

# NPN Epitaxial Silicon Transistor

## KSC3503

### Features

- High Voltage:  $V_{CEO} = 300\text{ V}$
- Low Reverse Transfer Capacitance:  $C_{re} = 1.8\text{ pF}$  at  $V_{CB} = 30\text{ V}$
- Excellent Gain Linearity for Low THD
- High Frequency: 150 MHz
- Full Thermal and Electrical Spice Models are Available
- Complement to KSA1381
- These Devices are Pb-Free and are RoHS Compliant

### Applications

- Audio, Voltage Amplifier and Current Source
- CRT Display, Video Output
- General Purpose Amplifier

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Units
Collector-Base Voltage	$BV_{CBO}$	300	V
Collector-Emitter Voltage	$BV_{CEO}$	300	V
Emitter-Base Voltage	$BV_{EBO}$	5	V
Collector Current (DC)	$I_C$	100	mA
Collector Current (Pulse)	$I_{CP}$	200	mA
Total Device Dissipation, $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$	$P_C$	7	W
		1.2	W
Junction and Storage Temperature	$T_J, T_{STG}$	-50 ~ +150	$^\circ\text{C}$

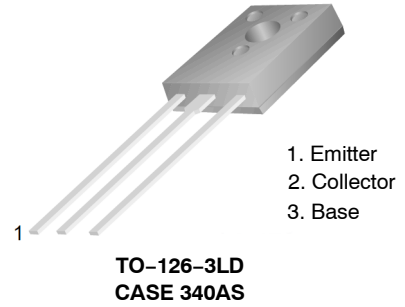
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS (Note 1)

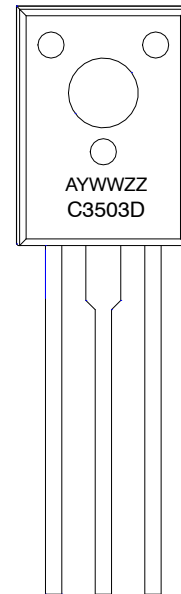
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Max.	Units
Thermal Resistance, Junction to Case	$R_{\theta JC}$	17.8	$^\circ\text{C/W}$

1. Device mounted on minimum pad size.



### MARKING DIAGRAM



A = Assembly Location  
 YWW = Date Code  
 ZZ = Assembly Lot  
 C3503D = Specific Device Code

### ORDERING INFORMATION

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

## KSC3503

### ELECTRICAL CHARACTERISTICS (Note 2) ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \mu\text{A}, I_E = 0$	300			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 1 \text{ mA}, I_B = 0$	300			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	5			V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 200 \text{ V}, I_E = 0$			0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 4 \text{ V}, I_C = 0$			0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$	60		120	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 20 \text{ mA}, I_B = 2 \text{ mA}$			0.6	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 20 \text{ mA}, I_B = 2 \text{ mA}$			1	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 30 \text{ V}, I_C = 10 \text{ mA}$		150		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 30 \text{ V}, f = 1 \text{ MHz}$		2.6		pF
$C_{ob}$	Output Capacitance	$V_{CB} = 30 \text{ V}, f = 1 \text{ MHz}$		1.8		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.

2. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2\%$

### ORDERING INFORMATION

Part Number*	Marking	Package	Shipping
KSC3503DS	C3503D	TO-126-3LD (Pb-Free)	2000 Units / Bulk Box
KSC3503DSTU	C3503D	TO-126-3LD (Pb-Free)	1920 Units / Tube

\*Suffix "-TU" means the tube packing, The Suffix "TU" could be replaced to other suffix character as packing method.

