

NPN Epitaxial Silicon Darlington Transistor

KSP13

Features

- Collector–Emitter Voltage: $V_{CES}=30\text{ V}$
- Collector Power Dissipation: $P_C(\text{max})=625\text{ mW}$
- These are Pb–Free Devices

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector–Base Voltage	30	V
V_{CES}	Collector–Emitter Voltage	30	V
V_{EBO}	Emitter–Base Voltage	10	V
I_C	Collector Current	500	mA
P_C	Collector Power Dissipation	625	mW
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	–55 to 150	$^\circ\text{C}$

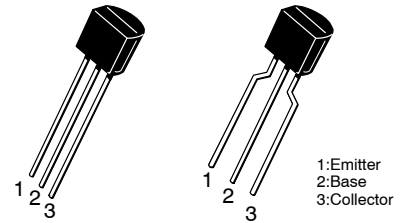
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

Symbol	Parameter	Test Condition	Min	Max	Unit
BV_{CES}	Collector–Emitter Breakdown Voltage	$I_C = 100\ \mu\text{A}, I_B = 0$	30	–	V
I_{CBO}	Collector Cut–off Current	$V_{CB} = 30\text{ V}, I_E = 0$	–	100	nA
I_{EBO}	Emitter Cut–off Current	$V_{EB} = 10\text{ V}, I_C = 0$	–	100	nA
h_{FE}	DC Current Gain (Note 1)	$V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$	5k	–	
		$V_{CE} = 5\text{ V}, I_C = 100\text{ mA}$	10k	–	
$V_{CE}(\text{sat})$	Collector–Emitter Saturation Voltage	$I_C = 100\text{ mA}, I_B = 0.1\text{ mA}$	–	1.5	V
$V_{BE}(\text{on})$	Base–Emitter On Voltage	$V_{CE} = 5\text{ V}, I_C = 100\text{ mA}$	–	2.0	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$ $f = 100\text{ MHz}$	125	–	MHz

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.

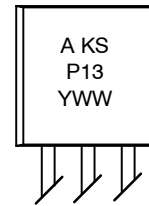
1. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$.



TO–92 3
CASE 135AN

TO–92 3 LF
CASE 135AR

MARKING DIAGRAM



A = Assembly Code
KSP13 = Device Code
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
KSP13BU	TO–92 3 (Pb–Free)	10000 / Bulk Bag
KSP13TA	TO–92 3 LF (Pb–Free)	2000 / Fan–Fold

