

S9013

DATASHEET

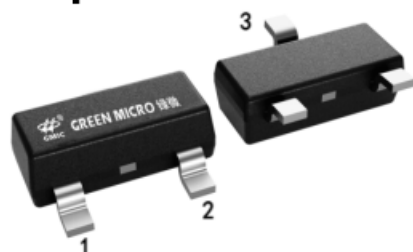
Specification Revision History:

Version	Date	Description
V1.0	2021/06	New
V1.1	2023/04	Modify Ordering Information
V1.2	2024/02	Modify Ordering Information
V1.3	2025/05	Add application precautions and overall typesetting.

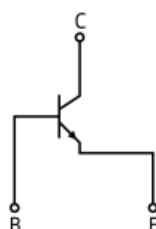
Features

- ※SOT23 Plastic-Encapsulate Transistors (NPN)
- ※Collector current $I_C=0.5A$.
- ※Excellent hFE Linearity.
- ※Complementary to S9012.

Simplified Outline



- 1.Base
- 2.Emitter
- 3.Collector



SOT-23

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
S9013-GM	SOT-23	J3	REEL	3000PCS/REEL

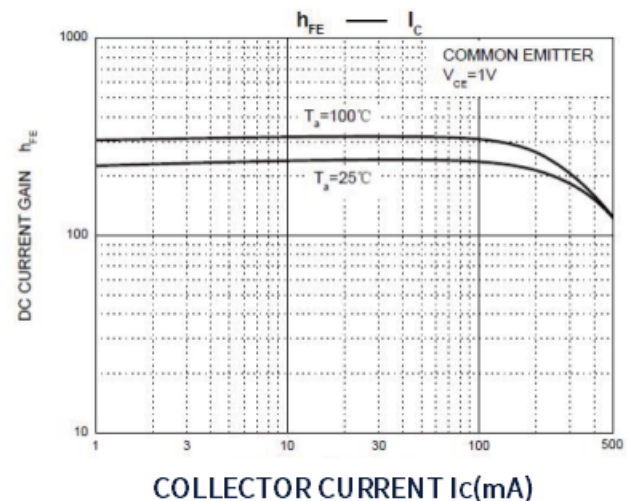
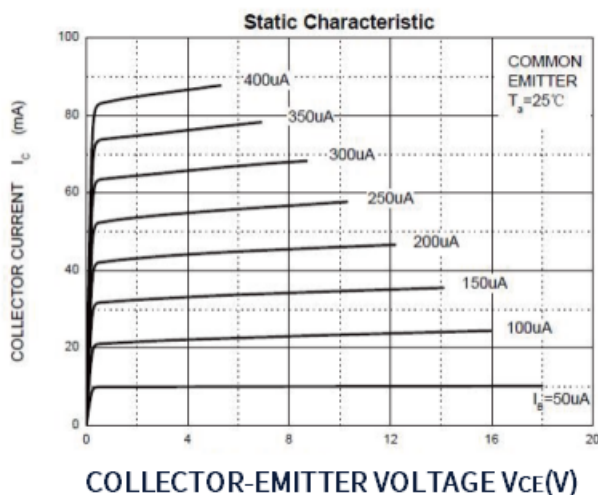
Absolute Maximum Ratings($T_A=25^{\circ}C$)

