



Micro Commercial Components  
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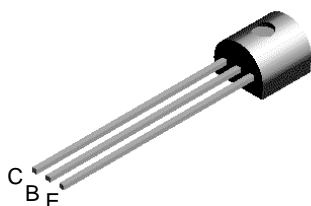
**S9013**

## NPN Silicon Transistors

### Features

- TO-92 Plastic-Encapsulate Transistors
- Capable of 0.625Watts( $T_{amb}=25^{\circ}\text{C}$ ) of Power Dissipation.
- Collector-current 0.5A
- Collector-base Voltage 40V
- Operating and storage junction temperature range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Marking Code: S9013

Pin Configuration



Electrical Characteristics @  $25^{\circ}\text{C}$  Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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#### OFF CHARACTERISTICS

$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=100\mu\text{A}$ , $I_E=0$ )	40	---	Vdc
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ( $I_C=0.1\text{mA}$ , $I_E=0$ )	25	---	Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_E=100\mu\text{A}$ , $I_C=0$ )	5.0	---	Vdc
$I_{CBO}$	Collector Cutoff Current ( $V_{CB}=40\text{Vdc}$ , $I_E=0$ )	---	0.1	$\mu\text{A}$
$I_{CEO}$	Collector Cutoff Current ( $V_{CE}=20\text{Vdc}$ , $I_B=0$ )	---	0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current ( $V_{EB}=5.0\text{Vdc}$ , $I_C=0$ )	---	0.1	$\mu\text{A}$

#### ON CHARACTERISTICS

$h_{FE(1)}$	DC Current Gain ( $I_C=50\text{mA}$ , $V_{CE}=1.0\text{Vdc}$ )	64	300	---
$h_{FE(2)}$	DC Current Gain ( $I_C=500\text{mA}$ , $V_{CE}=1.0\text{Vdc}$ )	40	---	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=500\text{mA}$ , $I_B=50\text{mA}$ )	---	0.6	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ( $I_C=500\text{mA}$ , $I_B=50\text{mA}$ )	---	1.2	Vdc
$V_{EB}$	Base- Emitter Voltage ( $I_E=100\text{mA}$ )	---	1.4	Vdc

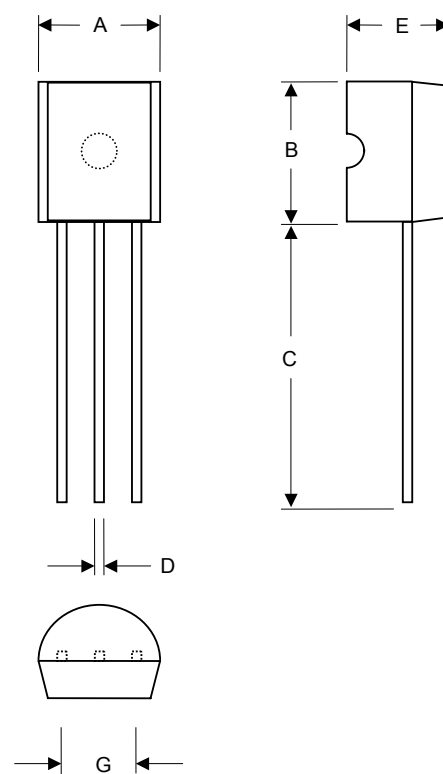
#### SMALL-SIGNAL CHARACTERISTICS

$f_T$	Transistor Frequency ( $I_C=20\text{mA}$ , $V_{CE}=6.0\text{Vdc}$ , $f=30\text{MHz}$ )	150	---	MHz
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#### CLASSIFICATION OF $h_{FE(1)}$

Rank	E	F	G	H	H1	I
Range	78-112	96-135	115-150	150-180	180-200	190-300

### TO-92



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.175	.185	4.45	4.70	
B	.175	.185	4.46	4.70	
C	.500	---	12.7	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	

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