TYPICAL CHARACTERISTICS

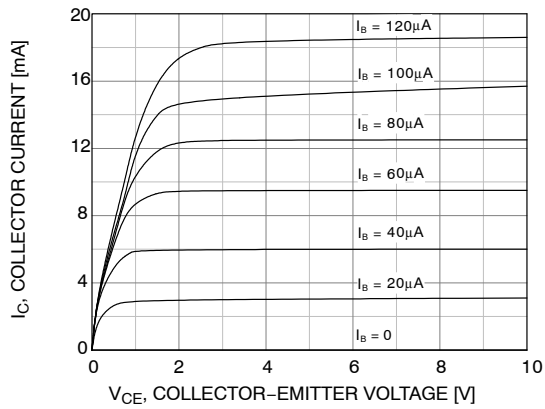


Figure 1. Static Characteristic

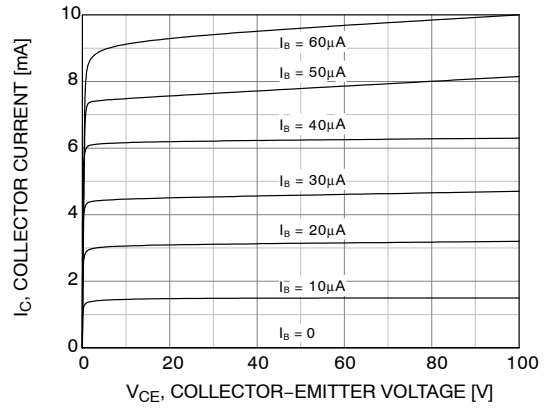


Figure 2. Static Characteristic

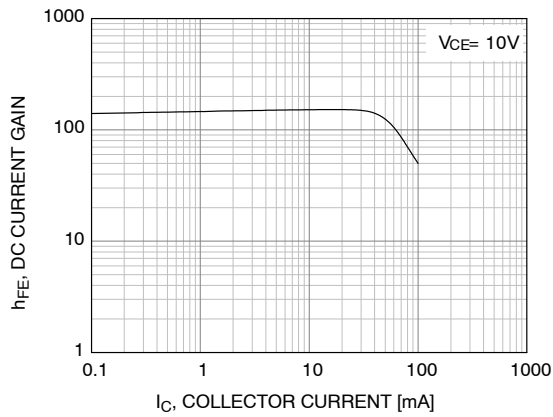


Figure 3. DC Current Gain

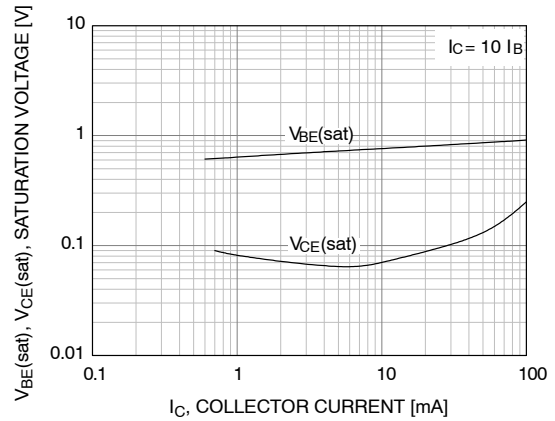


Figure 4. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

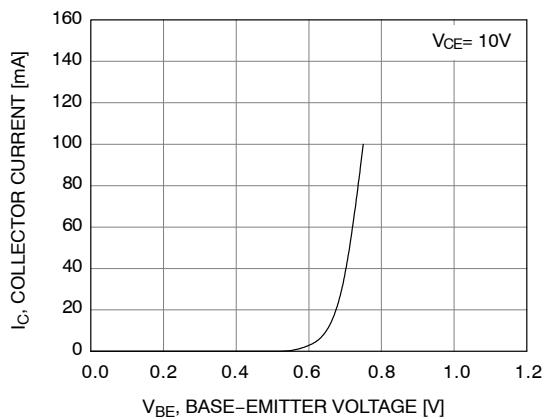


Figure 5. Base-Emitter On Voltage

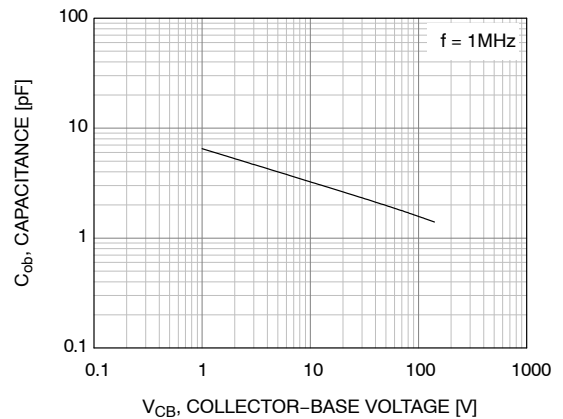


Figure 6. Collector Output Capacitance

TYPICAL CHARACTERISTICS

