

PNP Epitaxial Silicon Transistor

KSA928A

Features

- Audio Power Amplifier
- Complement to KSC2328A
- 3 W Output Application

ABSOLUTE MAXIMUM RATINGS

(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Notes 1, 2)

| Symbol | Parameter | Value | Unit |
|-----------|---------------------------|-------------|------------------|
| V_{CBO} | Collector–Base Voltage | –30 | V |
| V_{CEO} | Collector–Emitter Voltage | –30 | 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.

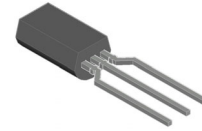
1. These ratings are based on a maximum junction temperature of 150°C .
2. These are steady-state limits. **onsemi** should be consulted on applications involving pulsed or low-duty-cycle operations.

THERMAL CHARACTERISTICS

(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.) (Note 3)

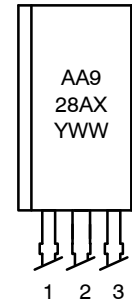
| Symbol | Parameter | Value | Unit |
|-----------------|---|-------|---------------------------|
| P_D | Power Dissipation | 1000 | mW |
| | Derate Above 25°C | 8.0 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction–to–Ambient | 125 | $^\circ\text{C}/\text{W}$ |

3. 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
A928A = Device Code
X = O / Y
YWW = Date Code

ORDERING INFORMATION

| Device | Package | Shipping |
|------------|-------------------------|--------------------|
| KSA928AOTA | TO–92 3 LF (Pb–Free) | 2000 / Fan–Fold |
| KSA928AYTA | TO–92 3 LF (Pb–Free) | 2000 / Fan–Fold |

KSA928A

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 | $I_C = -100\ \mu\text{A}$, $I_E = 0$ | -30 | – | – | V |
| BV_{CEO} | Collector–Emitter Breakdown Voltage | $I_C = -10\ \text{mA}$, $I_B = 0$ | -30 | – | – | V |
| BV_{EBO} | Emitter–Base Breakdown Voltage | $I_E = -1\ \text{mA}$, $I_C = 0$ | -5 | – | – | V |
| I_{CBO} | Collector Cut–Off Current | $V_{CB} = -30\ \text{V}$, $I_E = 0$ | – | – | -100 | nA |
| I_{EBO} | Emitter Cut–Off Current | $V_{EB} = -5\ \text{V}$, $I_C = 0$ | – | – | -100 | nA |
| h_{FE} | DC Current Gain | $V_{CE} = -2\ \text{V}$, $I_C = -500\ \text{mA}$ | 100 | – | 320 | |
| $V_{BE(on)}$ | Base–Emitter On Voltage | $V_{CE} = -2\ \text{V}$, $I_C = -500\ \text{mA}$ | – | – | -1.0 | V |
| $V_{CE(sat)}$ | Collector–Emitter Saturation Voltage | $I_C = -1.5\ \text{A}$, $I_B = -30\ \text{mA}$ | – | – | -2.0 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = -2\ \text{V}$, $I_C = -500\ \text{mA}$ | – | 120 | – | MHz |
| C_{ob} | Collector Output Capacitance | $V_{CB} = -10\ \text{V}$, $I_E = 0$, $f = 1\ \text{MHz}$ | – | 48 | – | 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_{FE} | 100 ~ 200 | 160 ~ 320 |