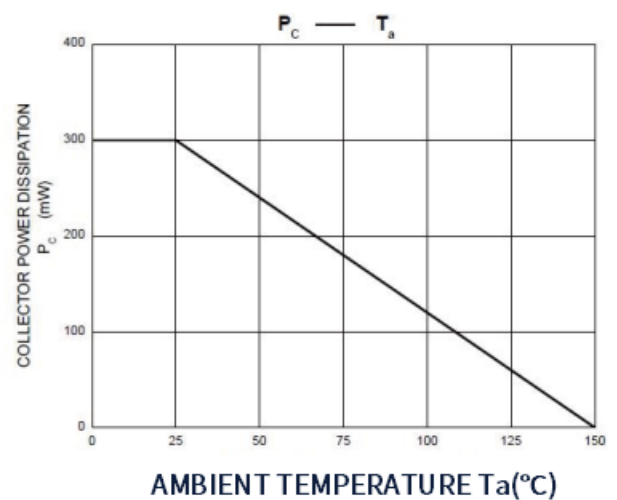
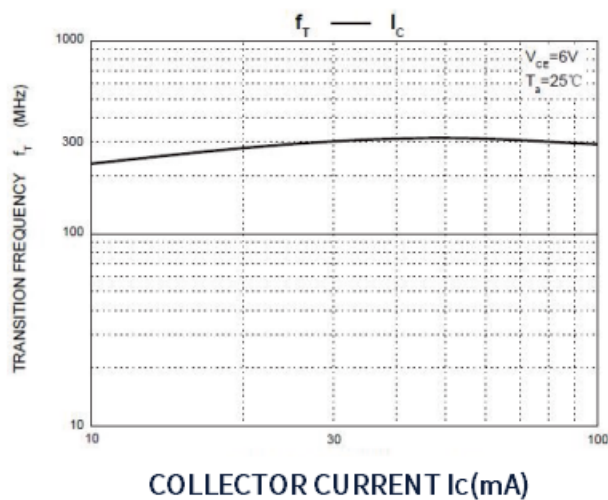
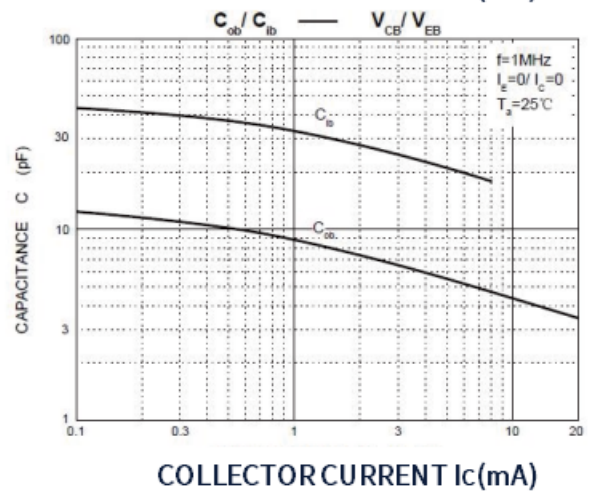
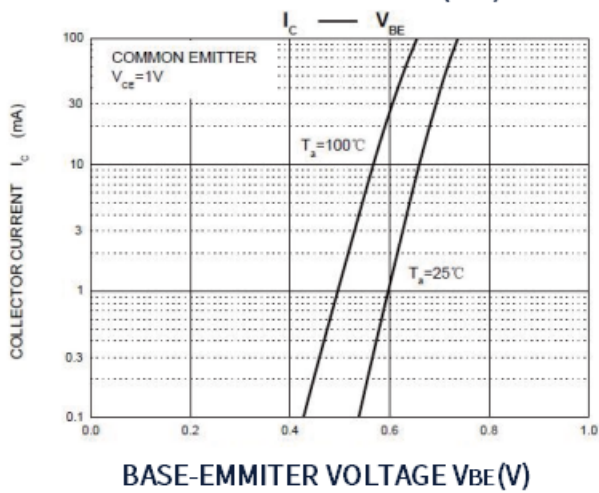
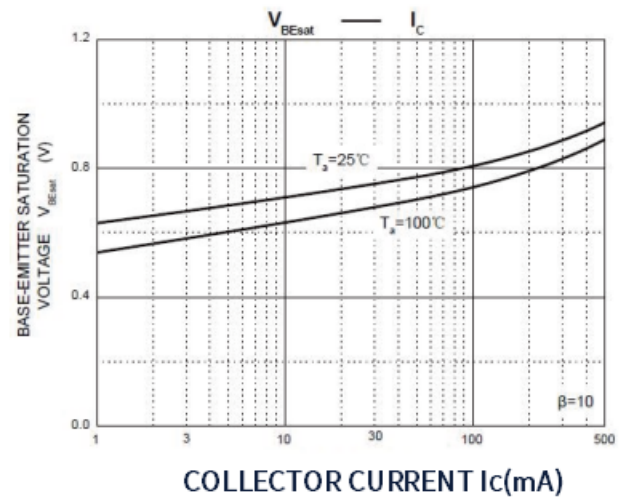
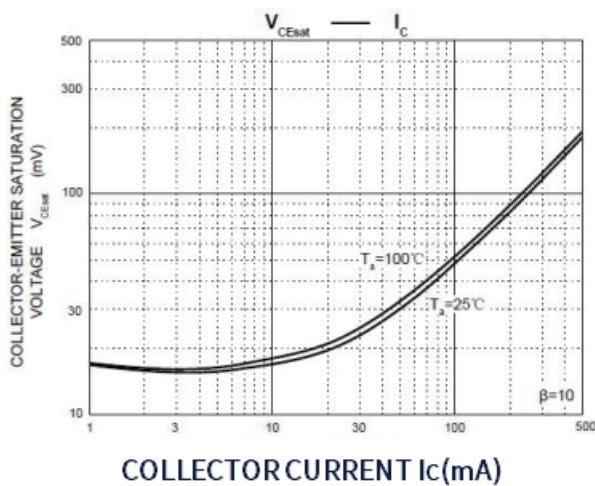
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current	0.5	A
P_C	Collector Power Dissipation	300	mW
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	400	$^{\circ}C/W$
T_J, T_{stg}	Operation Junction And Storage Temperature Range	-55~+150	$^{\circ}C/W$

Electrical Characteristics (TA=25°C unless otherwise specified)

