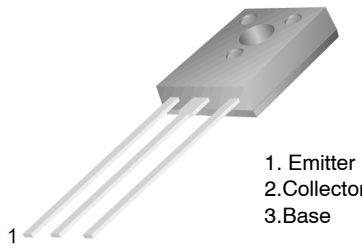
# PNP Silicon Transistor

# KSA1156




1. Emitter
2.Collector
3.Base

**TO−126−3LD**
**CASE 340AS**

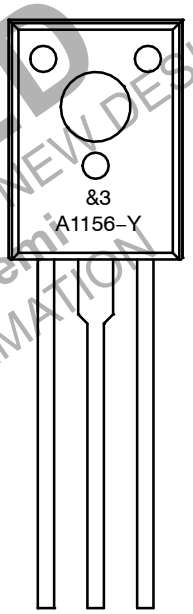
### Features

- High Breakdown Voltage
- Low Collector Saturation Voltage
- High Speed Switching
- This is a Pb−Free Device

### Applications

- High Voltage Switching
- Low Power Switching Regulator
- DC−DC Converter

### MARKING DIAGRAM




&3 = 3−Digit Date Code
A1156−Y = Specific Device Code

### ABSOLUTE MAXIMUM RATINGS ($T_C$ = 25°C unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector−Base Voltage | −400 | V |
| $V_{CEO}$ | Collector−Emitter Voltage | −400 | V |
| $V_{EBO}$ | Emitter−Base Voltage | −7 | V |
| $I_B$ | Base Current | −0.25 | A |
| $I_C$ | Collector Current (DC) | −0.5 | A |
| $I_{CP}$ | Collector Current (Pulse) | −1 | A |
| $P_C$ | Collector Dissipation, $T_A$ = 25°C<br>$T_C$ = 25°C | 1<br>10 | W |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature | −55 ~ 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.



### ORDERING INFORMATION

| Device | Package | Shipping |
|---|---|---|
| KSA1156YS | TO−126−3LD (Pb−Free) | 2000 Units / Bulk Bag |

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

| Symbol | Characteristic | Test Condition | Min | Max | Unit |
|---|---|---|---|---|---|
| $V_{CEO}$(sus) | Collector−Emitter Sustaining Voltage | $I_C$ = −100 mA, $I_B$ = −10 mA, L = −20 mH | −400 | – | V |
| $V_{CEX}$(sus) | Collector−Emitter Sustaining Voltage | $I_C$ = −200 mA, $I_{B1}$ = $I_{B2}$ = −20 mA, $V_{BE}$(off) = 5 V, L = 10 mH | −400 | – | V |
| $I_{CBO}$ | Collector Cut−off Current | $V_{CB}$ = −400 V, $I_E$ = 0 | – | −100 | μA |
| $I_{EBO}$ | Emitter Cut−off Current | $V_{EB}$ = −5 V, $I_C$ = 0 | – | −10 | μA |
| $I_{CEX1}$ | Collector Cut−off Current | $V_{CE}$ = −400 V, $V_{BE}$(off) = 1.5 V | – | −100 | μA |
| $I_{CEX2}$ | Collector Cut−off Current | $V_{CE}$ = −400 V, $V_{BE}$(off) = 1.5 V, $T_C$ = 125°C | – | −1 | mA |
| $h_{FE}$ | DC Current Gain | $V_{CE}$ = −5 V, $I_C$ = −100 mA | 30 | 200 | |
| $V_{CE}$(sat) | Collector−Emitter Saturation Voltage | $I_C$ = −100 mA, $I_B$ = −10 mA | – | −1 | V |
| $V_{BE}$(sat) | Base−Emitter Saturation Voltage | $I_C$ = −100 mA, $I_B$ = −10 mA | – | −1.2 | V |
| $t_{ON}$ | Turn On Time | $V_{CC}$ = −150 V, $I_C$ = −100 mA, $I_{B1}$ = −10 mA, $I_{B2}$ = 20 mA, $R_L$ = 1.5 kΩ | – | 1 | μs |
| $t_{STG}$ | Storage Time | | – | 4 | μs |
| $t_F$ | Fall Time | | – | 1 | μs |

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 | N | R | O | Y |
|---|---|---|---|---|
| $h_{FE}$ | 30 ~ 60 | 40 ~ 80 | 60 ~ 120 | 100 ~ 200 |

