



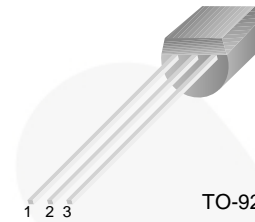
November 2014



# KSP2907A PNP General-Purpose Amplifier

## Features

- Collector-Emitter Voltage:  $V_{CEO} = -60\text{ V}$
- Suffix “-C” means a Center Collector (1. Emitter 2. Collector 3. Base)
- Non suffix “-C” means a Side Collector (1. Emitter 2. Base 3. Collector)
- Available as PN2907A



TO-92  
 KSP2907A: 1. Emitter 2. Base 3. Collector  
 KSP2907AC: 1. Emitter 2. Collector 3. Base

## Ordering Information<sup>(1)</sup>

Part Number	Marking	Package	Packing Method
KSP2907ABU	KSP2907A	TO-92 3L	Bulk
KSP2907ABU	KSP2907A	TO-92 3L	Ammo
KSP2907ATF	KSP2907A	TO-92 3L	Tape and Reel
KSP2907ACTA	KSP2907AC	TO-92 3L	Ammo

### Note:

1. Affix “-C-” means center collector pin. Suffix “-BU” means bulk packing, and straight lead form. Suffix “-TF” means tape & reel packing, and 0.200 in-line spacing lead form. Suffix “-TA” means ammo packing, and 0.200 in-line spacing lead form.

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	-60	V
$V_{CEO}$	Collector-Emitter Voltage	-60	V
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current	-600	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to +150	$^\circ\text{C}$

## Thermal Characteristics

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

Symbol	Parameter	Max.	Unit
$P_D$	Power Dissipation by $R_{\theta JA}$	625	mW
	Derate Above $25^\circ\text{C}$	5	mW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case <sup>(2)</sup>	83.3	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient <sup>(3)</sup>	200	$^\circ\text{C}/\text{W}$

### Notes:

- Infinite heat sink.
- Minimum Land pad size.

## Electrical Characteristics<sup>(4)</sup>

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

Symbol	Parameter	Conditions	Min.	Max.	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -10 \mu\text{A}$ , $I_E = 0$	-60		V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10 \text{mA}$ , $I_B = 0$	-60		V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10 \mu\text{A}$ , $I_C = 0$	-5.0		V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = -50 \text{V}$ , $I_E = 0$		-10	nA
$h_{FE}$	DC Current Gain	$V_{CE} = -10 \text{V}$ , $I_C = -0.1 \text{mA}$	75		
		$V_{CE} = -10 \text{V}$ , $I_C = -1 \text{mA}$	100		
		$V_{CE} = -10 \text{V}$ , $I_C = -10 \text{mA}$	100		
		$V_{CE} = -10 \text{V}$ , $I_C = -150 \text{mA}$	100	300	
		$V_{CE} = -10 \text{V}$ , $I_C = -500 \text{mA}$	50		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -150 \text{mA}$ , $I_B = -15 \text{mA}$		-0.4	V
		$I_C = -500 \text{mA}$ , $I_B = -50 \text{mA}$		-1.6	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -150 \text{mA}$ , $I_B = -15 \text{mA}$		-1.3	V
		$I_C = -500 \text{mA}$ , $I_B = -50 \text{mA}$		-2.6	
$C_{obo}$	Output Capacitance	$V_{CB} = -10 \text{V}$ , $I_E = 0$ , $f = 1.0 \text{MHz}$		8	pF
$f_T$	Current Gain Bandwidth Product	$I_C = -50 \text{mA}$ , $V_{CE} = -20 \text{V}$ , $f = 100 \text{MHz}$	200		MHz
$t_{ON}$	Turn-On Time	$V_{CC} = -30 \text{V}$ , $I_C = -150 \text{mA}$ , $I_{B1} = -15 \text{mA}$		45	ns
$t_{OFF}$	Turn-Off Time	$V_{CC} = -6 \text{V}$ , $I_C = -150 \text{mA}$ , $I_{B1} = I_{B2} = -15 \text{mA}$		100	ns

