

# PNP Epitaxial Silicon Transistor

## KSA1281

### Features

- Audio Power Amplifier
- 3 W Output Application

### ABSOLUTE MAXIMUM RATINGS

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

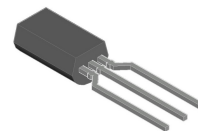
| Symbol    | Parameter                 | Value       | Unit             |
|-----------|---------------------------|-------------|------------------|
| $V_{CBO}$ | Collector–Base Voltage    | –50         | V                |
| $V_{CEO}$ | Collector–Emitter Voltage | –50         | V                |
| $V_{EBO}$ | Emitter–Base Voltage      | –5          | V                |
| $I_C$     | Collector Current         | –2          | A                |
| $T_J$     | 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 (Note 1)

| Symbol          | Parameter                                  | Value | Unit                      |
|-----------------|--------------------------------------------|-------|---------------------------|
| $P_D$           | Power Dissipation $T_C = 25^\circ\text{C}$ | 1000  | mW                        |
|                 | Derate Above $T_A = 25^\circ\text{C}$      | 8.0   | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction–to–Ambient    | 125   | $^\circ\text{C}/\text{W}$ |

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.



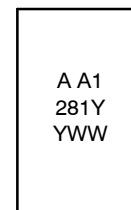
TO–92 3L  
CASE 135AM

### PIN CONNECTIONS



1. Emitter 2. Collector 3. Base

### MARKING DIAGRAM



A = Assembly Location  
A1281Y = Specific Device Code  
Y = Year  
WW = Work Week

### ORDERING INFORMATION

See detailed ordering, marking and shipping information on page 2 of this data sheet.

# KSA1281

## ELECTRICAL CHARACTERISTICS (Note 2) 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     | $I_C = -1\text{ mA}, I_E = 0$                      | -50 |     |      | V    |
| $BV_{CEO}$    | Collector–Emitter Breakdown Voltage  | $I_C = -10\text{ mA}, I_B = 0$                     | -50 |     |      | V    |
| $BV_{EBO}$    | Emitter–Base Breakdown Voltage       | $I_E = -1\text{ mA}, I_C = 0$                      | -5  |     |      | V    |
| $I_{CBO}$     | Collector Cut–Off Current            | $V_{CB} = -50\text{ V}, I_E = 0$                   |     |     | -100 | nA   |
| $I_{EBO}$     | Emitter Cut–Off Current              | $V_{EB} = -5\text{ V}, I_C = 0$                    |     |     | -100 | nA   |
| $h_{FE1}$     | DC Current Gain                      | $V_{CE} = -2\text{ V}, I_C = -500\text{ mA}$       | 120 |     | 240  |      |
| $h_{FE2}$     |                                      | $V_{CE} = -2\text{ V}, I_C = -1.5\text{ A}$        | 40  |     |      |      |
| $V_{BE(sat)}$ | Base–Emitter Saturation Voltage      | $I_C = -1\text{ A}, I_B = -0.05\text{ A}$          |     |     | -1.2 | V    |
| $V_{CE(sat)}$ | Collector–Emitter Saturation Voltage | $I_C = -1\text{ A}, I_B = -0.05\text{ A}$          |     |     | -0.5 | V    |
| $C_{ob}$      | Output Capacitance                   | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ |     | 40  |      | pF   |
| $f_T$         | Current Gain Bandwidth Product       | $V_{CE} = -2\text{ V}, I_C = -500\text{ mA}$       |     | 100 |      | MHz  |

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.

2. Pulse test: pulse width  $\leq 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2.0\%$ .

## ORDERING INFORMATION

| Part Number | Top Mark | Package  | Packing Method |
|-------------|----------|----------|----------------|
| KSA1281YTA  | A1281 Y– | TO–92 3L | Ammo           |

