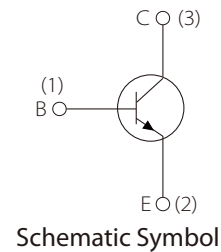
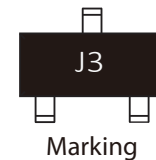
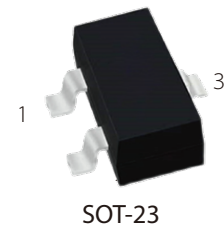


FEATURES

- | High Collector Current

- | Complementary To S9012

- | Excellent h_{FE} Linearity



MECHANICAL DATA

- | SOT-23 small outline plastic package

- | Epoxy UL: 94V-0

- | Mounting position: Any

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	25	
Emitter-Base Voltage	V_{EBO}	5	
Collector Current	I_C	500	mA
Collector Power Dissipation	P_C	300	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	416	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	-55~+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

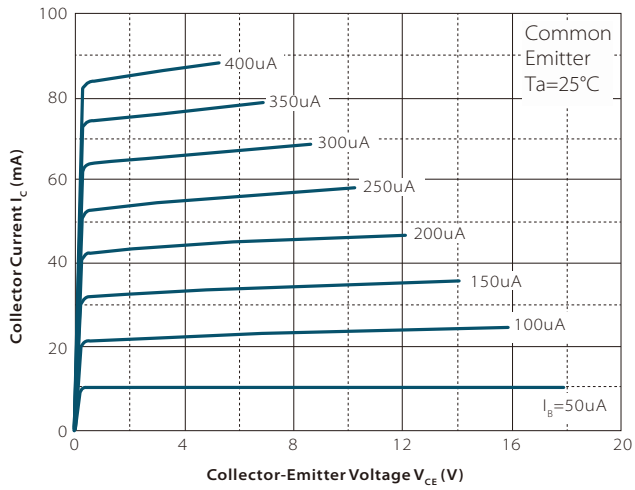
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C =0.1mA, I _E =0	40			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C =1mA, I _B =0	25			
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =0.1mA, I _C =0	5			
Collector cut-off current	I _{CEO}	V _{CE} =20V, I _B =0			0.1	uA
Emitter cut-off current	I _{CBO}	V _{CB} =40V, I _E =0			0.1	
Emitter cut-off current	I _{EBO}	V _{EB} =5V, I _C =0			0.1	
DC current gain	h _{FE(1)}	V _{CE} =1V, I _C =50mA	120		400	
	h _{FE(2)}	V _{CE} =1V, I _C =500mA	40			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C =500mA, I _B =50mA			0.6	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C =500mA, I _B =50mA			1.2	V
Base-emitter voltage	V _{BE}	V _{CB} =1V, I _C =10mA			0.7	V
Transition frequency	f _T	V _{CE} =6V, I _C =20mA, f=30MHz	150			MHz
Collector output capacitance	C _{ob}	V _{CB} =6V, I _E =0, f=1MHz			8	pF

CLASSIFICATION OF H_{FE(1)}

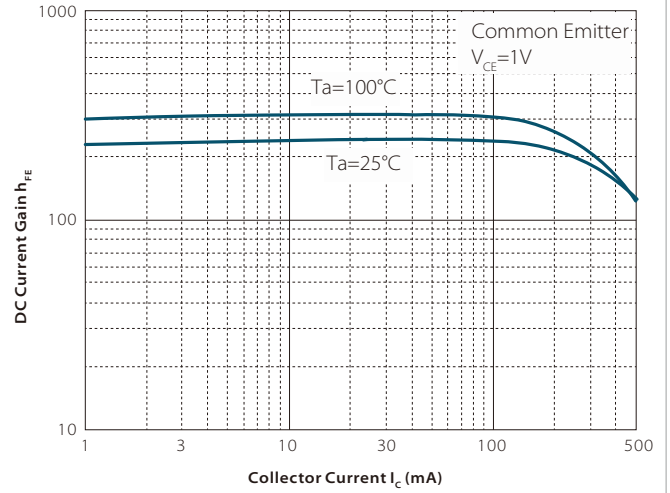
Rank	L	H	J
Range	120-200	200-350	300-400