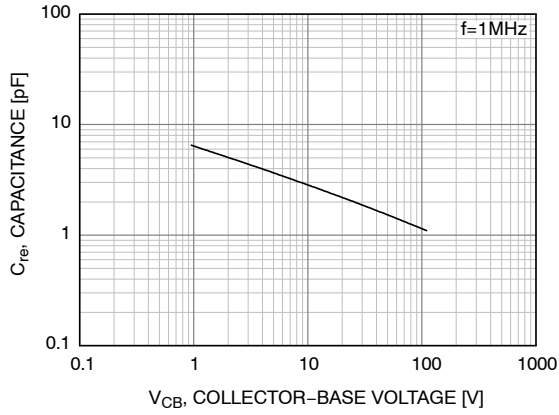


Figure 7. Reverse Transfer Capacitance

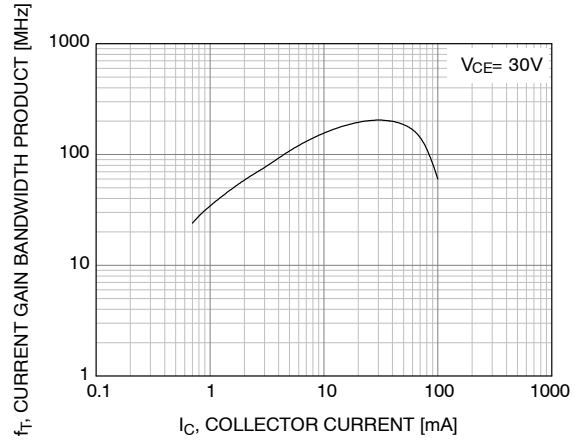


Figure 8. Current Gain Bandwidth Product

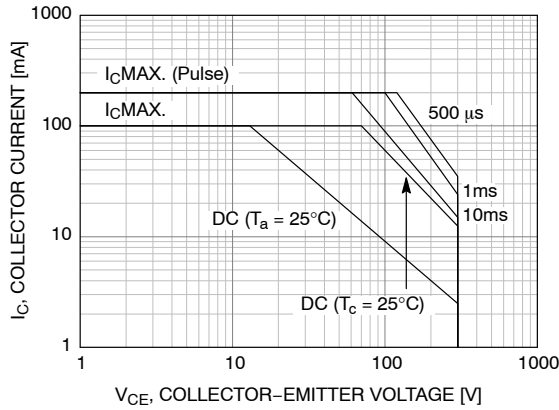


Figure 9. Safe Operating Area

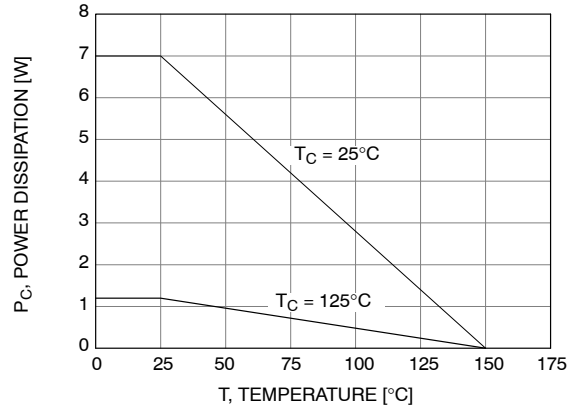


Figure 10. Power Derating

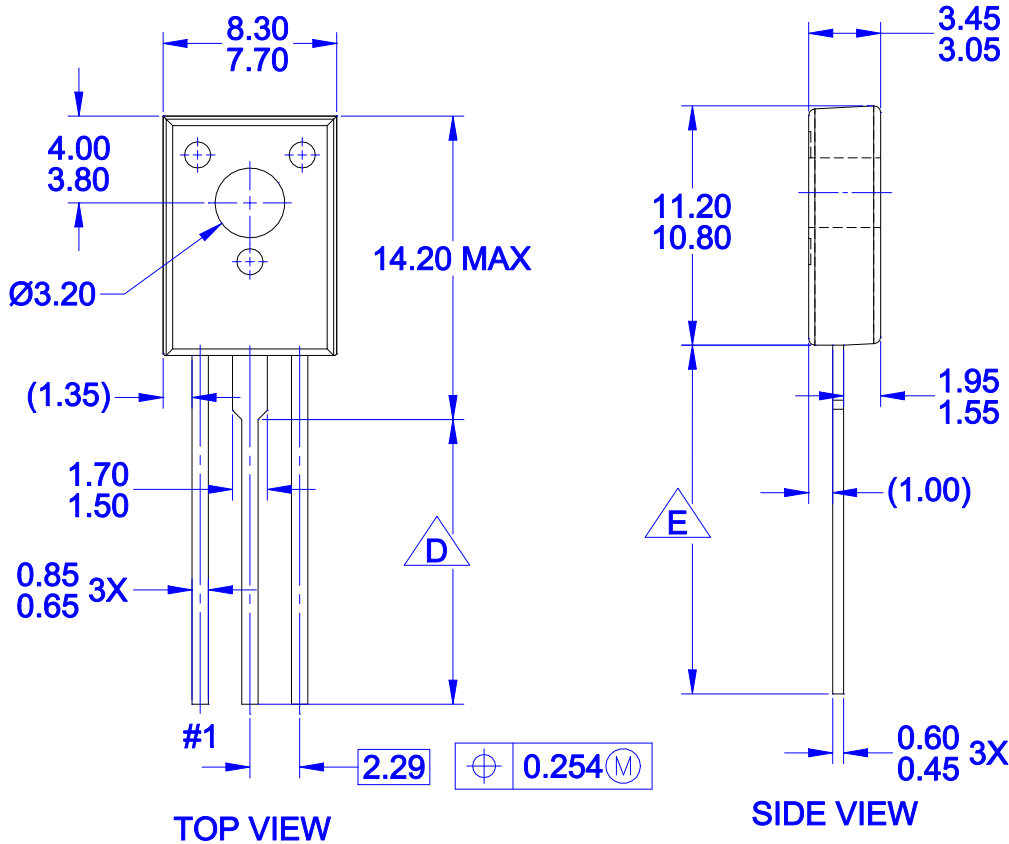
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®



TO-126-3LD  
CASE 340AS  
ISSUE 0

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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