## TYPICAL PERFORMANCE CHARACTERISTICS

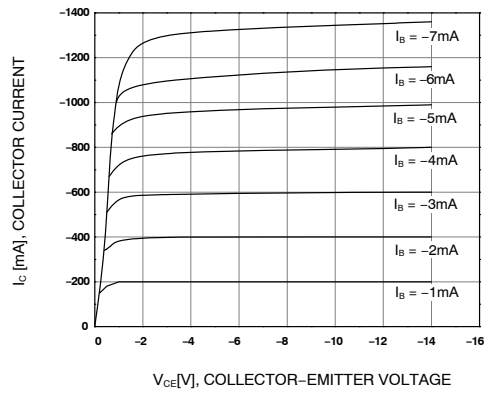


Figure 1. Static Characteristic

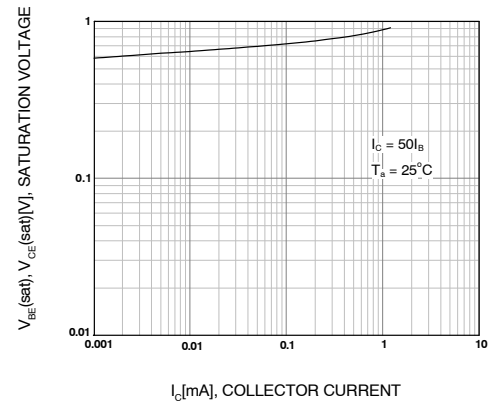


Figure 2. Base-Emitter Saturation Voltage

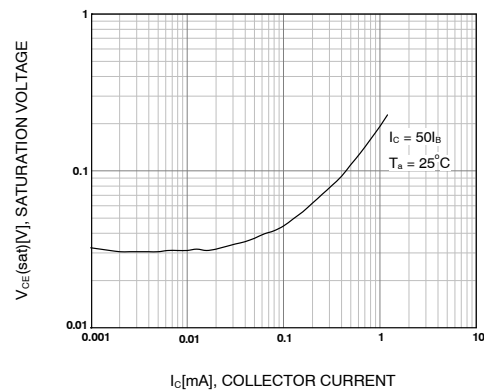


Figure 3. Collector-Emitter Saturation Voltage

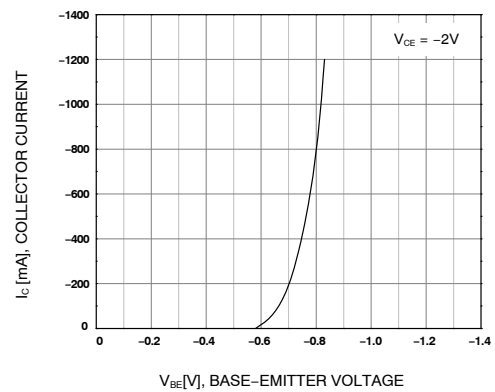


Figure 4. Base-Emitter On Voltage

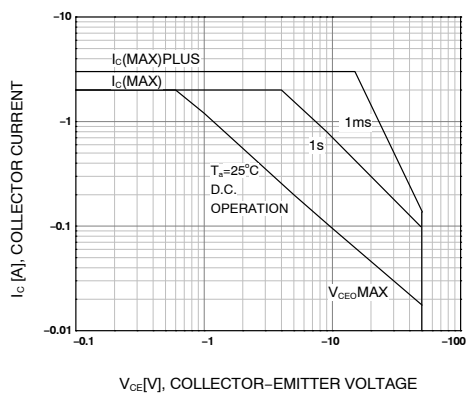


Figure 5. Safe Operating Area

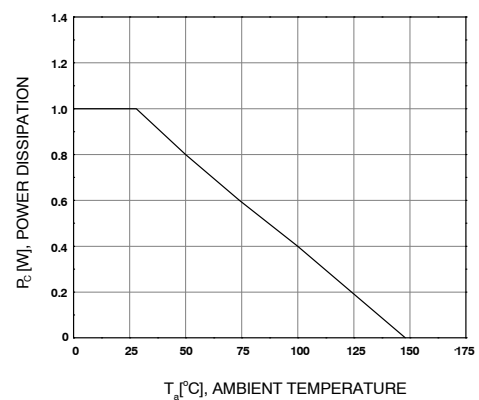
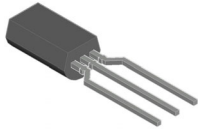
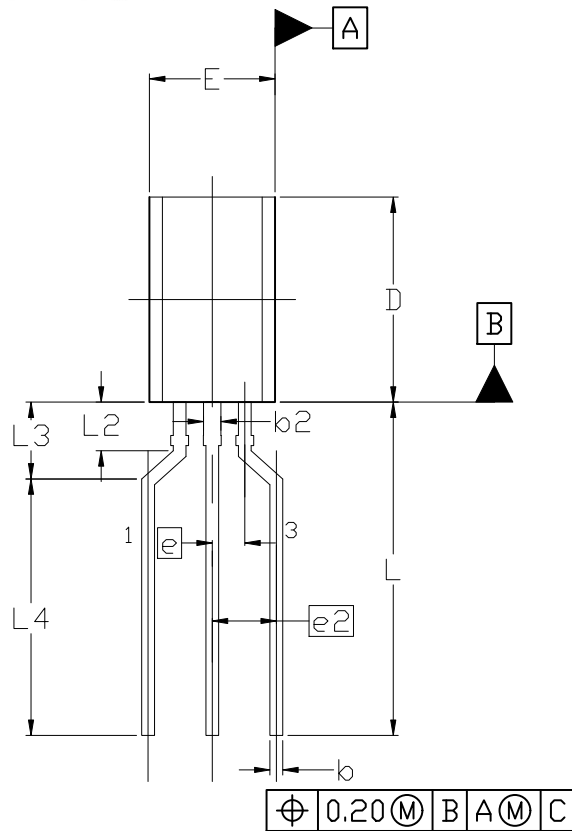


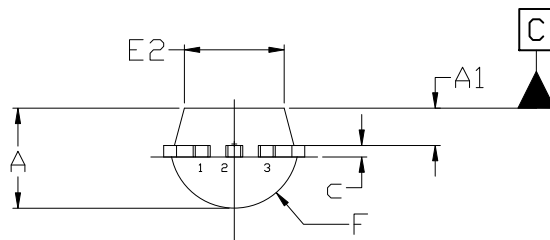
Figure 6. Power Derating


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

DATE 14 JAN 2021



TOP VIEW



END VIEW

## 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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**DESCRIPTION:** TO-92 3 8.0X4.9 (LEADFORMED)

**PAGE 1 OF 1**

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