

# NPN Epitaxial Silicon Transistor

## KSP10

### Features

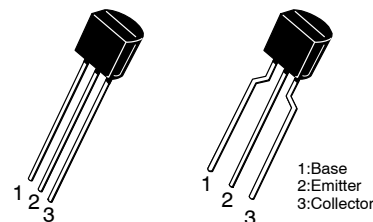
- VHF/UHF Transistor
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	30	V
$V_{CEO}$	Collector-Emitter Voltage	25	V
$V_{EBO}$	Emitter-Base Voltage	3.0	V
PC	Collector Power Dissipation ( $T_A = 25^\circ\text{C}$ )	350	mW
	Derate above $25^\circ\text{C}$	2.8	mW/ $^\circ\text{C}$
PC	Collector Power Dissipation ( $T_C = 25^\circ\text{C}$ )	1.0	W
	Derate above $25^\circ\text{C}$	8.0	W/ $^\circ\text{C}$
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to 150	$^\circ\text{C}$
$R_{th(j-c)}$	Thermal Resistance, Junction to Case	125	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C}/\text{W}$

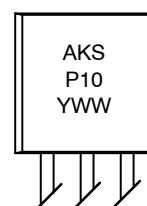
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



TO-92-3  
CASE 135AN

TO-92 LF  
CASE 135AR

### MARKING DIAGRAM



A = Assembly Code  
KSP10 = Device Code  
Y = Year  
WW = Work Week

### ORDERING INFORMATION

Device	Package	Shipping
KSP10BU	TO-92 3 (Pb-Free)	10000 / Bulk Bag
KSP10TA	TO-92 3 LF (Pb-Free)	2000 / Fan-Fold

# KSP10

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

Symbol	Parameter	Conditions	Min	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	$I_C = 1\ \text{mA}$ , $I_B = 0$	25	–	V
$BV_{EBO}$	Emitter–Base Breakdown Voltage	$I_E = 10\ \mu\text{A}$ , $I_C = 0$	3.0	–	V
$I_{CBO}$	Collector Cut–Off Current	$V_{CB} = 25\ \text{V}$ , $I_E = 0$	–	100	nA
$I_{EBO}$	Emitter Cut–Off Current	$V_{EB} = 2\ \text{V}$ , $I_C = 0$	–	100	nA
$h_{FE}$	DC Current Gain	$V_{CE} = 10\ \text{V}$ , $I_C = 4\ \text{mA}$	60	–	–
$V_{CE(sat)}$	Collector–Emitter Saturation Voltage	$I_C = 4\ \text{mA}$ , $I_B = 0.4\ \text{mA}$	–	0.5	V
$V_{BE(on)}$	Base–Emitter On Voltage	$V_{CE} = 10\ \text{V}$ , $I_C = 4\ \text{mA}$	–	0.95	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\ \text{V}$ , $I_C = 4\ \text{mA}$ , $f = 100\ \text{MHz}$	650	–	MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\ \text{V}$ , $I_E = 0$ , $f = 1\ \text{MHz}$	–	0.7	pF
$C_{rb}$	Collector Base Feedback Capacitance	$V_{CB} = 10\ \text{V}$ , $I_E = 0$ , $f = 1\ \text{MHz}$	0.35	0.65	pF
$C_{c-rbb'}$	Collector Base Time Constant	$V_{CB} = 10\ \text{V}$ , $I_C = 4\ \text{mA}$ , $f = 31.8\ \text{MHz}$	–	9.0	ps

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.

