# THE DATASHEET OF

# KSA1015YTA

# PNP Epitaxial Silicon Transistor

# KSA1015


1. Emitter
2. Collector
3. Base

*Bent Lead*
Tape & Reel
Ammo Packing

**TO−92 3 4.83x4.76 LEADFORMED**
**CASE 135AR**

### Features

- Low−Frequency Amplifier
- Collector−Base Voltage: $V_{CBO}$ = −50 V
- Complement to KSC1815
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°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 | −150 | mA |
| $I_B$ | Base Current | −50 | mA |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature Range | −55 to 150 | °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.

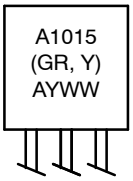
### THERMAL CHARACTERISTICS (Note 1)

($T_A$ = 25°C unless otherwise noted)

| Symbol | Parameter | Max | Unit |
|---|---|---|---|
| $P_D$ | Total Device Dissipation | 400 | mW |
| | Derate Above 25°C | 3.2 | mW/°C |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 312 | °C/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.

### MARKING DIAGRAM




A = Assembly Site
A1015(GR, Y) = Device Code
Y = Year of Production,
WW = Work Week Number

### ORDERING INFORMATION

| Device | Marking | Package | Packing Method |
|---|---|---|---|
| KSA1015GRTA | A1015GR | TO−92 3L (Pb−Free) | Ammo |
| KSA1015YTA | A1015Y | TO−92 3L (Pb−Free) | Ammo |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $BV_{CBO}$ | Collector−Base Breakdown Voltage | $I_C$ = −100 μA, $I_E$ = 0 | −50 | – | – | V |
| $BV_{CEO}$ | Collector−Emitter Breakdown Voltage | $I_C$ = −10 mA, $I_B$ = 0 | −50 | – | – | V |
| $BV_{EBO}$ | Emitter−Base Breakdown Voltage | $I_E$ = −10 μA, $I_C$ = 0 | −5 | – | – | V |
| $I_{CBO}$ | Collector Cut−Off Current | $V_{CB}$ = −50 V, $I_E$ = 0 | – | – | −0.1 | μA |
| $I_{EBO}$ | Emitter Cut−Off Current | $V_{EB}$ = −5 V, $I_C$ = 0 | – | – | −0.1 | μA |
| $h_{FE}1$ | DC Current Gain | $V_{CE}$ = −6 V, $I_C$ = −2 mA | 70 | – | 400 | |
| $h_{FE}2$ | DC Current Gain | $V_{CE}$ = −6 V, $I_C$ = −150 mA | 25 | – | – | |
| $V_{CE}$(sat) | Collector−Emitter Saturation Voltage | $I_C$ = −100 mA, $I_B$ = −10 mA | – | −0.1 | −0.3 | V |
| $V_{BE}$(sat) | Base−Emitter Saturation Voltage | $I_C$ = −100 mA, $I_B$ = −10 mA | – | – | −1.1 | V |
| $f_T$ | Current Gain Bandwidth Product | $V_{CE}$ = −10 V, $I_C$ = −1 mA | 80 | – | – | MHz |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = −10 V, $I_E$ = 0, f = 1 MHz | – | 4 | 7 | pF |
| NF | Noise Figure | $V_{CE}$ = −6 V, $I_C$ = −0.1 mA, f = 100 Hz, $R_G$ = 10 kΩ | – | 0.5 | 6 | dB |

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 | GR |
|---|---|---|---|
| $h_{FE}1$ | 70~140 | 120~240 | 200~400 |

