

# PNP Silicon Transistor

## KSA1156

### Features

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

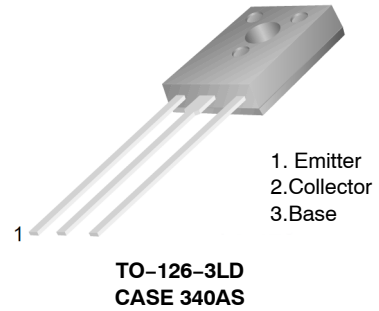
### Applications

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

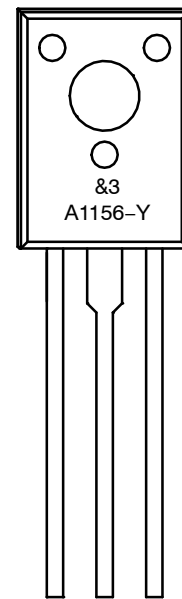
### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Ratings	Units
V <sub>CBO</sub>	Collector-Base Voltage	-400	V
V <sub>CEO</sub>	Collector-Emitter Voltage	-400	V
V <sub>EBO</sub>	Emitter-Base Voltage	-7	V
I <sub>B</sub>	Base Current	-0.25	A
I <sub>C</sub>	Collector Current (DC)	-0.5	A
I <sub>CP</sub>	Collector Current (Pulse)	-1	A
P <sub>C</sub>	Collector Dissipation, T <sub>A</sub> = 25°C T <sub>C</sub> = 25°C	1 10	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>STG</sub>	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.



### MARKING DIAGRAM



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

### ORDERING INFORMATION

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

# KSA1156

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Characteristic	Test Condition	Min	Max	Unit
$V_{CE0(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -100\text{ mA}, I_B = -10\text{ mA}, L = -20\text{ mH}$	-400	-	V
$V_{CEX(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -200\text{ mA}, I_{B1} = I_{B2} = -20\text{ mA}, V_{BE(off)} = 5\text{ V}, L = 10\text{ mH}$	-400	-	V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -400\text{ V}, I_E = 0$	-	-100	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = -5\text{ V}, I_C = 0$	-	-10	$\mu\text{A}$
$I_{CEX1}$	Collector Cut-off Current	$V_{CE} = -400\text{ V}, V_{BE(off)} = 1.5\text{ V}$	-	-100	$\mu\text{A}$
$I_{CEX2}$	Collector Cut-off Current	$V_{CE} = -400\text{ V}, V_{BE(off)} = 1.5\text{ V}, T_C = 125^\circ\text{C}$	-	-1	mA
$h_{FE}$	DC Current Gain	$V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$	30	200	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -100\text{ mA}, I_B = -10\text{ mA}$	-	-1	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -100\text{ mA}, I_B = -10\text{ mA}$	-	-1.2	V
$t_{ON}$	Turn On Time	$V_{CC} = -150\text{ V}, I_C = -100\text{ mA}, I_{B1} = -10\text{ mA}, I_{B2} = 20\text{ mA}, R_L = 1.5\text{ k}\Omega$	-	1	$\mu\text{s}$
$t_{STG}$	Storage Time		-	4	$\mu\text{s}$
$t_F$	Fall Time		-	1	$\mu\text{s}$

