

NPN General-Purpose Amplifier

KSP2222A

Features

- Collector–Emitter Voltage: $V_{CEO} = 40\text{ V}$
- Available as PN2222A
- 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	75	V
V_{CEO}	Collector–Emitter Voltage	40	V
V_{EBO}	Emitter–Base Voltage	6.0	V
I_C	Collector Current	600	mA
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	–55 to 150	$^\circ\text{C}$

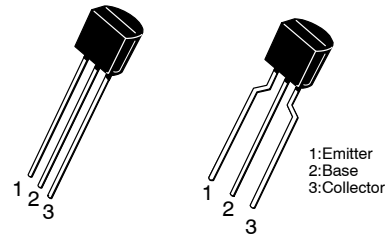
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS (Note 1)

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

Symbol	Parameter	Value	Unit
P_D	Power Dissipation by $R_{\theta JA}$	625	mW
	Derate Above 25°C	5	MW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction–to–Case	83.3	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction–to–Ambient	200	$^\circ\text{C}/\text{W}$

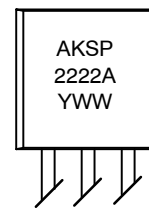
1. PCB size: FR–4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.



TO–92–3
CASE 135AN

TO–92 LF
CASE 135AR

MARKING DIAGRAM



A = Assembly Code
KSP2222A = Specific Device Code
Y = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
KSP2222ABU	TO–92 3 (Pb–Free)	10,000 Units / Bulk Bag
KSP2222ATA	TO–92 3 LF (Pb–Free)	2,000 / Fan–Fold

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

KSP2222A

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

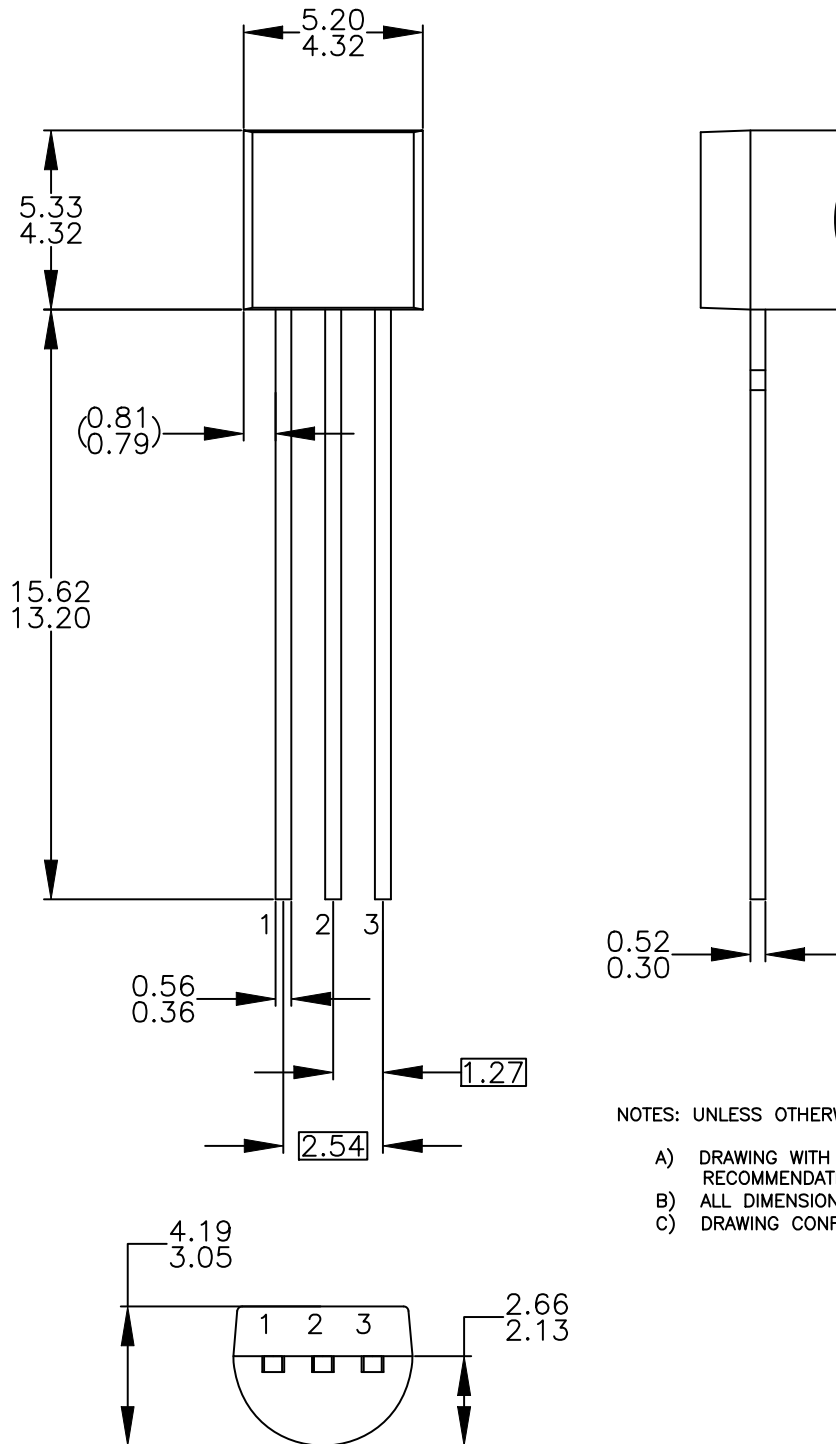
Symbol	Parameter	Conditions	Min	Max	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 10 \mu\text{A}, I_E = 0$	75	-	V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{mA}, I_B = 0$	40	-	V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	6.0	-	V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 60 \text{V}, I_E = 0$	-	0.01	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 3.0 \text{V}, I_C = 0$	-	10	nA
h_{FE}	DC Current Gain	$V_{CE} = 10 \text{V}, I_C = 0.1 \text{mA}$	35	-	
		$V_{CE} = 10 \text{V}, I_C = 1 \text{mA}$	50	-	
		$V_{CE} = 10 \text{V}, I_C = 10 \text{mA}$	75	-	
		$V_{CE} = 10 \text{V}, I_C = 150 \text{mA}$ (Note 2)	100	300	
		$V_{CE} = 10 \text{V}, I_C = 500 \text{mA}$ (Note 2)	40	-	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage (Note 2)	$I_C = 150 \text{mA}, I_B = 15 \text{mA}$	-	0.3	V
		$I_C = 500 \text{mA}, I_B = 50 \text{mA}$	-	1.0	
$V_{BE(on)}$	Base-Emitter On Saturation Voltage (Note 2)	$I_C = 150 \text{mA}, I_B = 15 \text{mA}$	0.6	1.2	V
		$I_C = 500 \text{mA}, I_B = 50 \text{mA}$	-	2.0	
f_T	Current Gain Bandwidth Product	$I_C = 20 \text{mA}, V_{CE} = 20 \text{V}, f = 100 \text{MHz}$	300	-	MHz
C_{ob}	Output Capacitance	$V_{CB} = 10 \text{V}, I_E = 0, f = 1.0 \text{MHz}$	-	8	pF
t_{ON}	Turn-On Time	$V_{CC} = 30 \text{V}, I_C = 150 \text{mA}, I_{B1} = 15 \text{mA}, V_{BE(off)} = 0.5 \text{V}$	-	35	ns
t_{OFF}	Turn-Off Time	$V_{CC} = 30 \text{V}, I_C = 150 \text{mA}, I_{B1} = I_{B2} = 15 \text{mA}$	-	285	ns
NF	Noise Figure	$I_C = 100 \mu\text{A}, V_{CE} = 10 \text{V}, R_S = 1 \text{k}\Omega, f = 1.0 \text{kHz}$	-	4	dB