TYPICAL CHARACTERISTICS

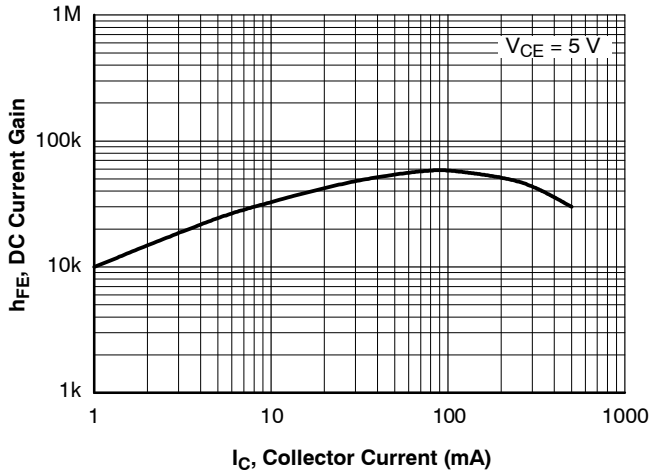


Figure 1. DC Current Gain

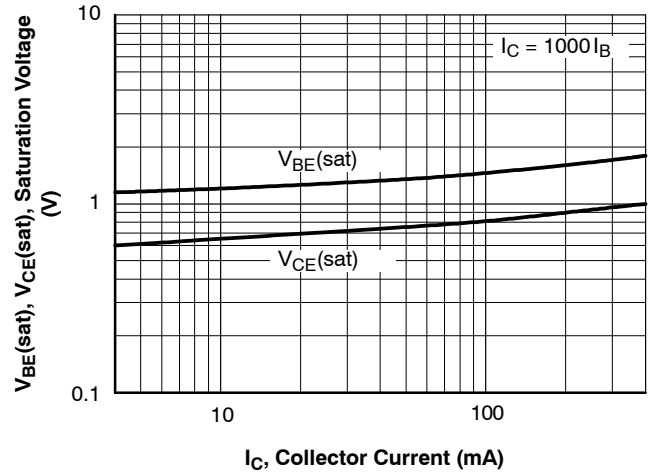


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

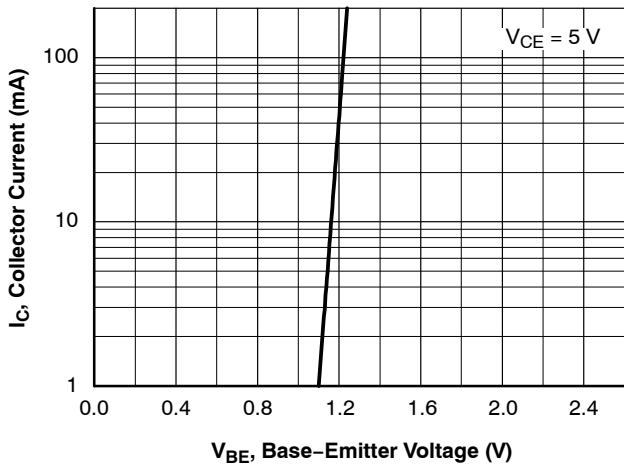


Figure 3. Base-Emitter On Voltage

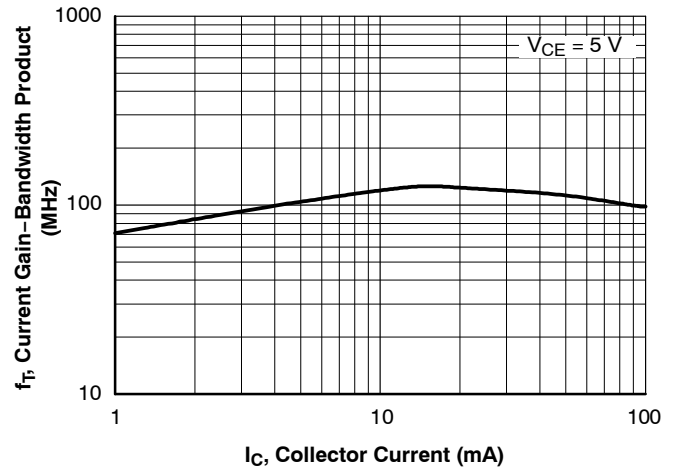
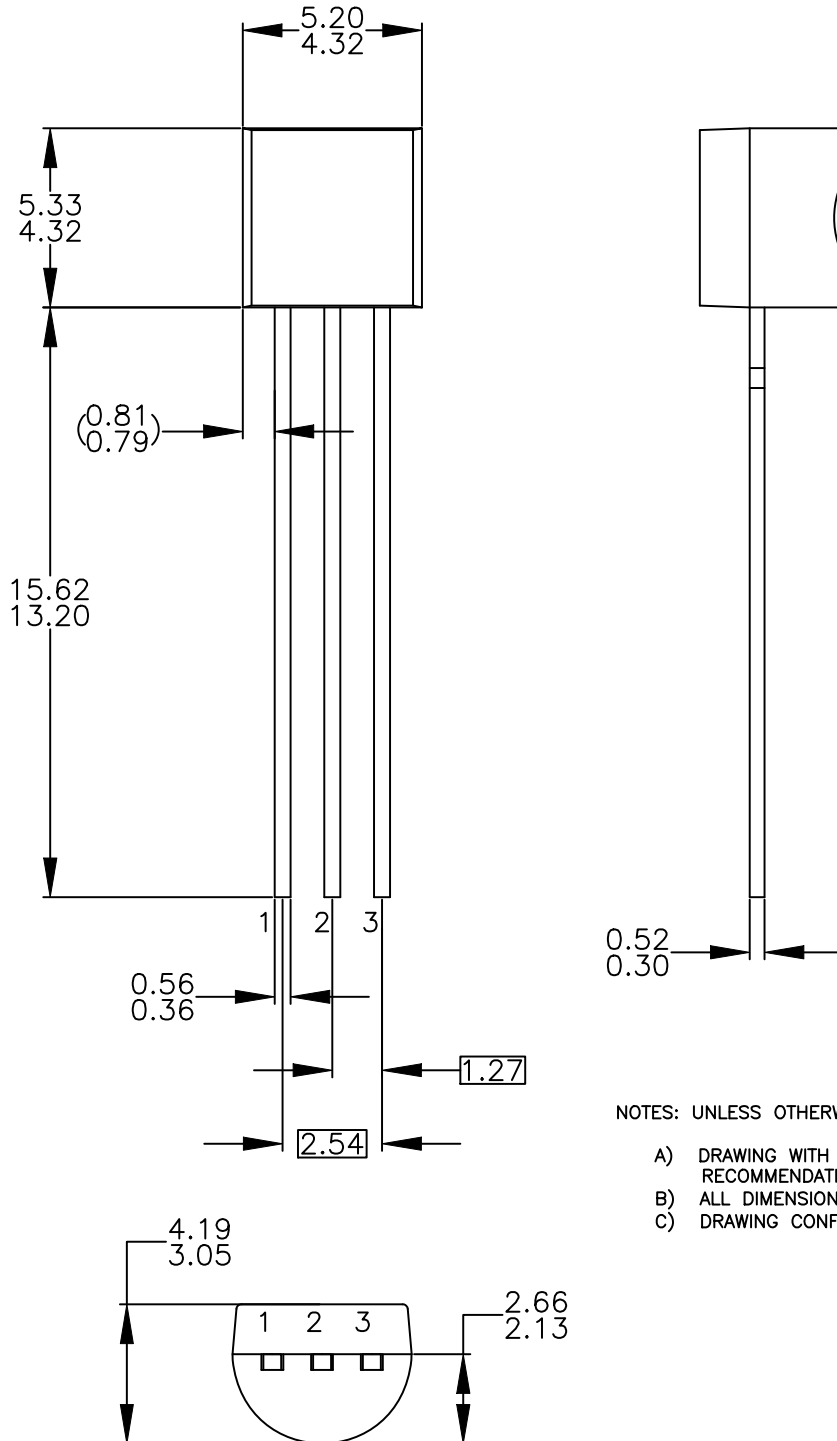