### Note:

- DC items are tested by pulse test: pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$

## Typical Performance Characteristics

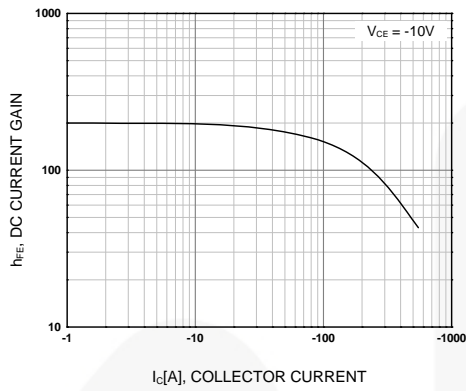


Figure 1. DC Current Gain

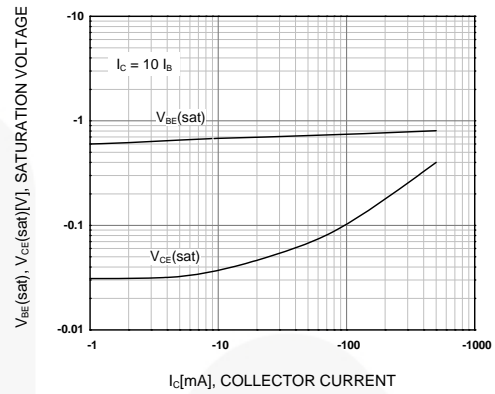


Figure 2. Collector-Emitter Saturation Voltage and Base-Emitter Saturation Voltage

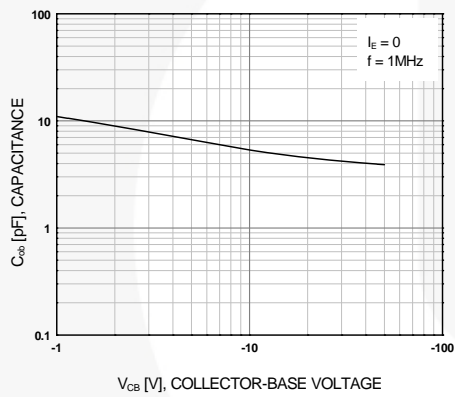


Figure 3. Output Capacitance

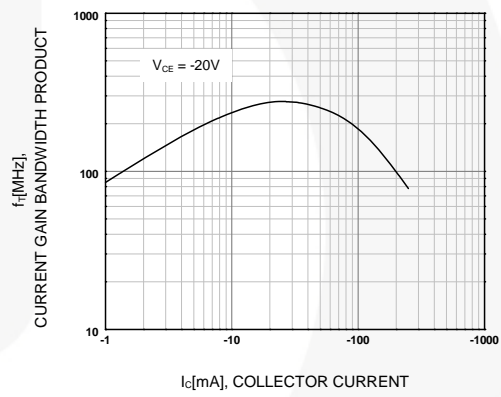
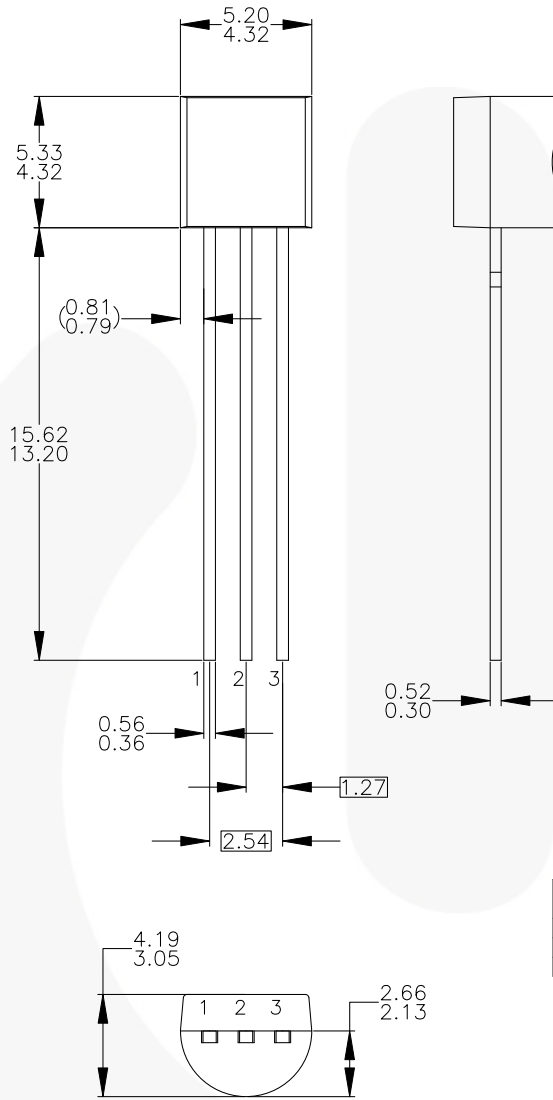