## TYPICAL CHARACTERISTICS

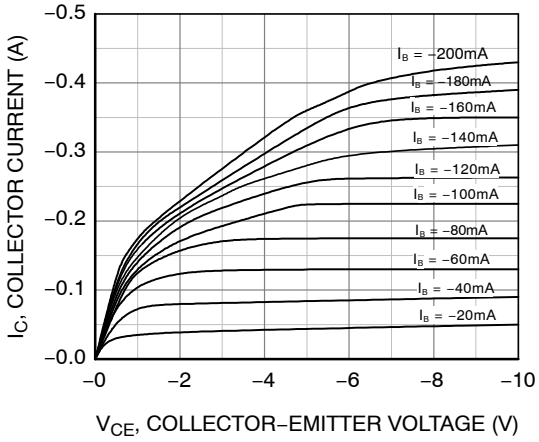



**Figure 1. Static Characteristic**

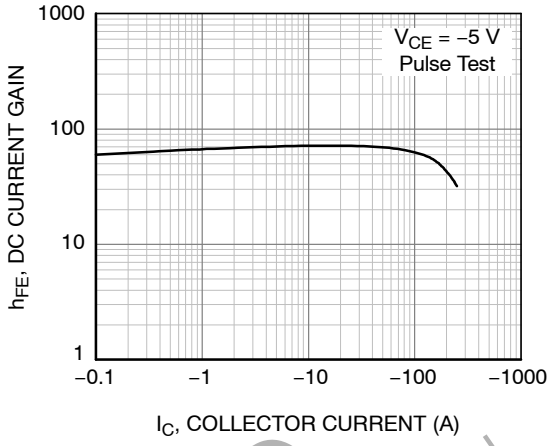



**Figure 2. DC Current Gain**

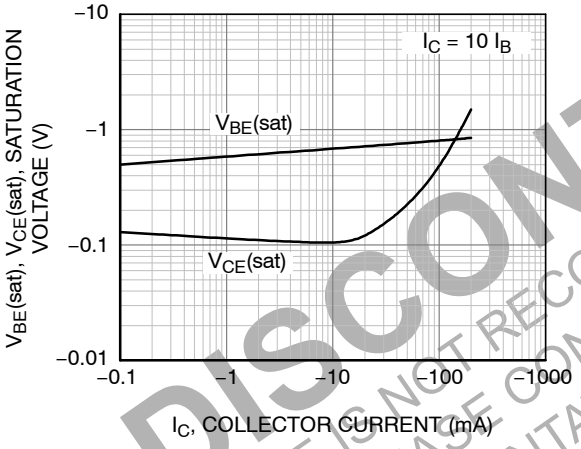



**Figure 3. Collector−Emitter Saturation Voltage Base−Emitter Saturation Voltage**

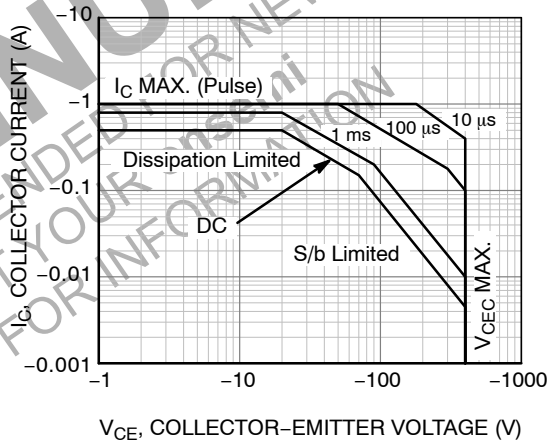



**Figure 4. Safe Operating Area**

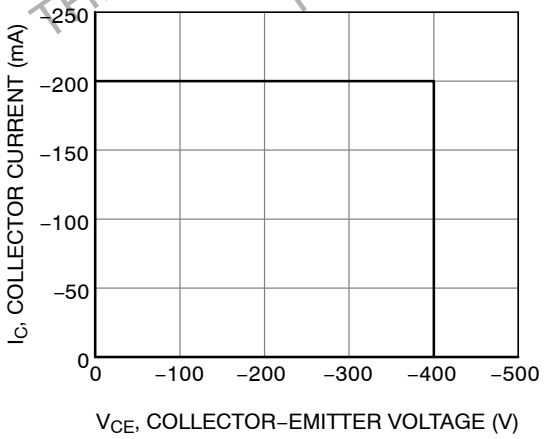



**Figure 5. Reverse Bias Safe Operating Area**

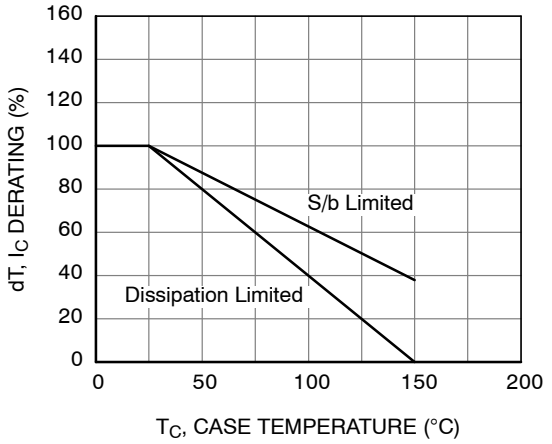



**Figure 6. Derating Curve of Safe Operating Areas**

## TYPICAL CHARACTERISTICS (Continued)

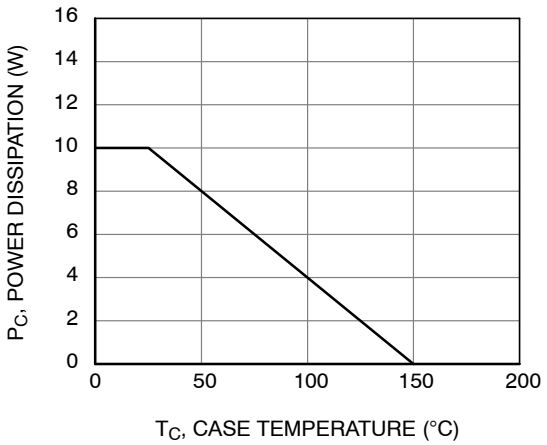
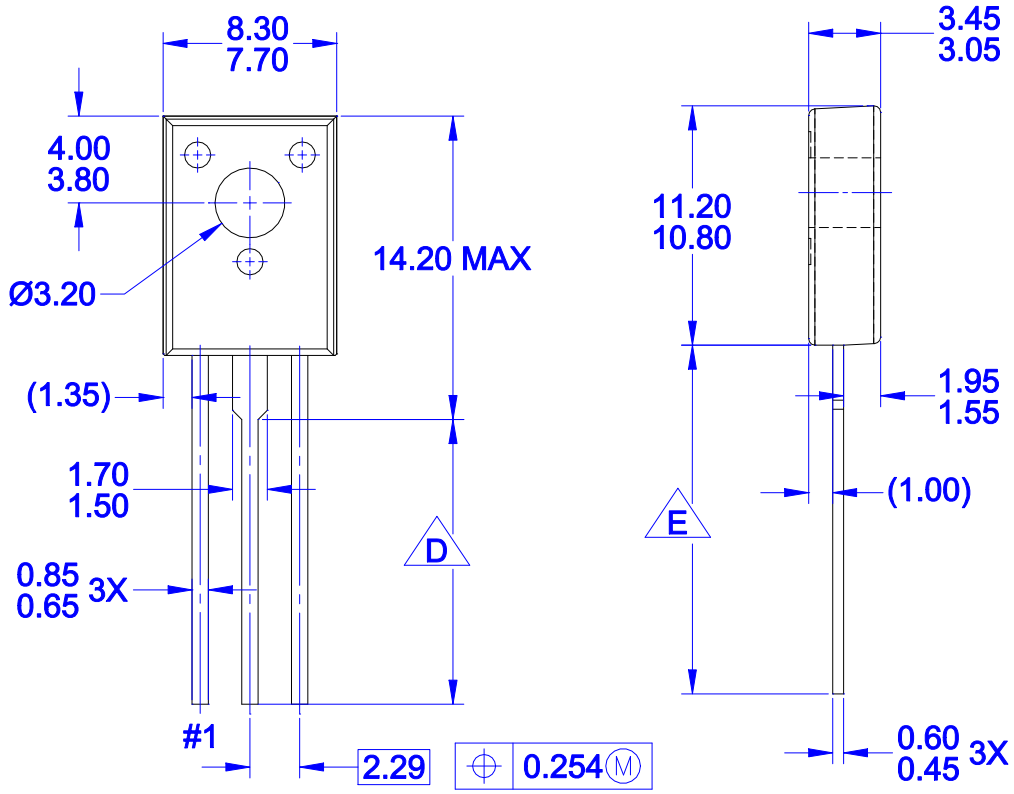



**Figure 7. Power Derating**

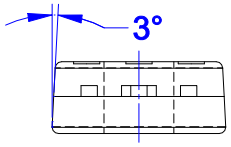
**TO−126−3LD**
CASE 340AS
ISSUE O

DATE 30 SEP 2016




TOP VIEW

SIDE VIEW




FRONT VIEW

| PRODUCTION CODE | TERMINAL LENGTH "D" | TERMINAL LENGTH "E" |
|---|---|---|
| TSSTU | 3.45 - 4.05 | 6.45 - 7.45 |
| TSTU | 2.36 - 2.96 | 5.36 - 6.36 |
| NONE (STD LENGTH) | 12.76 - 13.36 | 15.76 - 16.76 |

NOTES:

A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
B. ALL DIMENSIONS ARE IN MILLIMETERS
C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS

△D FOR TERMINAL LENGTH "D", REFER TO TABLE

△E FOR TERMINAL LENGTH "E", REFER TO TABLE

| | | | |
|---|---|---|---|
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| **DESCRIPTION:** | **TO−126−3LD** | | **PAGE 1 OF 1** |

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