Figure 4. Current Gain Bandwidth Product

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

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

DATE 31 JUL 2016



NOTES: UNLESS OTHERWISE SPECIFIED

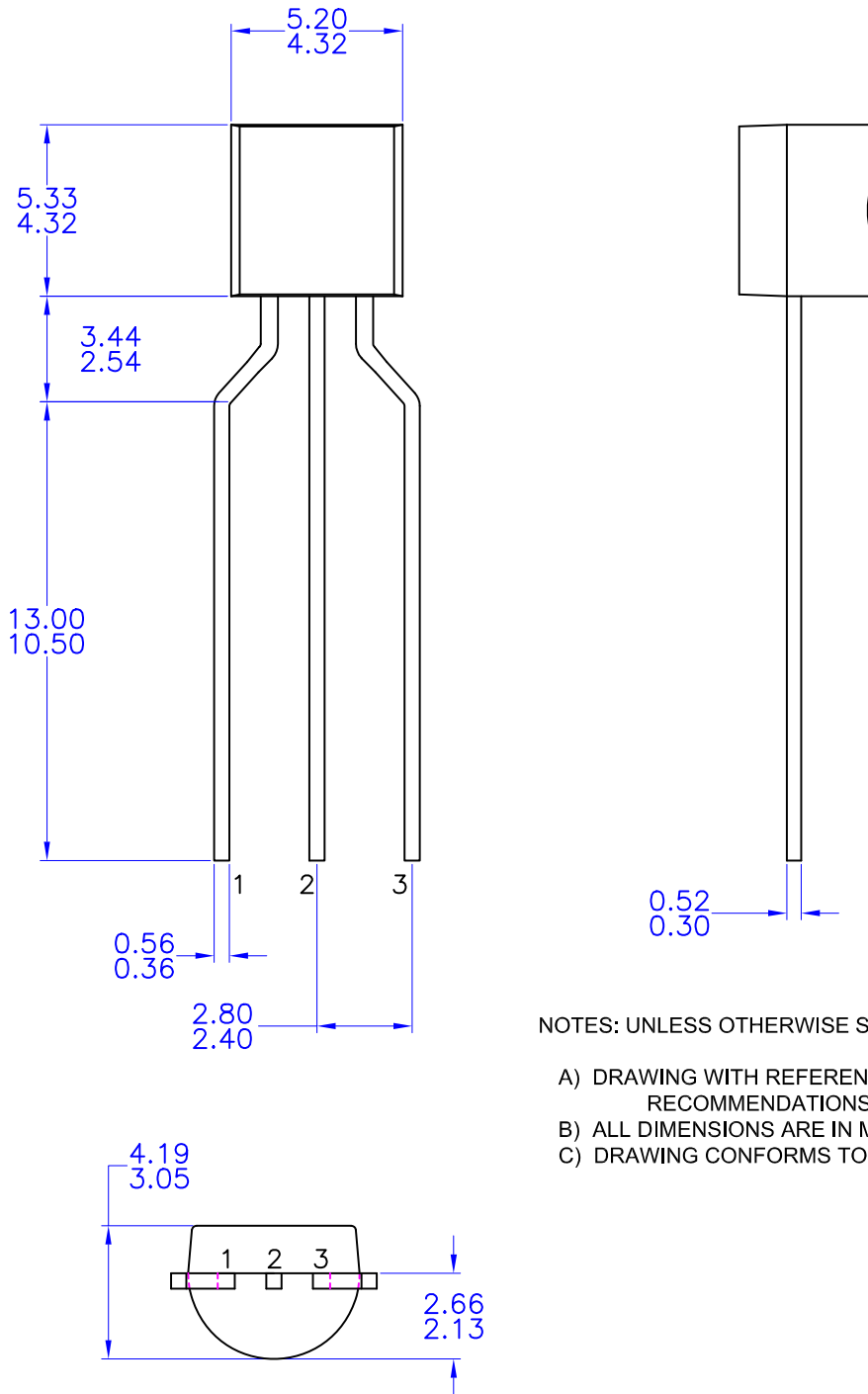
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TO-92 3 4.83x4.76 LEADFORMED
CASE 135AR
ISSUE O

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