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

## TYPICAL CHARACTERISTICS

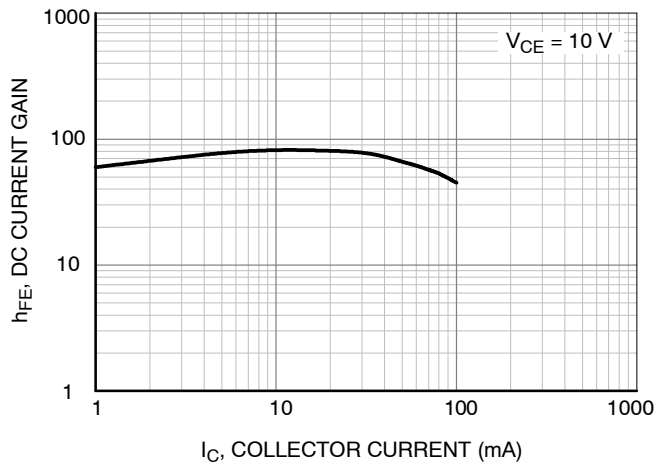


Figure 1. DC Current Gain

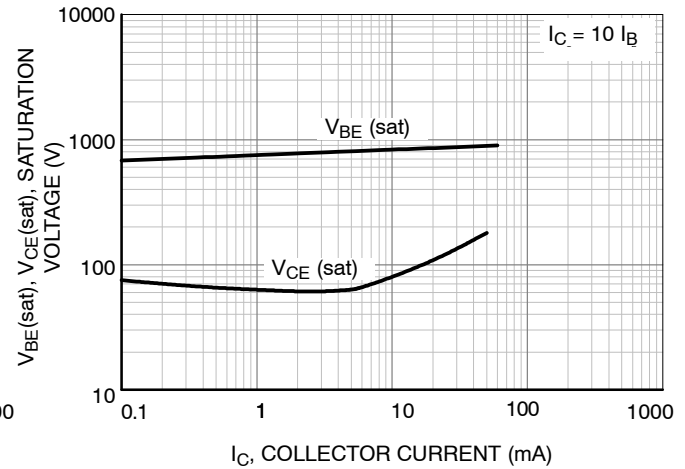


Figure 2. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

