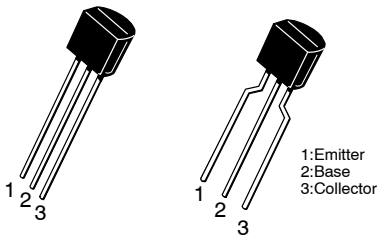
NPN General-Purpose Amplifier

KSP2222A

Features

- Collector−Emitter Voltage: V_{CEO} = 40 V
- Available as PN2222A
- These are Pb−Free Devices



TO−92−3
CASE 135AN

TO−92 LF
CASE 135AR

ABSOLUTE MAXIMUM RATINGS

(T_A = 25°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	°C
T_{STG}	Storage Temperature	−55 to 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.

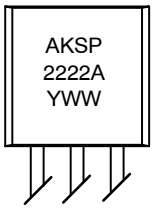
THERMAL CHARACTERISTICS (Note 1)

(T_A = 25°C unless otherwise noted.)

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

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.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

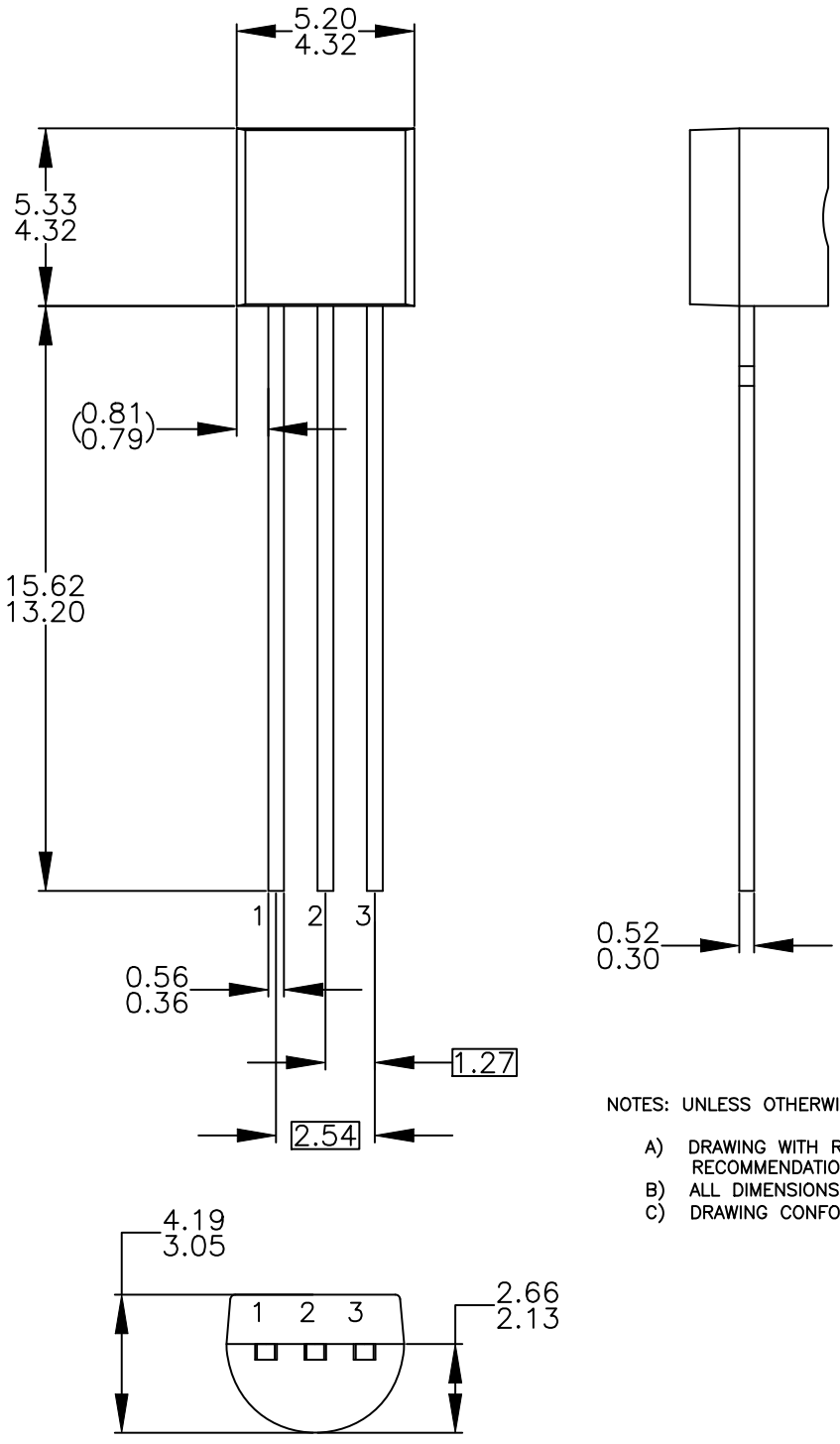
Symbol	Parameter	Conditions	Min	Max	Unit
BV_{CBO}	Collector−Base Breakdown Voltage	I_C = 10 μA, I_E = 0	75	–	V
BV_{CEO}	Collector−Emitter Breakdown Voltage	I_C = 10 mA, I_B = 0	40	–	V
BV_{EBO}	Emitter−Base Breakdown Voltage	I_E = 10 μA, I_C = 0	6.0	–	V
I_{CBO}	Collector Cut−Off Current	V_{CB} = 60 V,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