TYPICAL PERFORMANCE CHARACTERISTICS

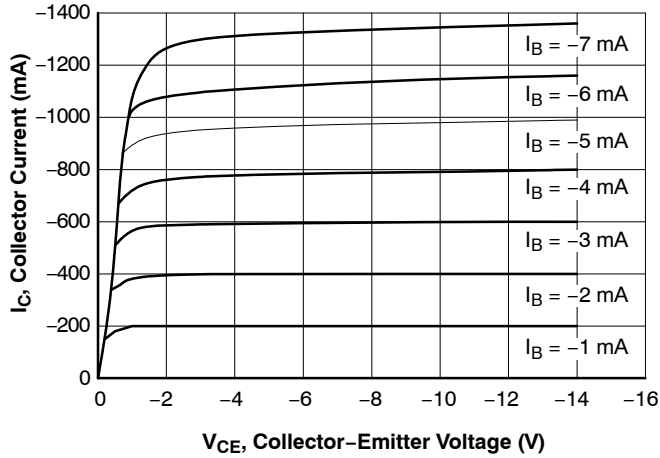


Figure 1. Static Characteristic

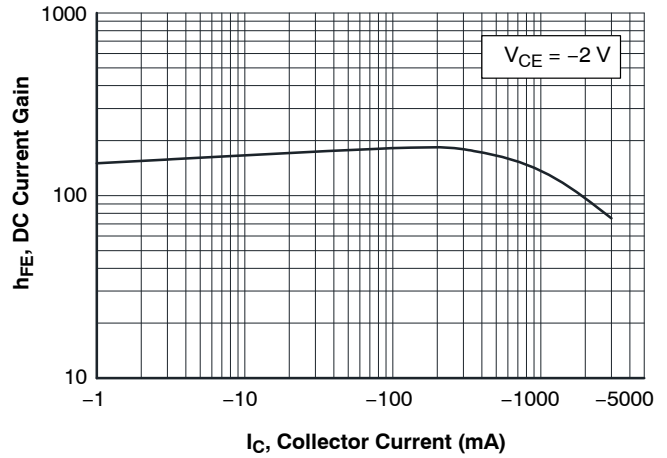


Figure 2. DC Current Gain

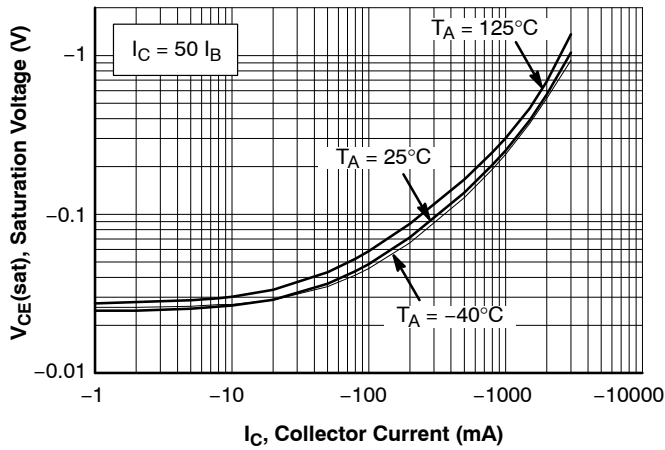


Figure 3. Collector-Emitter Saturation Voltage

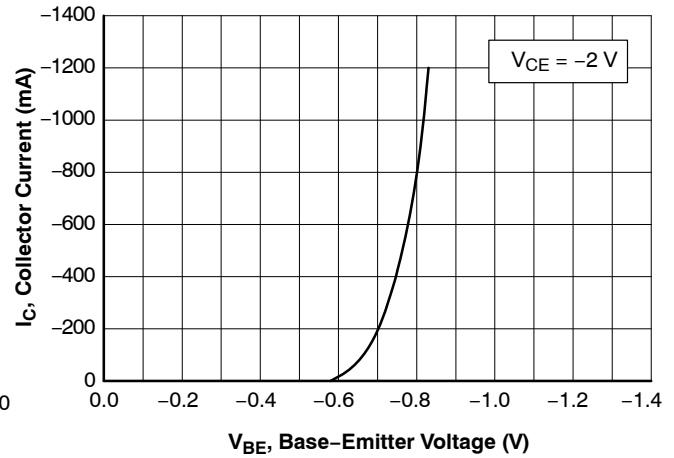


Figure 4. Base-Emitter On Voltage

