



Micro Commercial Components



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S9013-G
S9013-H
S9013-I

**NPN Silicon
Transistors**

Features

- TO-92 Plastic-Encapsulate Transistors
- Capable of 0.625Watts($T_{amb}=25^{\circ}C$) of Power Dissipation.
- Collector-current 0.5A
- Collector-base Voltage 40V
- Operating and storage junction temperature range: $-55^{\circ}C$ to $+150^{\circ}C$
- Marking Code: S9013
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_c=100\mu A_{dc}$, $I_e=0$)	40	---	Vdc
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage ($I_c=0.1mA_{dc}$, $I_b=0$)	25	---	Vdc
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_e=100\mu A_{dc}$, $I_c=0$)	5.0	---	Vdc
I_{cBO}	Collector Cutoff Current ($V_{CB}=40V_{dc}$, $I_e=0$)	---	0.1	μA_{dc}
I_{cEO}	Collector Cutoff Current ($V_{CE}=20V_{dc}$, $I_b=0$)	---	0.1	μA_{dc}
I_{eBO}	Emitter Cutoff Current ($V_{EB}=5.0V_{dc}$, $I_c=0$)	---	0.1	μA_{dc}

ON CHARACTERISTICS

$h_{FE(1)}$	DC Current Gain ($I_c=50mA_{dc}$, $V_{CE}=1.0V_{dc}$)	64	400	---
$h_{FE(2)}$	DC Current Gain ($I_c=500mA_{dc}$, $V_{CE}=1.0V_{dc}$)	40	---	---
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ($I_c=500mA_{dc}$, $I_b=50mA_{dc}$)	---	0.6	Vdc
$V_{BE(sat)}$	Base-Emitter Saturation Voltage ($I_c=500mA_{dc}$, $I_b=50mA_{dc}$)	---	1.2	Vdc
V_{EB}	Base- Emitter Voltage ($I_e=100mA_{dc}$)	---	1.4	Vdc

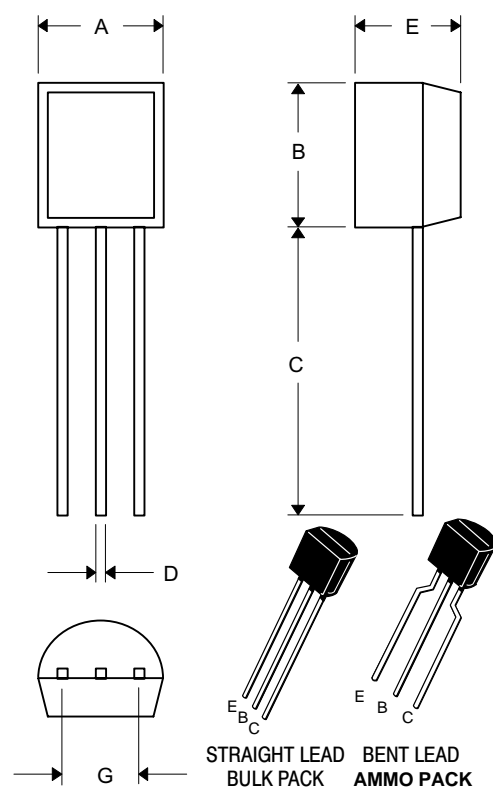
SMALL-SIGNAL CHARACTERISTICS

f_T	Transistor Frequency ($I_c=20mA_{dc}$, $V_{CE}=6.0V_{dc}$, $f=30MHz$)	150	---	MHz
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CLASSIFICATION OF $h_{FE(1)}$

Rank	G	H	I
Range	112-166	144-202	190-300

TO-92



DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.175	.185	4.45	4.70	
B	.175	.185	4.45	4.70	
C	.500	---	12.70	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	Straight Lead
	.173	.220	4.40	5.60	Bent Lead

* For ammo packing detailed specification, click here to visit our website of product packaging for details.

www.mccsemi.com



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Ordering Information :

Device	Packing
Part Number-AP	Ammo Packing: 20Kpcs/Carton
Part Number-BP	Bulk: 100Kpcs/Carton

Note : Adding "-HF" suffix for halogen free, eg. Part Number-AP-HF

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