## TYPICAL PERFORMANCE CHARACTERISTICS

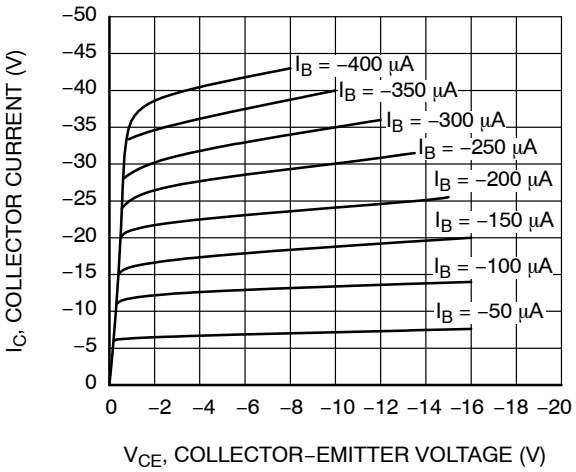



**Figure 1. Static Characteristic**

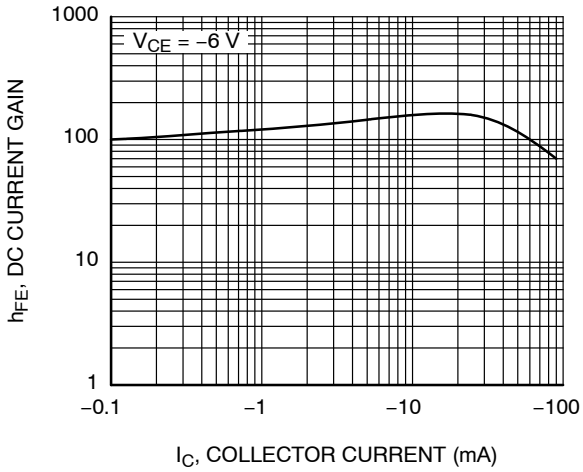



**Figure 2. DC Current Gain**

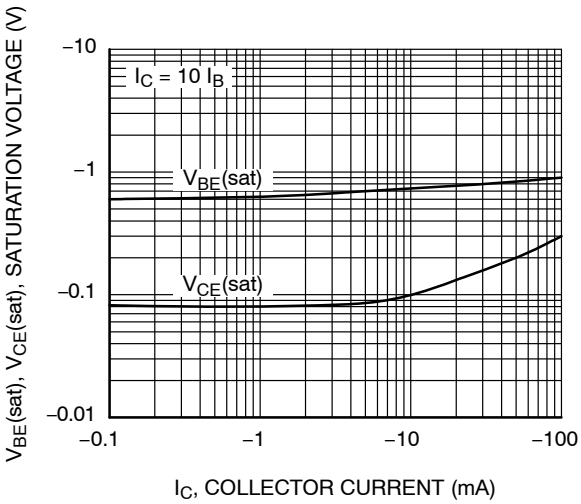



**Figure 3. Base−Emitter Saturation Voltage and Collector−Emitter Saturation Voltage**

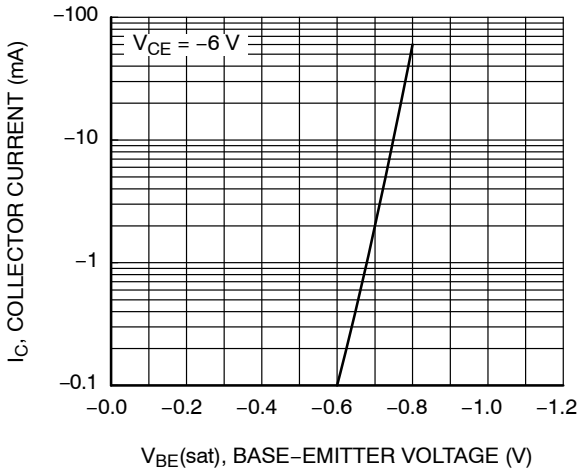



**Figure 4. Base−Emitter On Voltage**

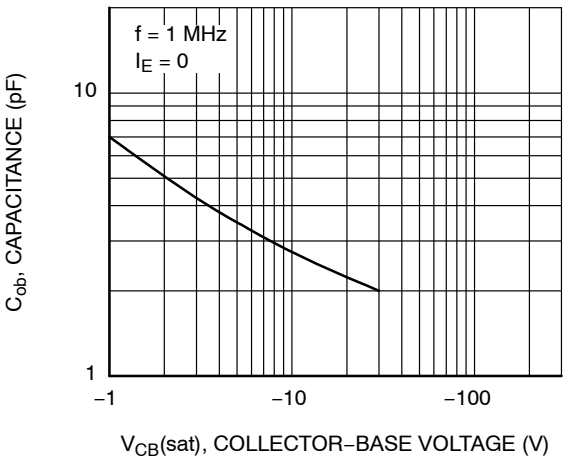