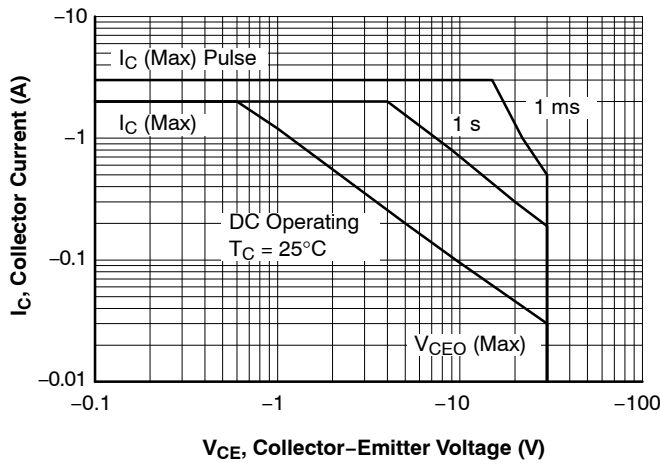


Figure 5. Safe Operating Area

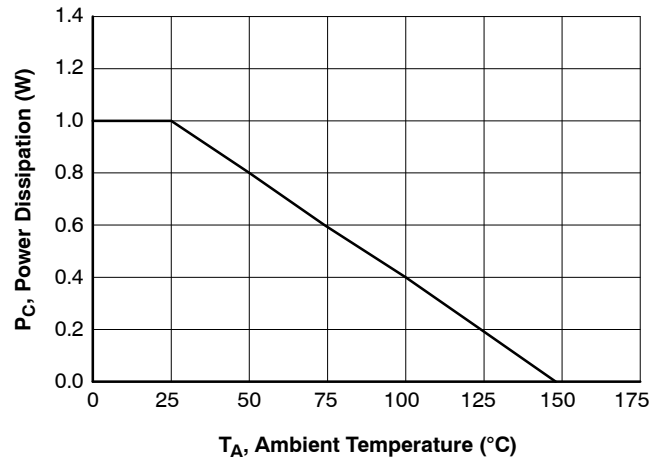
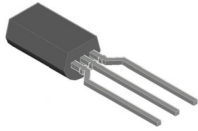
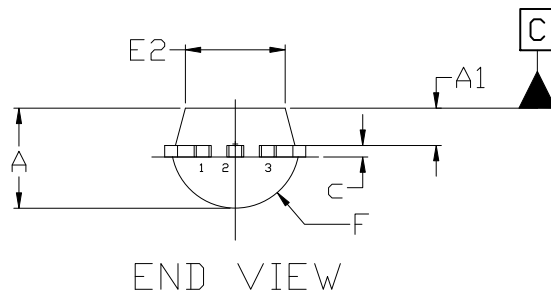
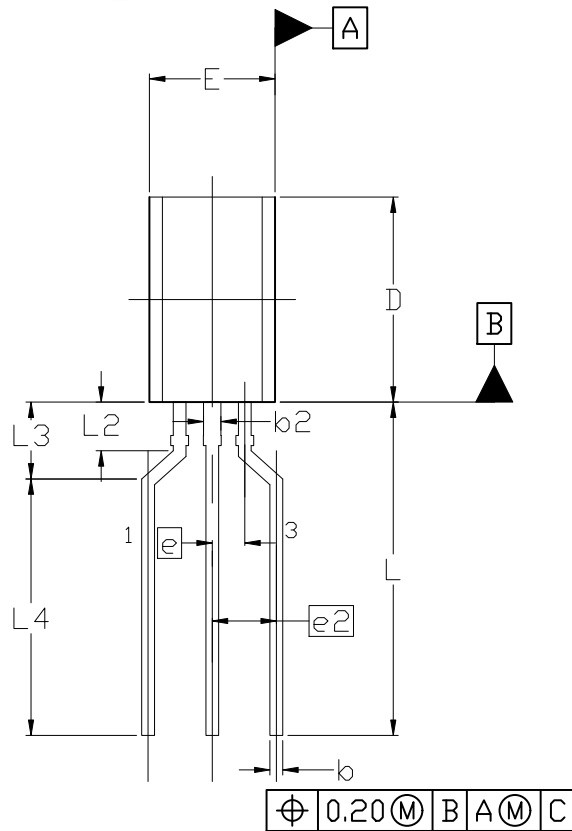


Figure 6. Power Derating


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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