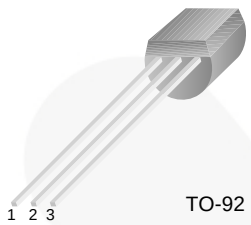
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November 2014

KSP2222A
NPN General-Purpose Amplifier

Features

- Collector-Emitter Voltage: V_{CEO} = 40 V
- Available as PN2222A



TO-92

1 2 3

1. Emitter 2. Base 3. Collector

Ordering Information

Part Number	Marking	Package	Packing Method
KSP2222ABU	KSP2222	TO-92 3L	Bulk
KSP2222ATA	KSP2222	TO-92 3L	Ammo
KSP2222ATF	KSP2222	TO-92 3L	Tape and Reel

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at 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

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Thermal Characteristics[1]

Values are at 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

Note:

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.

Electrical Characteristics

Values are at 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[2]	100	300	
		V_{CE} = 10 V, I_C = 500 mA[2]	40		
V_{CE}(sat)	Collector-Emitter Saturation Voltage[2]	I_C = 150 mA, I_B = 15 mA		0.3	V
		I_C = 500 mA, I_B = 50 mA		1.0	
V_{BE}(sat)	Base-Emitter Saturation Voltage[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

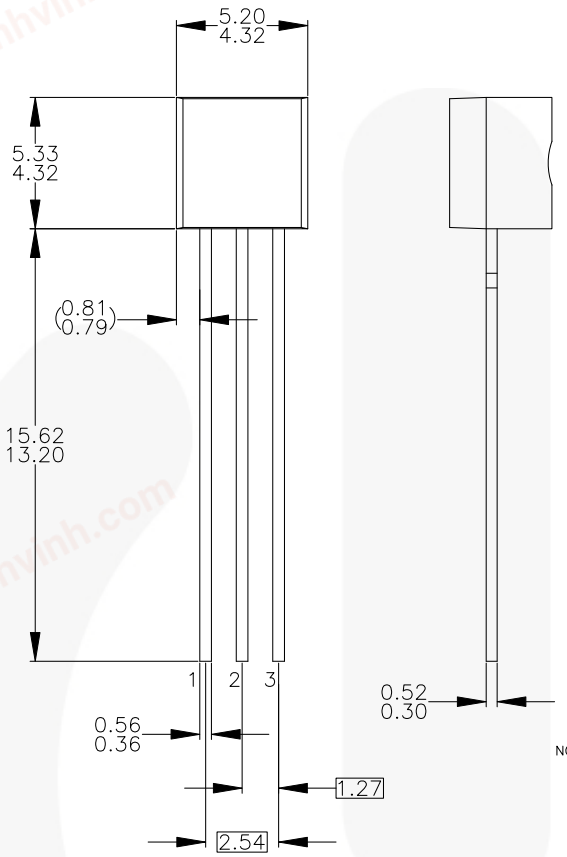
Note:

2. Pulse test: Pulse width ≤ 300 µs, duty cycle ≤ 2%

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Physical Dimensions



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.
D) TO-92 (92,94,96,97,98) PIN CONFIGURATION:

PIN	92			94			96			97			98		
	P	F	M	P	F	M	B	F	M	P	F	M	P	F	M
1	E	S	S	E	S	S	B	D	G	C	G	D	C	G	D
2	B	D	G	C	G	D	E	S	S	B	D	G	E	S	S
3	C	G	D	B	D	G	C	G	D	E	S	S	B	D	G

LEGEND:
P – BIPOLAR
F – JFET
M – DMOS
E – EMITTER
B – BASE
C – COLLECTOR
D – DRAIN
S – SOURCE
G – GATE

E) FOR PACKAGE 92, 94, 96, 97 AND 98: PIN CONFIGURATION DRAIN "D" AND SOURCE "S" ARE INTERCHANGEAGLE AT JFET "F" OPTION.
F) DRAWING FILENAME: MKT-ZA03DREV3.