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

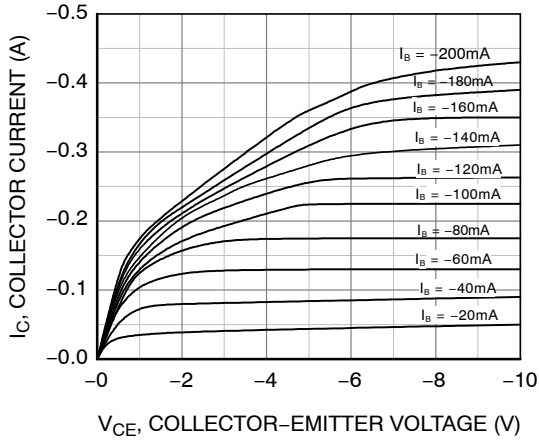


Figure 1. Static Characteristic

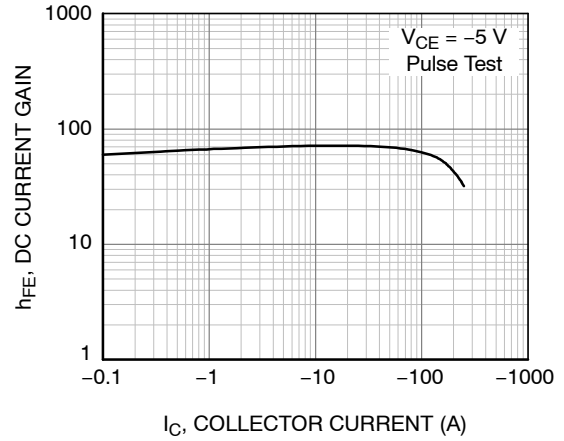


Figure 2. DC Current Gain

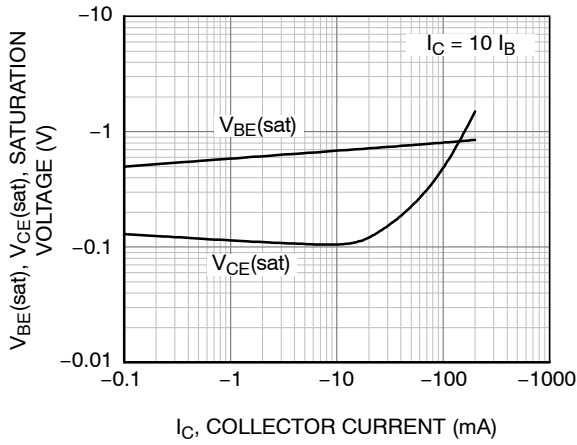


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

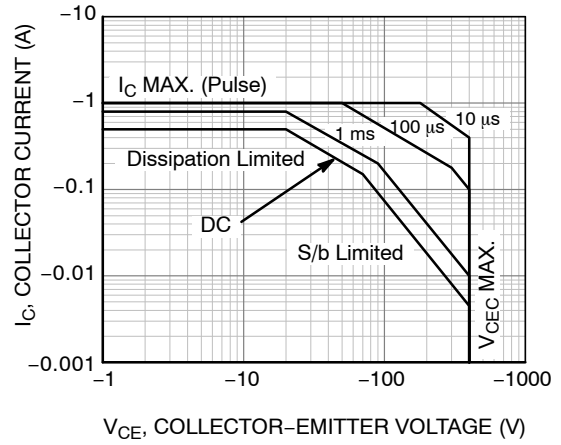


Figure 4. Safe Operating Area

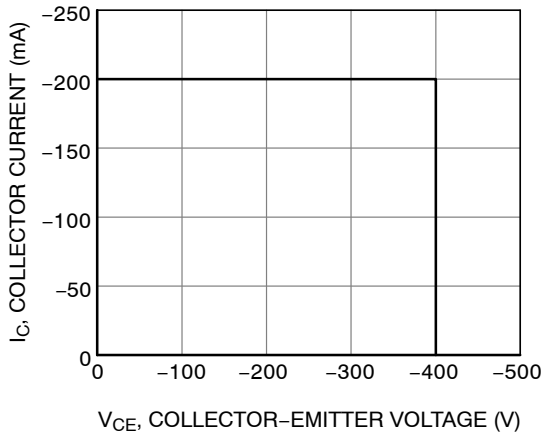


Figure 5. Reverse Bias Safe Operating Area

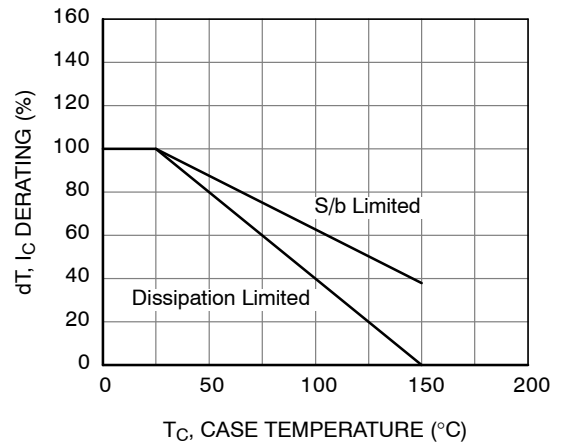
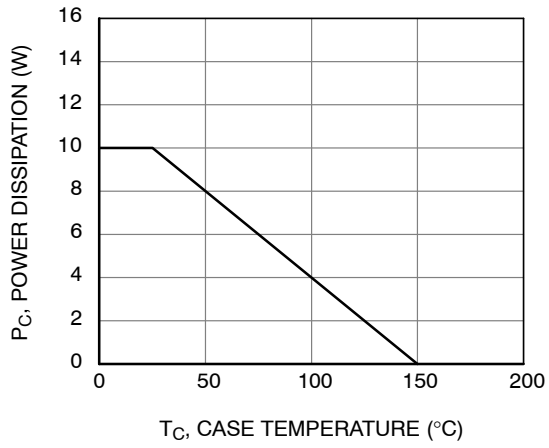