**Figure 5. Collector Output Capacitance**

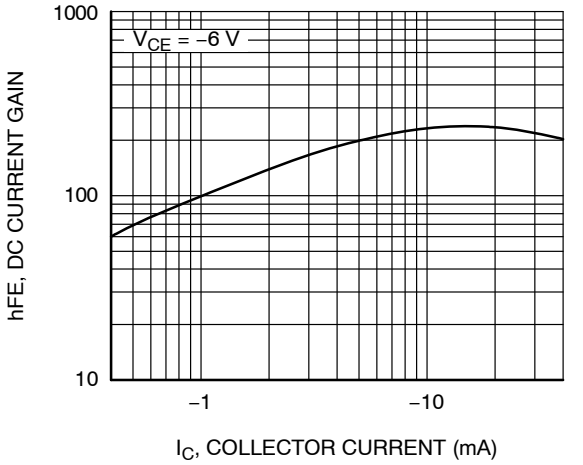



**Figure 6. Current Gain Bandwidth Product**

# MECHANICAL CASE OUTLINE
## PACKAGE DIMENSIONS

ON Semiconductor®

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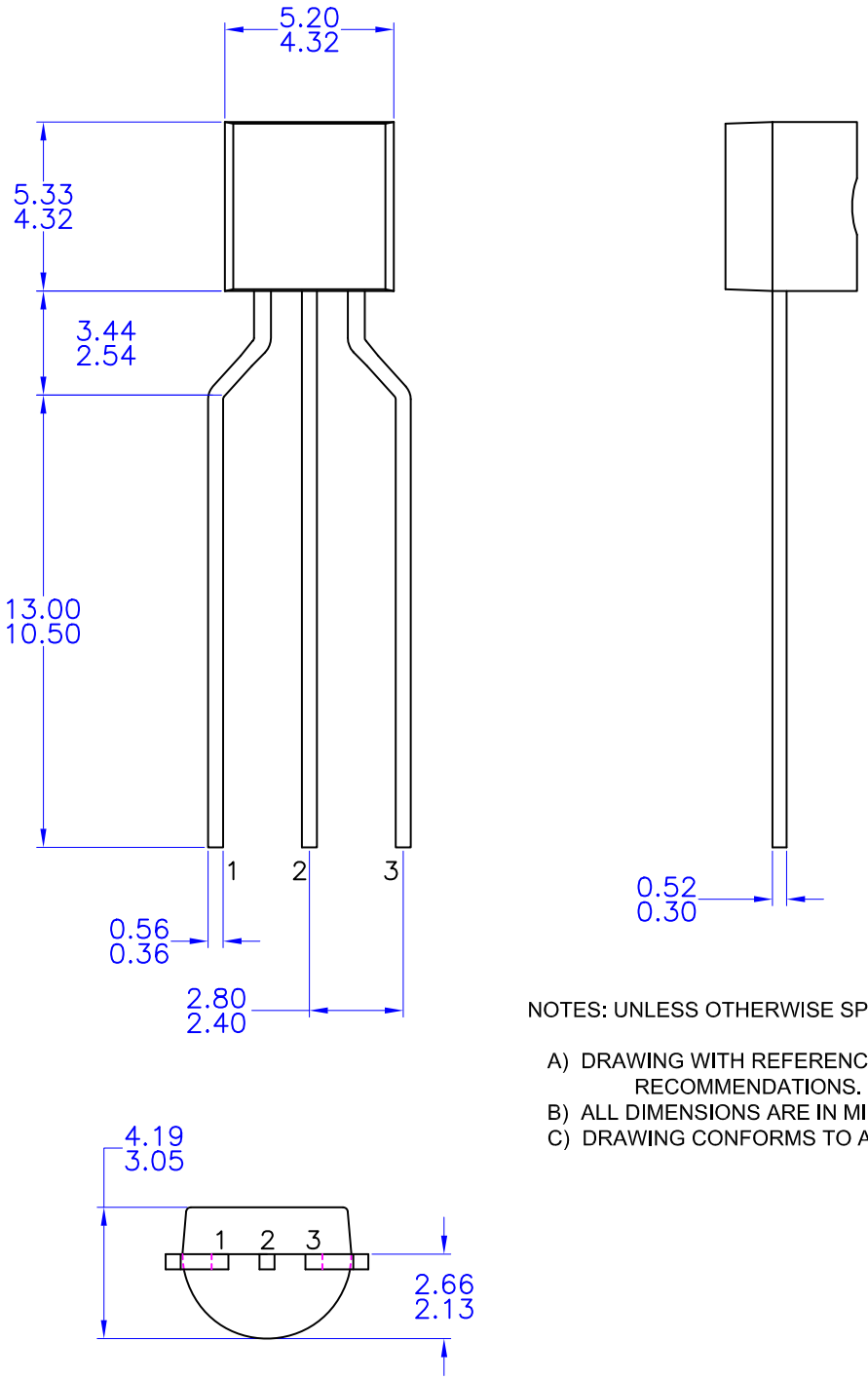
ISSUE O

DATE 30 SEP 2016




NOTES: UNLESS OTHERWISE SPECIFIED

A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DRAWING CONFORMS TO ASME Y14.5M-1994

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