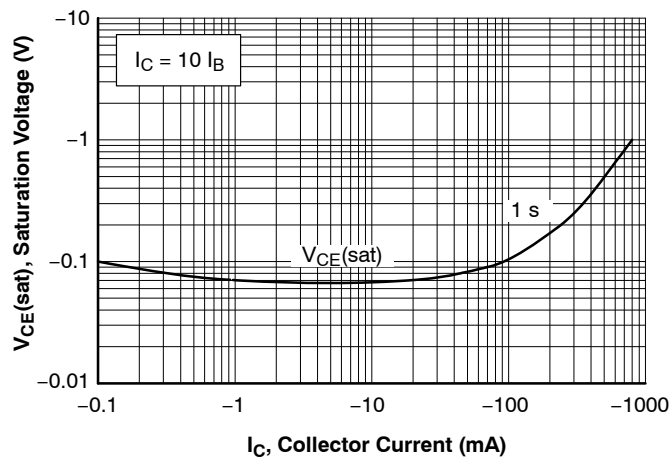


Figure 3. Collector-Emitter Saturation Voltage

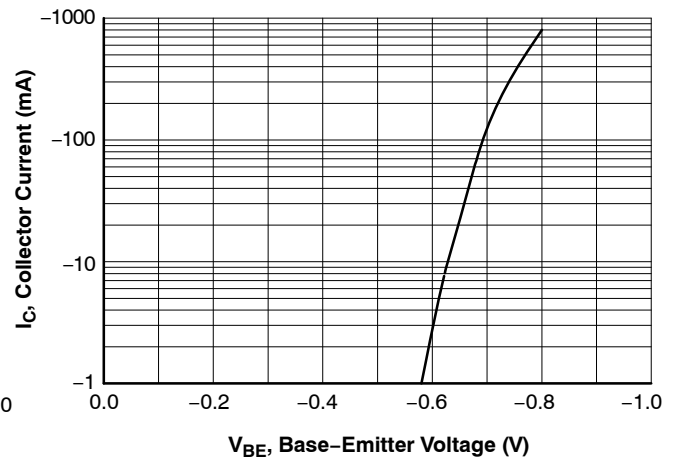


Figure 4. Base-Emitter On Voltage

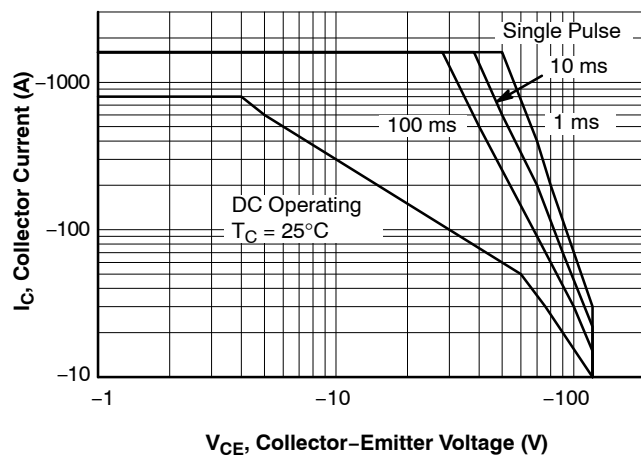


Figure 5. Safe Operating Area

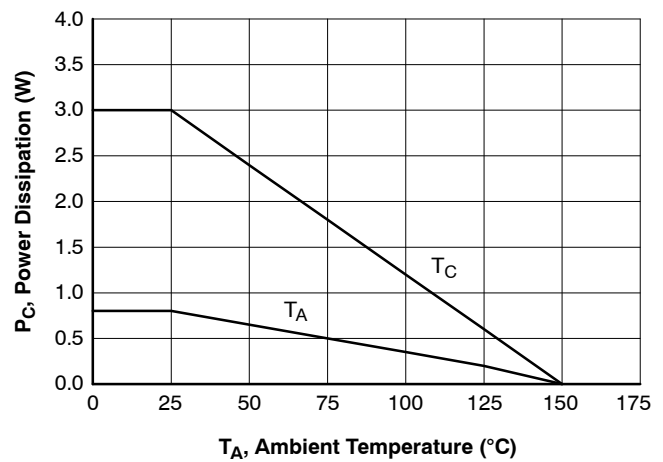
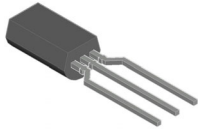
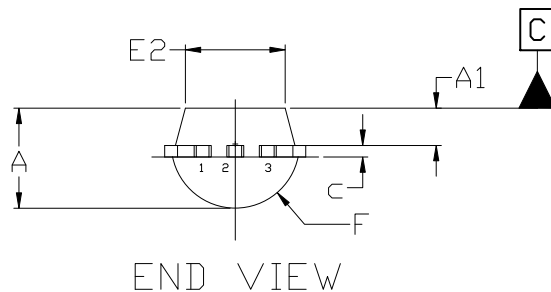
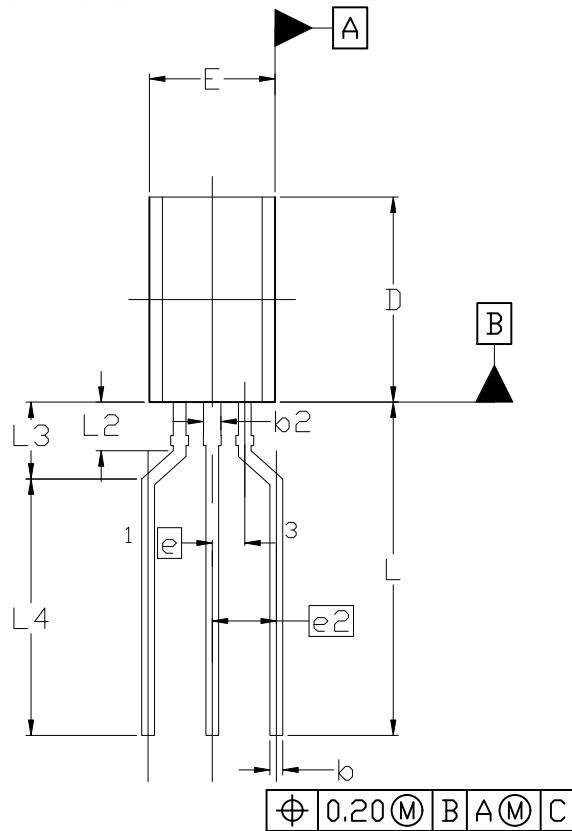


Figure 6. Power Derating


**TO-92 3 8.0x4.9 (LEADFORMED)**  
CASE 135AM  
ISSUE B

DATE 14 JAN 2021



## NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, GATE REMAINS AND TIE BAR PROTRUSIONS.
4. DIMENSION b AND b2 DOES NOT INCLUDE DAMBAR PROTRUSION. DIMENSION b2 LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.

| DIM | MILLIMETERS |      |      |
|-----|-------------|------|------|
|     | MIN.        | NOM. | MAX. |
| A   | 3.70        | 3.90 | 4.10 |
| A1  | 1.25        | 1.45 | 1.65 |
| b   | 0.35        | 0.50 | 0.60 |
| b2  | 0.62        | ---  | 0.78 |
| c   | 0.35        | 0.45 | 0.55 |
| D   | 7.80        | 8.00 | 8.20 |
| E   | 4.70        | 4.90 | 5.10 |
| E2  | 3.70        | 3.90 | 4.10 |
| e   | 1.27 BSC    |      |      |
| e2  | 2.50 BSC    |      |      |
| F   | 2.45 REF    |      |      |
| L   | 13.00 REF   |      |      |
| L2  | 1.50        | ---  | 1.90 |
| L3  | 2.60        | ---  | 3.40 |
| L4  | 10.40 REF   |      |      |

|                         |                                     |                                                                                                                                                                                  |
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