Figure 6. Derating Curve of Safe Operating Areas

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## TYPICAL CHARACTERISTICS (Continued)



**Figure 7. Power Derating**

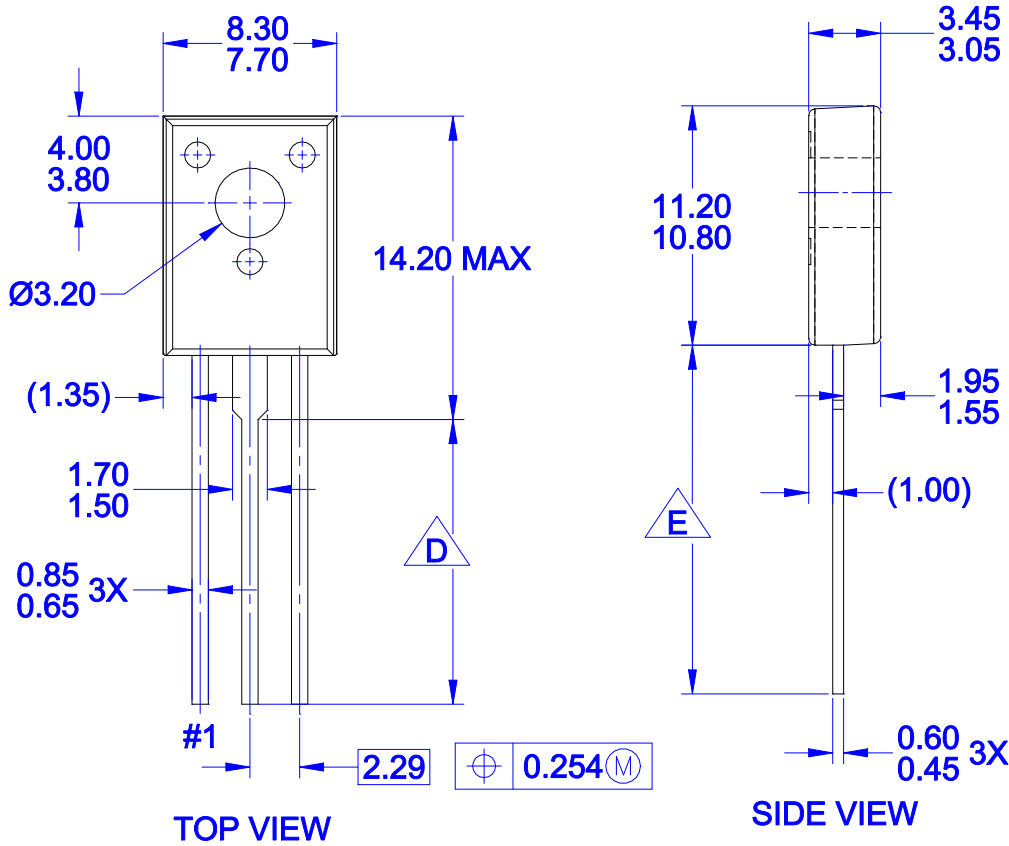
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®



TO-126-3LD  
CASE 340AS  
ISSUE O

DATE 30 SEP 2016



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:**

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- 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

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