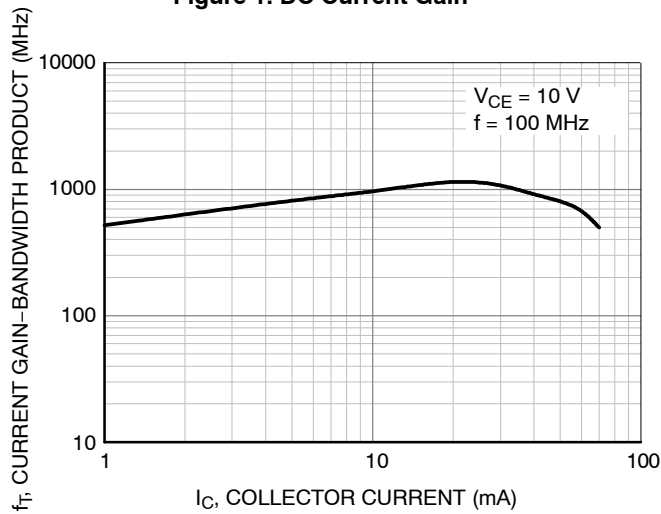


Figure 3. Current Gain Bandwidth Product

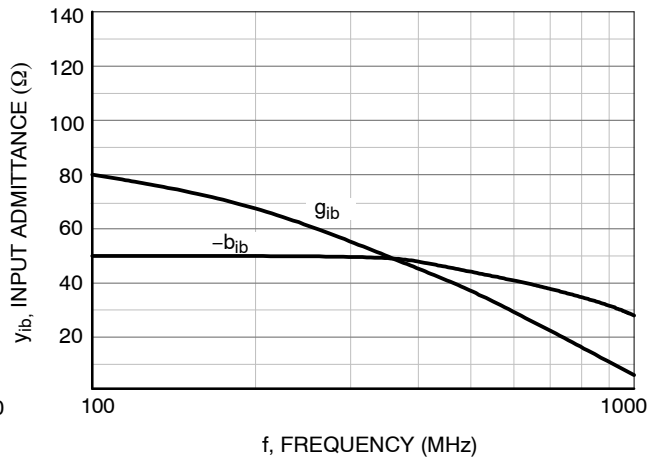


Figure 4. Rectangular Form

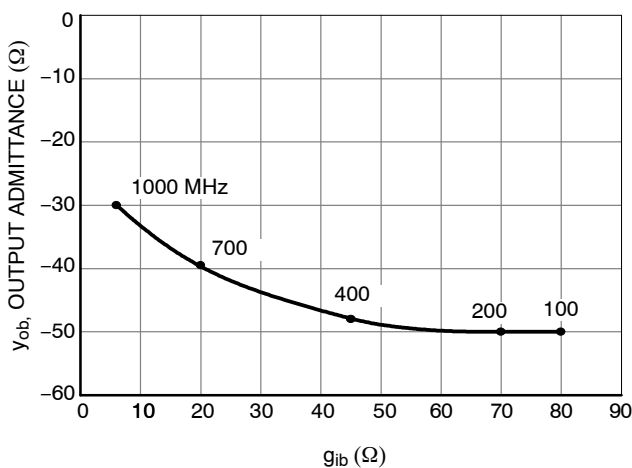


Figure 5. Polar Form