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

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

DATE 31 JUL 2016



NOTES: UNLESS OTHERWISE SPECIFIED

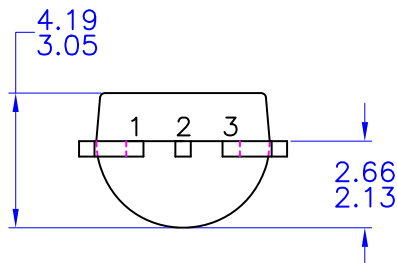
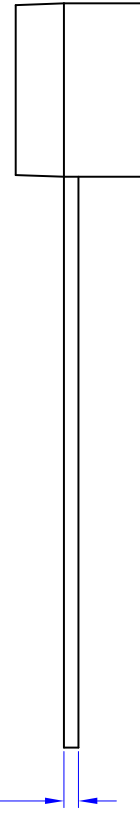
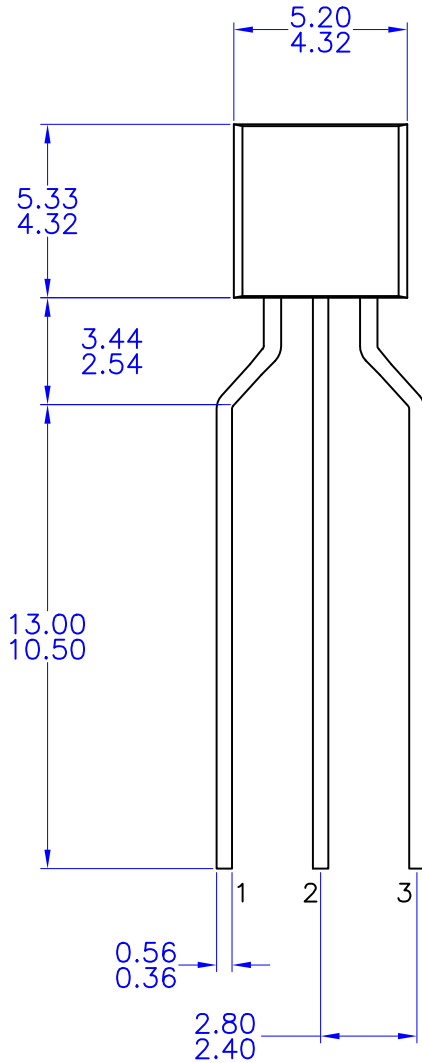
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CASE 135AR
ISSUE O

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