Figure 4. Current Gain Bandwidth Product

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 INTERCHANGEABLE AT JFET "F" OPTION.
- F) DRAWING FILENAME: MKT-ZA03DREV3.

Figure 5. 3-Lead, TO-92, JEDEC TO-92 Compliant Straight Lead Configuration, Bulk Type

Physical Dimensions (Continued)

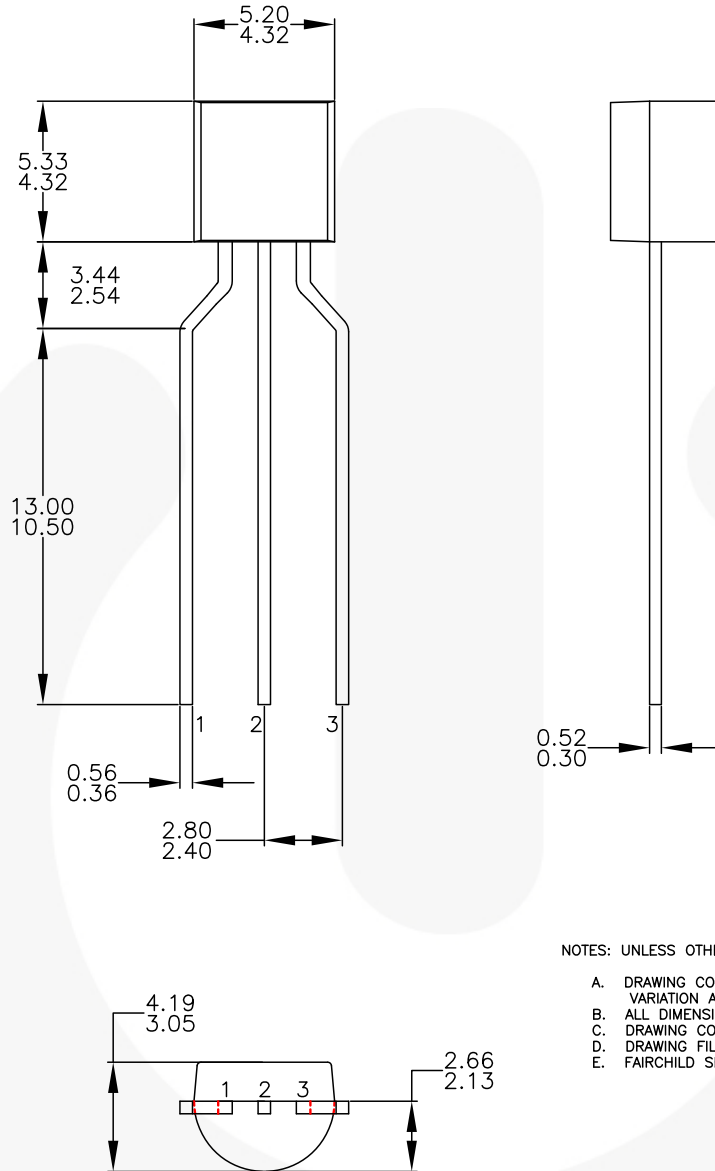


Figure 6. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type



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