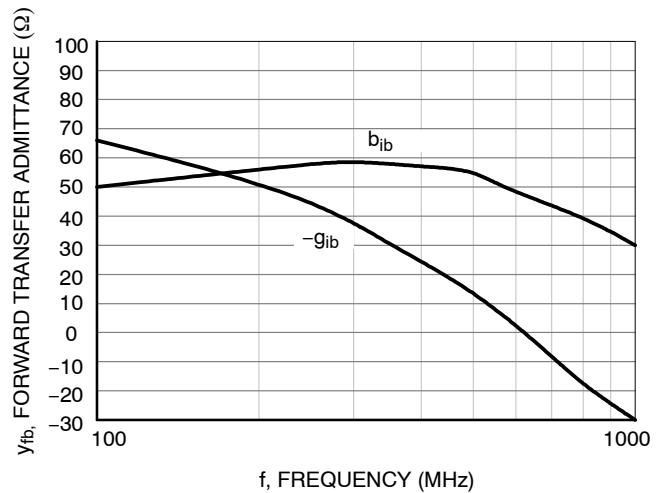


Figure 6. Rectangular Form

## TYPICAL CHARACTERISTICS (CONTINUED)

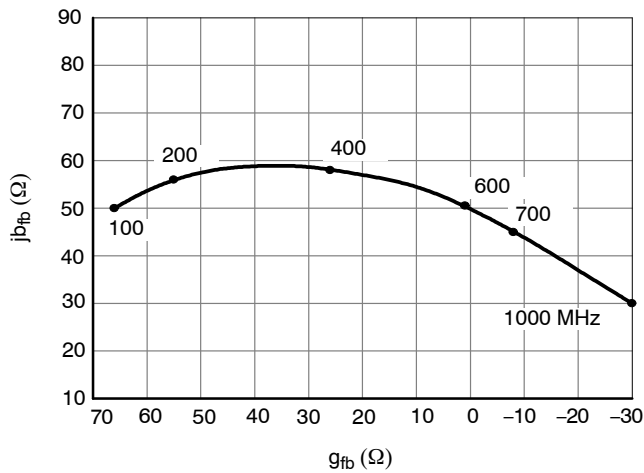


Figure 7. Polar Form

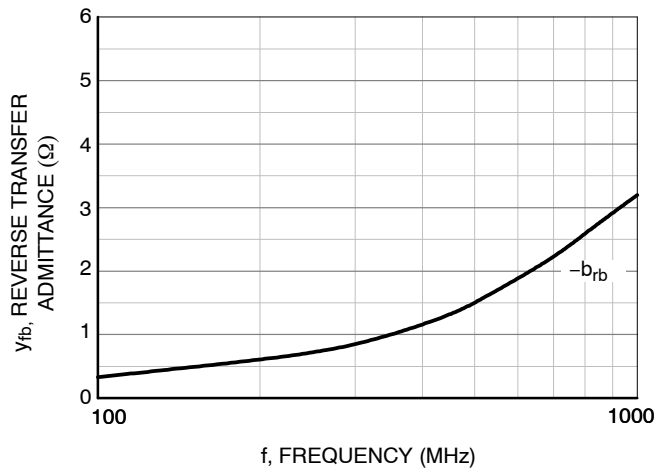


Figure 8. Rectangular Form