Figure 1. 3-Lead, TO-92, JEDEC TO-92 Compliant Straight Lead Configuration, Bulk Type

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Physical Dimensions (Continued)

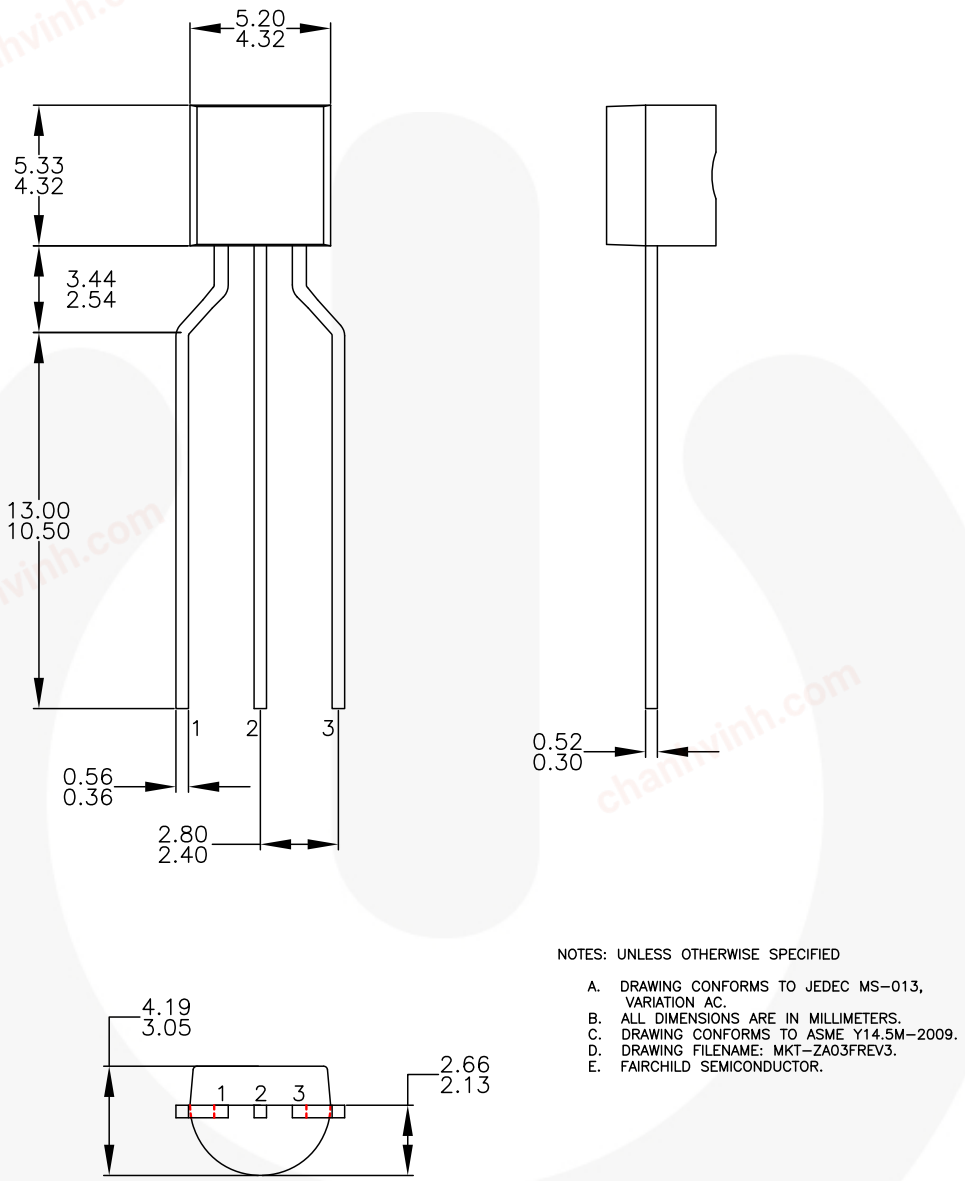


Figure 2. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type

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