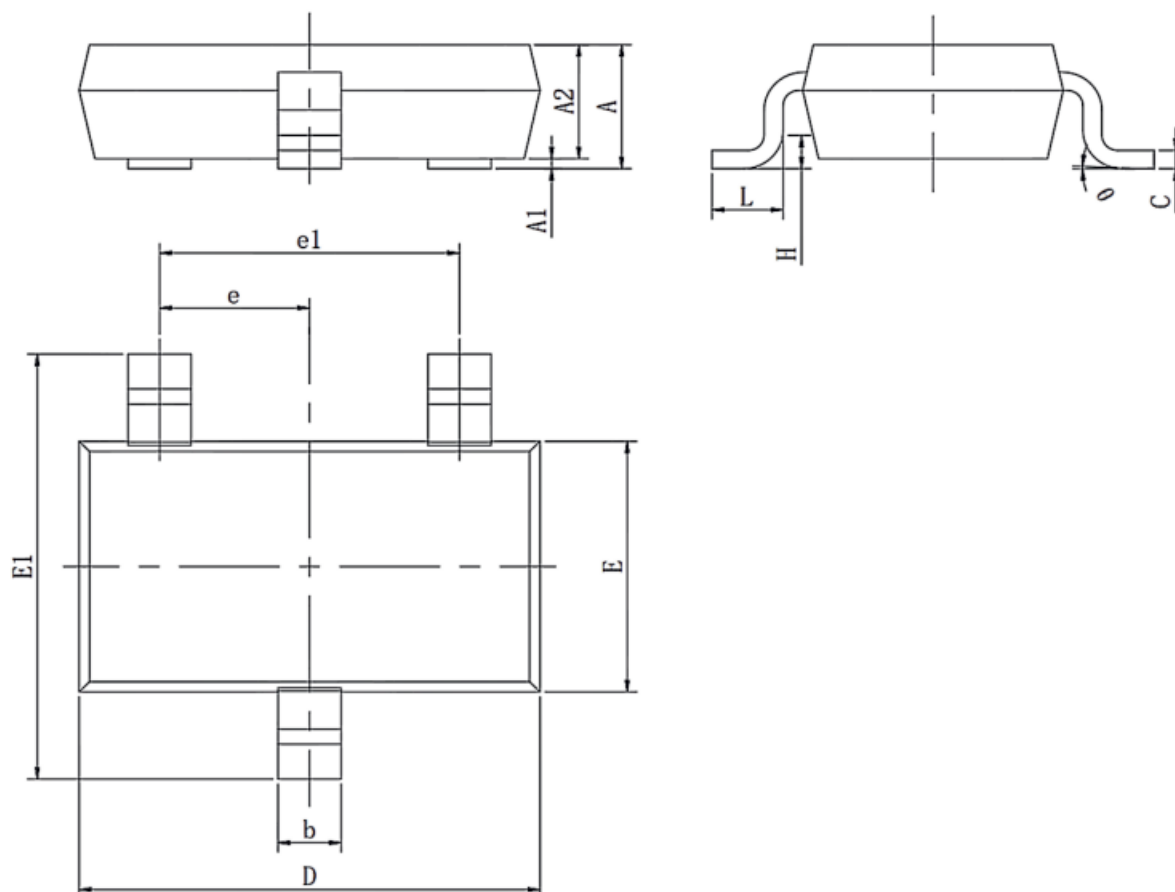
Symbol	Parameter	Test conditions	Min	Typ	Max	Unit
$V_{(BR)CBO}$	Collector-base breakdown voltage	$I_C=100\mu A, I_E=0$	40			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	$I_C=0.1mA, I_B=0$	25			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	$I_E=100\mu A, I_C=0$	5			V
I_{CEO}	Collector cut-off current	$V_{CE}=20V, I_E=0$			100	nA
I_{CBO}	Collector cut-off current	$V_{CB}=40V, I_E=0$			100	nA
I_{EBO}	Emitter cut-off current	$V_{EB}=50V, I_C=0$			100	nA
$h_{FE(1)}$	DC current gain(1)	$V_{CE}=1V, I_C=50mA$	200		350	
$h_{FE(2)}$	DC current gain(2)	$V_{CE}=1V, I_C=500mA$	50			
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C=500mA, I_B=50mA$			0.6	V
$V_{BE(sat)}$	Base-emitter saturation voltage				1.2	V
f_T	Transition frequency	$V_{CE}=6V, I_C=20mA,$ $f=30MHz$	150			MHz
C_{ob}	Collector output capacitance	$V_{CB}=6V, I_E=0, f=1MHz$			8	pF

Typical Characteristics





Outline Dimensions

SOT-23
Unit : mm


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
C	0.080	0.200	0.003	0.008
D	2.800	3.020	0.110	0.119
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95 (BSC)		0.037(BSC)	
e1	1.90 (BSC)		0.075(BSC)	
L	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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