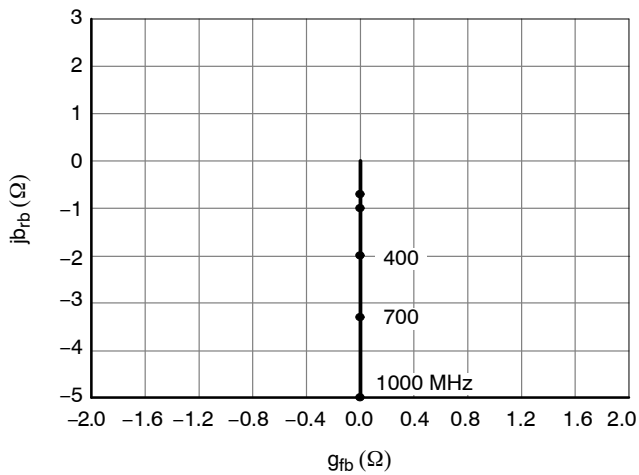


Figure 9. Polar Form

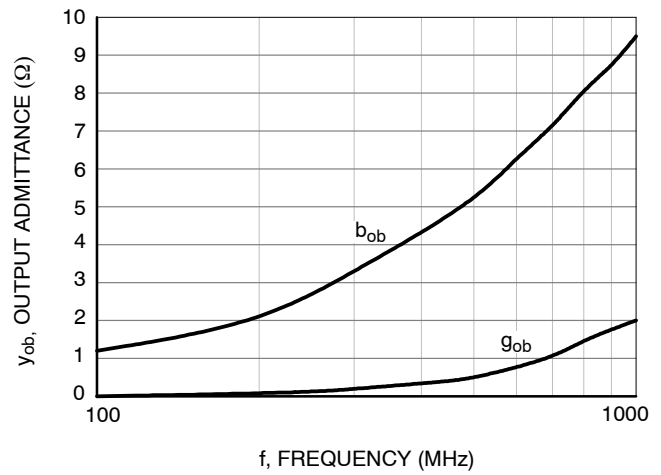


Figure 10. Rectangular Form

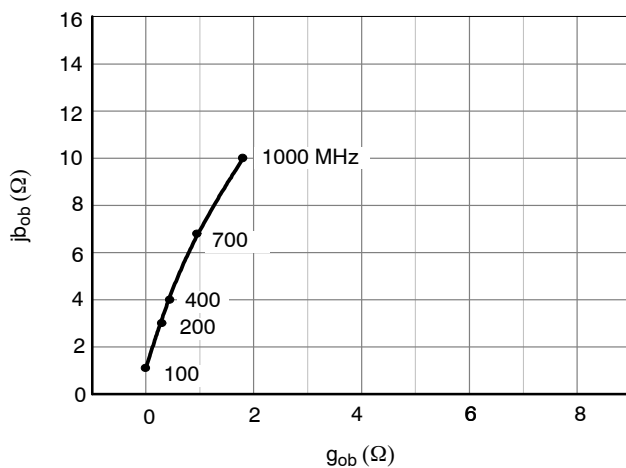


Figure 11. Polar Form

# MECHANICAL CASE OUTLINE

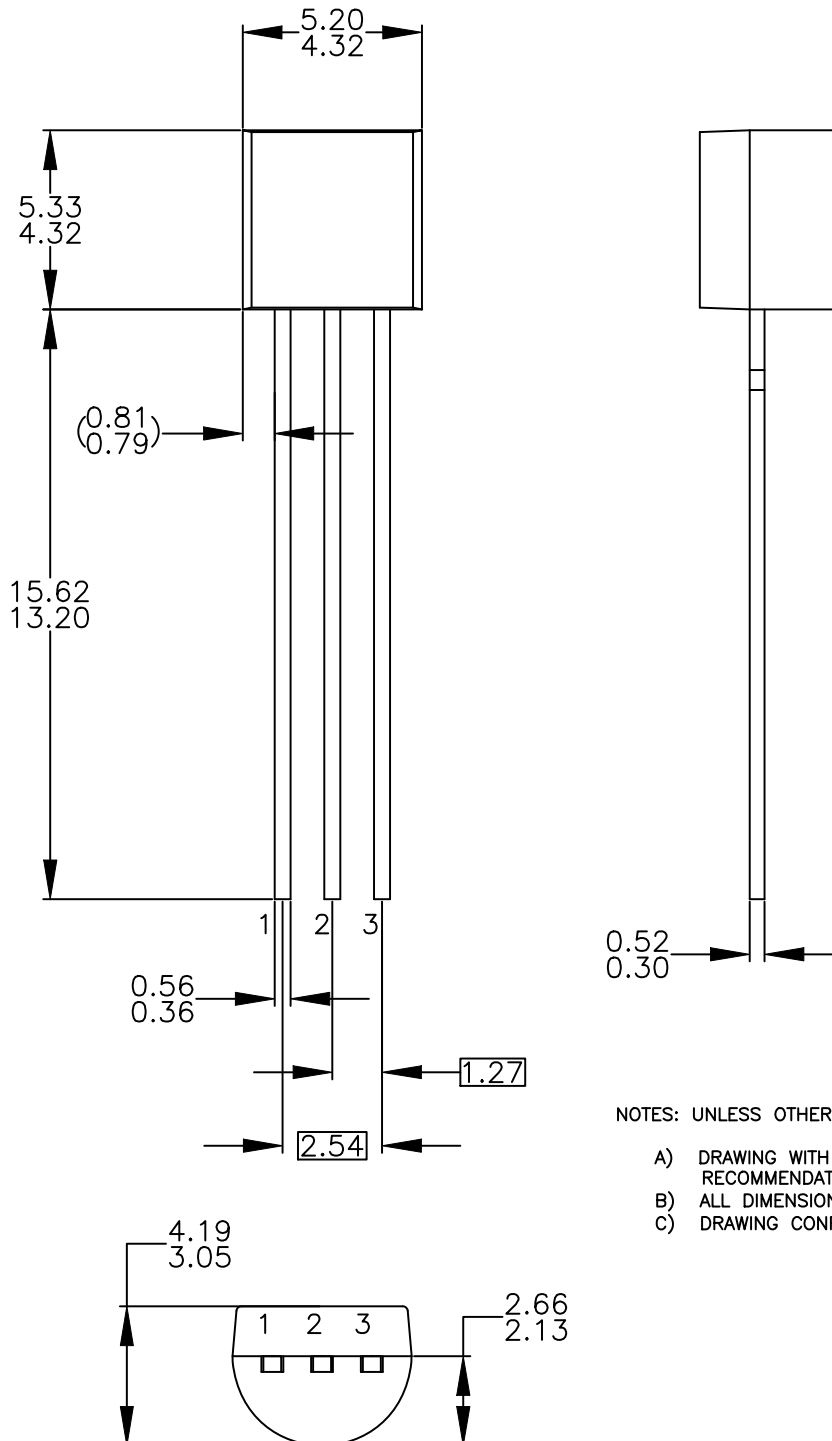