TO−92 3 4.825x4.76
CASE 135AN
ISSUE O

DATE 31 JUL 2016



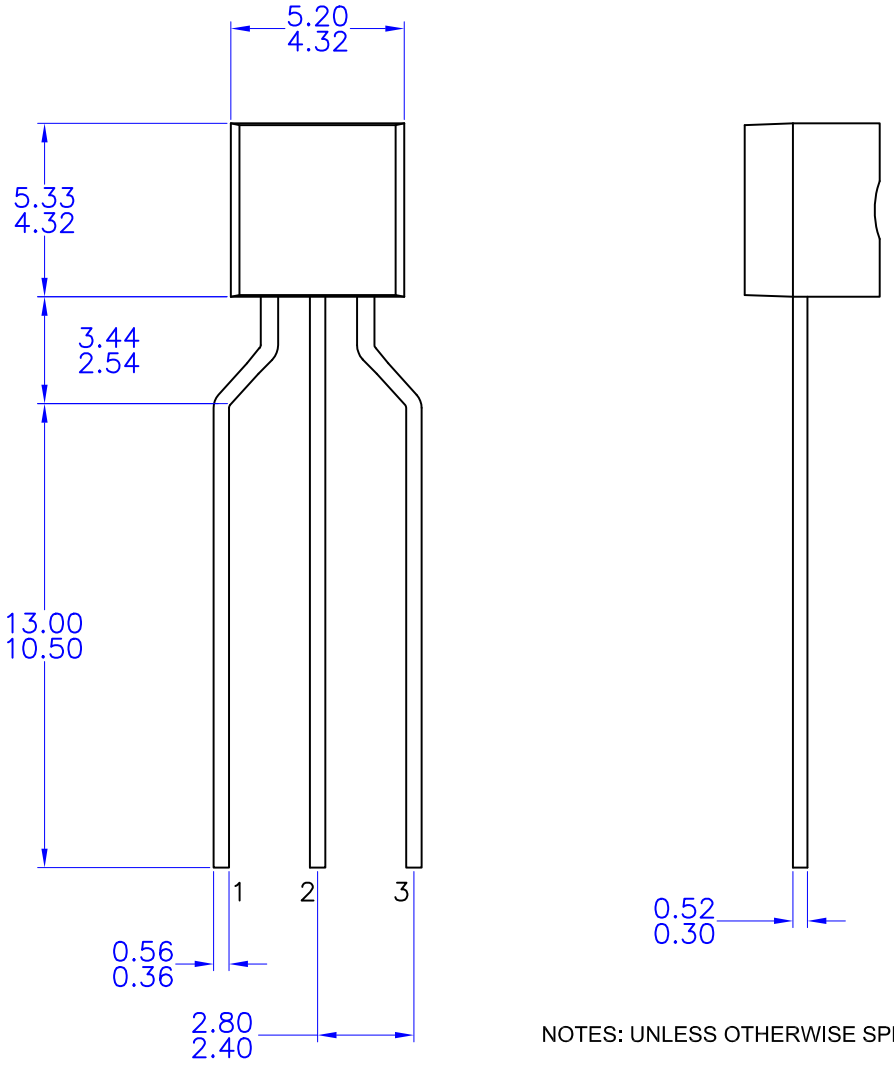
NOTES: UNLESS OTHERWISE SPECIFIED

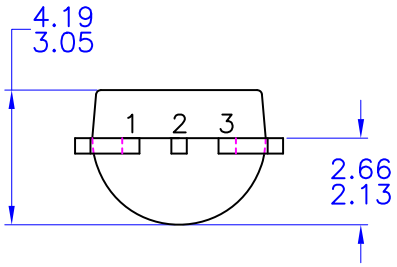
A) DRAWING WITH REFERENCE TO JEDEC TO−92 RECOMMENDATIONS.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DRAWING CONFORMS TO ASME Y14.5M−2009.

DOCUMENT NUMBER:	**98AON13880G**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	**TO−92 3 4.825X4.76**		**PAGE 1 OF 1**

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

DATE 30 SEP 2016





NOTES: UNLESS OTHERWISE SPECIFIED

A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DRAWING CONFORMS TO ASME Y14.5M-1994

DOCUMENT NUMBER:	**98AON13879G**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	**TO−92 3 4.83X4.76 LEADFORMED**		**PAGE 1 OF 1**

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales