



# PNP Transistor Bare Die, MPSA92

Rev 1.0  
02/09/17

**General purpose high voltage amplifier in bare die form**  
Complement to NPN MPSA42

## Features:

- High Breakdown Voltage
- Low  $V_{CE(sat)}$
- Characterized at temperature extremes
- High Reliability Gold Back Metal
- High Reliability tested grades for Military + Space

## Ordering Information:

The following part suffixes apply:

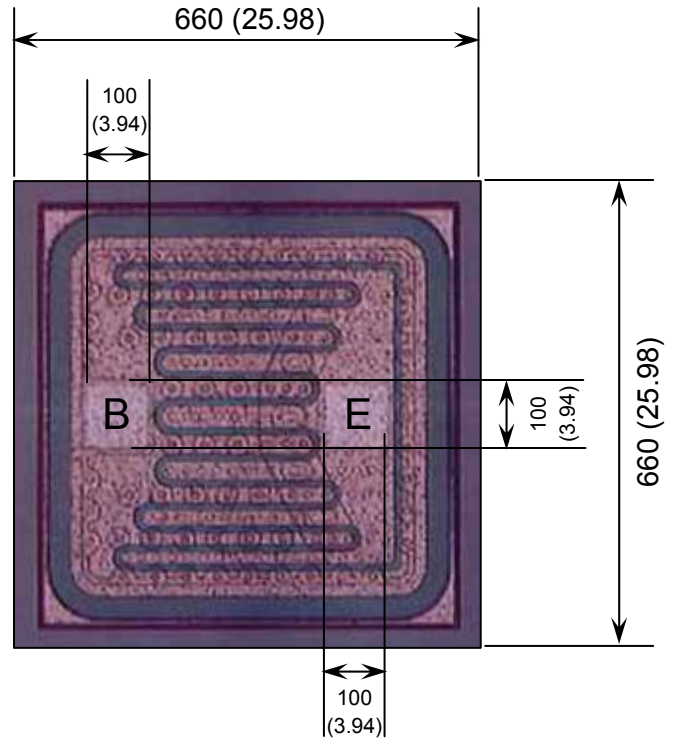
- No suffix - MIL-STD-750 /2072 Visual Inspection
- "H" - MIL-STD-750 /2072 Visual Inspection  
+ MIL-PRF-38534 Class H LAT
- "K" - MIL-STD-750 /2072 Visual Inspection  
+ MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

[www.siliconsupplies.com/quality/bare-die-lot-qualification](http://www.siliconsupplies.com/quality/bare-die-lot-qualification)

## Die Dimensions in $\mu\text{m}$ (mils)



**E = EMITTER B = BASE**

**DIE BACK = COLLECTOR**

## Supply Formats:

- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – Specific request
- Unsawn Wafer – Specific request
- With additional electrical selection – Specific request
- Sawn as pairs or adjacent pair pick – Specific request

## Mechanical Specification

Die Size (Excluding Saw Street)	660 x 660 25.98 x 25.98	$\mu\text{m}$ mils
Base & Emitter Pad Size	100 x 100 3.94 x 3.94	$\mu\text{m}$ mils
Die Thickness	230 ( $\pm 20$ ) 9.06 ( $\pm 0.79$ )	$\mu\text{m}$ mils
Top Metal Composition	Al - 2.6 $\mu\text{m}$	
Back Metal Composition	AuAs - 0.9 $\mu\text{m}$	





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## Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-300	V
Collector-Emitter Voltage	$V_{CEO}$	-300	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current	$I_C$	-500	mA
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to 150	$^\circ\text{C}$

## Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu\text{A}$	-300	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}$	-300	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -100\mu\text{A}$	-5	-	-	V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = -200\text{V}$	-	-	-250	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = -3\text{V}$	-	-	-100	nA
<b>ON CHARACTERISTICS</b>						
Forward-Current Transfer Ratio	$h_{FE}$	$V_{CE} = -10\text{V}, I_C = -1\text{mA}$	25	-	-	-
		$V_{CE} = -10\text{V}, I_C = -10\text{mA}$	40	-	-	-
		$V_{CE} = -10\text{V}, I_C = -30\text{mA}$	25	-	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -20\text{mA}, I_B = -2\text{mA}$	-	-	-0.5	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_C = -20\text{mA}, I_B = -2\text{mA}$	-	-	-0.9	V
<b>SMALL SIGNAL CHARACTERISTICS<sup>1</sup></b>						
Transition Frequency	$f_T$	$V_{CE} = -10\text{V}, I_E = -20\text{mA}$	50	70	-	MHz
Output Capacitance	$C_{obo}$	$V_{CB} = -20\text{V}, I_E = 0, f = 1\text{MHz}$	-	3.5	-	pF

Note 1: Not production testing in die form. Characterized by chip design and tested in package LAT.

## Typical Electrical Characteristics

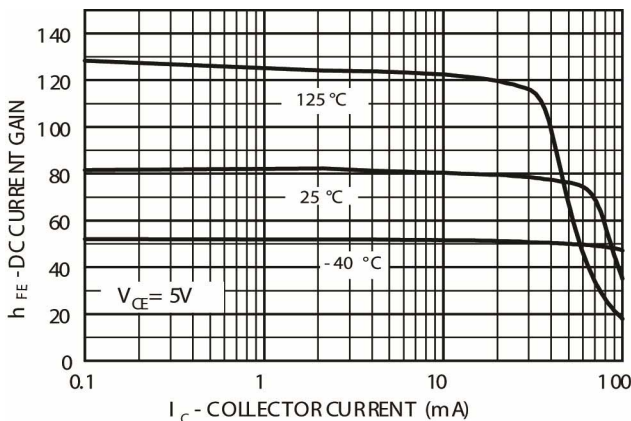


Fig 1 - Typical Pulsed Current Gain versus Collector Current

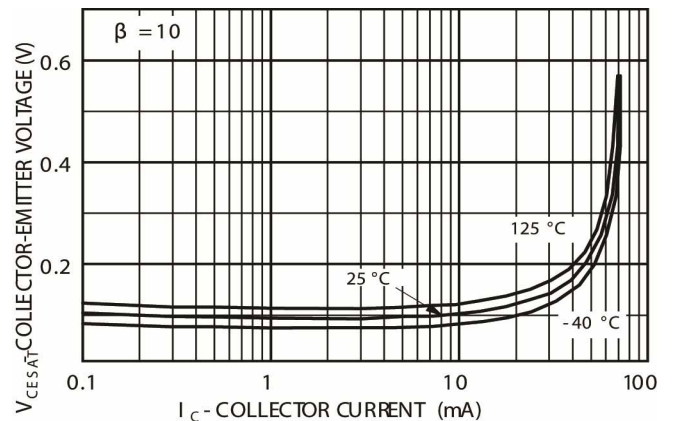


Fig 2 - Collector-Emitter Saturation Voltage versus Collector Current

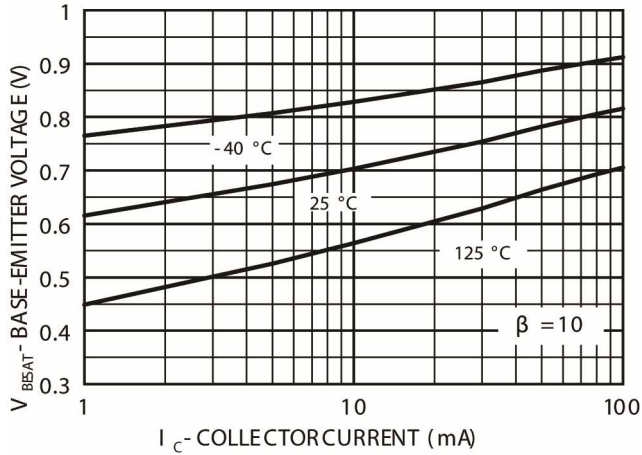




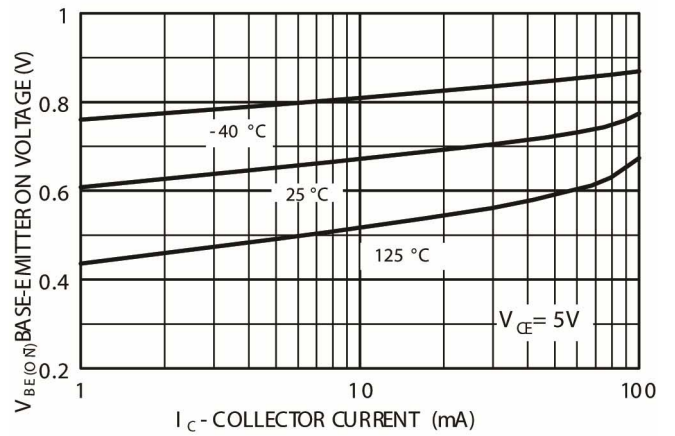
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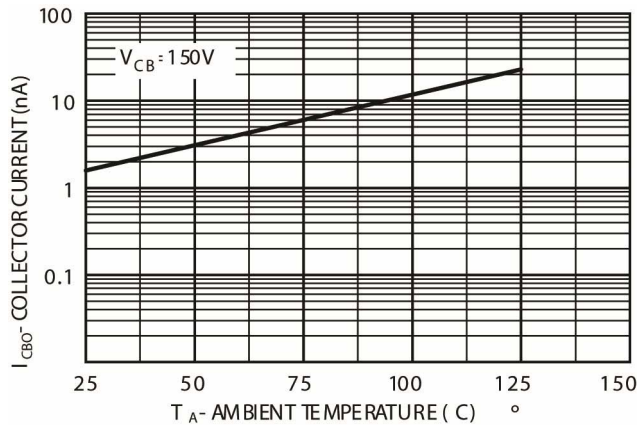
## Typical Electrical Characteristics (Continued)



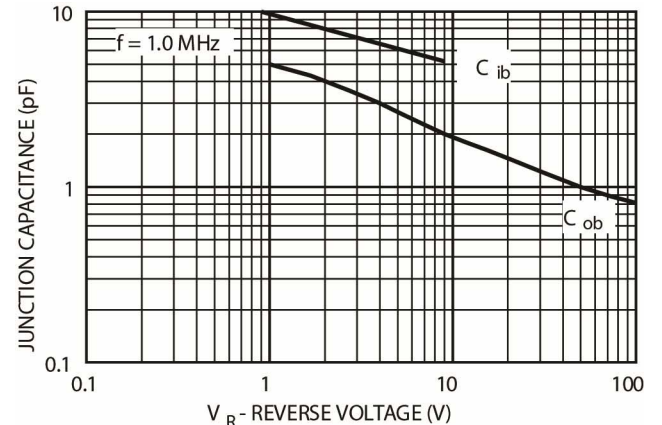
**Fig 3** - Base-Emitter Saturation Voltage versus Collector Current



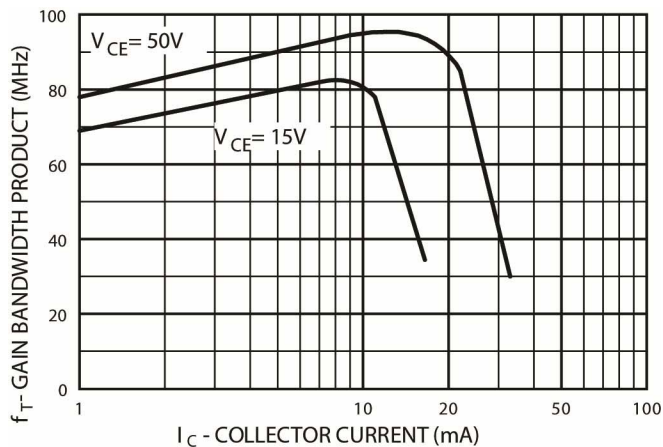
**Fig 4** - Base-Emitter ON Voltage versus Collector Current



**Fig 5** - Collector-Cut-off Current versus Ambient Temperature



**Fig 6** - Collector-Base and Emitter-Base Capacitance versus Reverse Bias Voltage



**Fig 5** - Gain Bandwidth Product versus Collector Current



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