## PACKAGE DIMENSIONS

ON Semiconductor®

ON

TO-92 3 4.825x4.76  
CASE 135AN  
ISSUE O


DATE 31 JUL 2016



NOTES: UNLESS OTHERWISE SPECIFIED

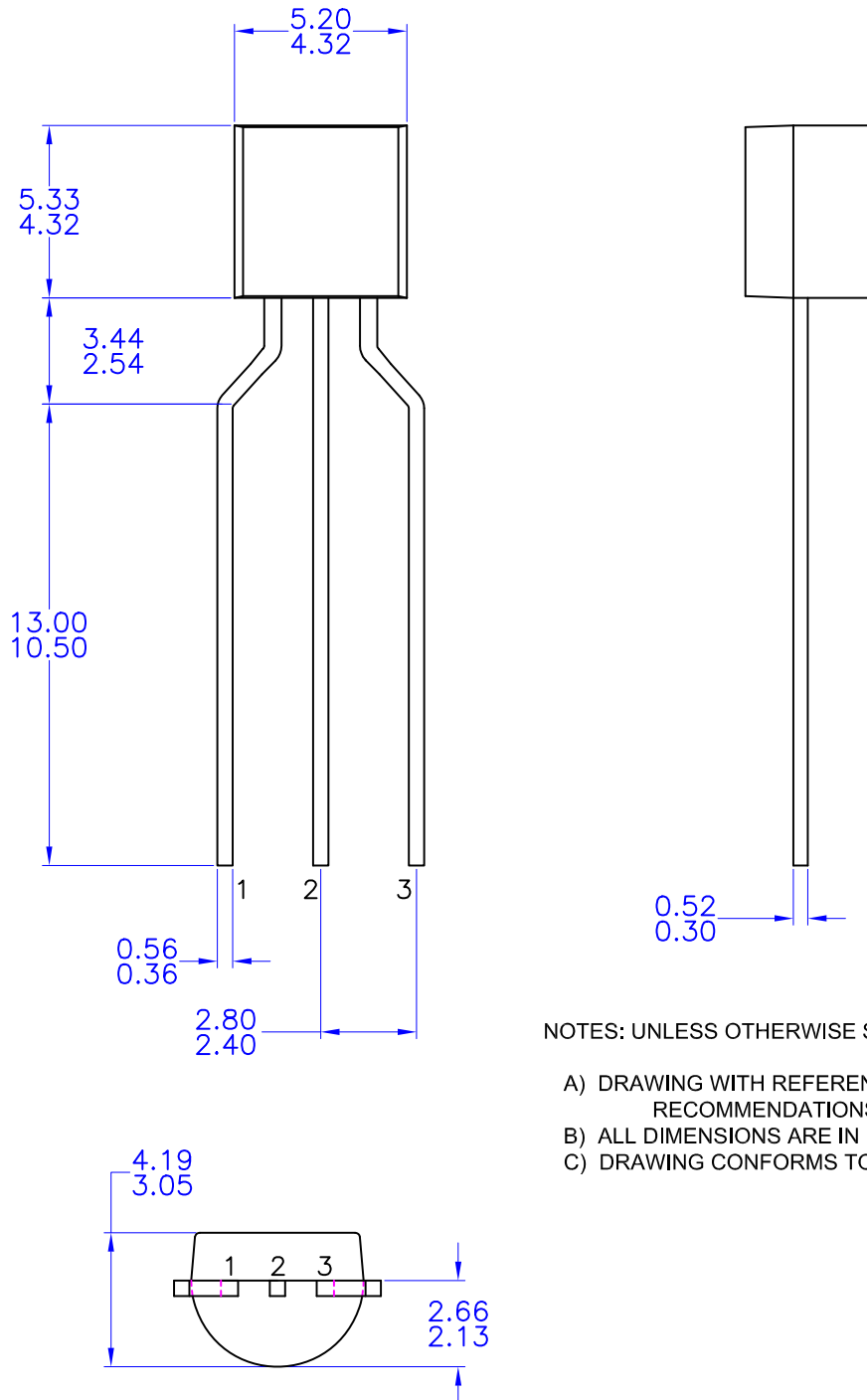
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