TYPICAL CHARACTERISTICS

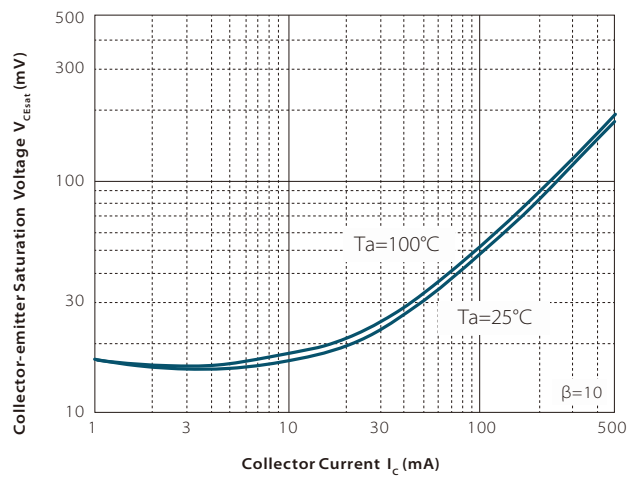
Static Characteristic



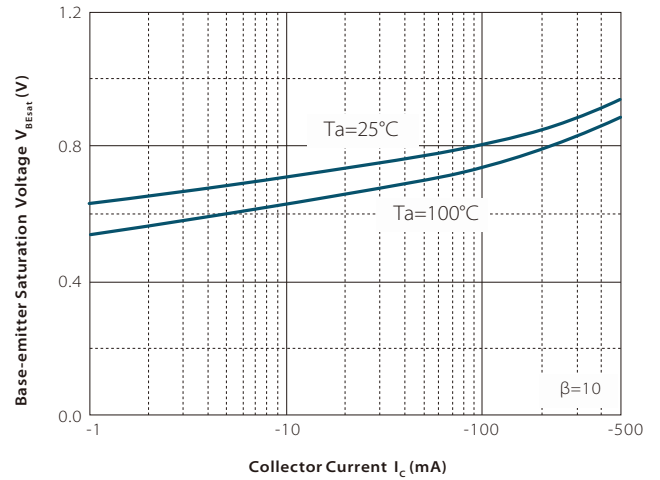
$h_{FE} \text{ — } I_C$

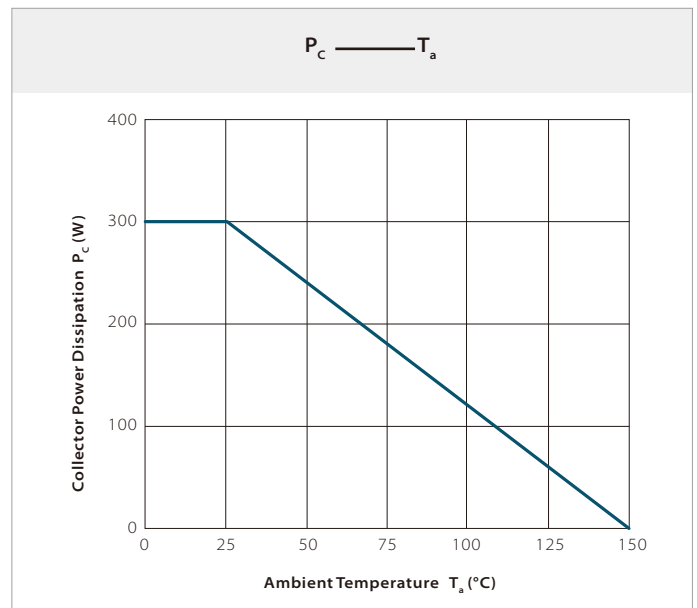
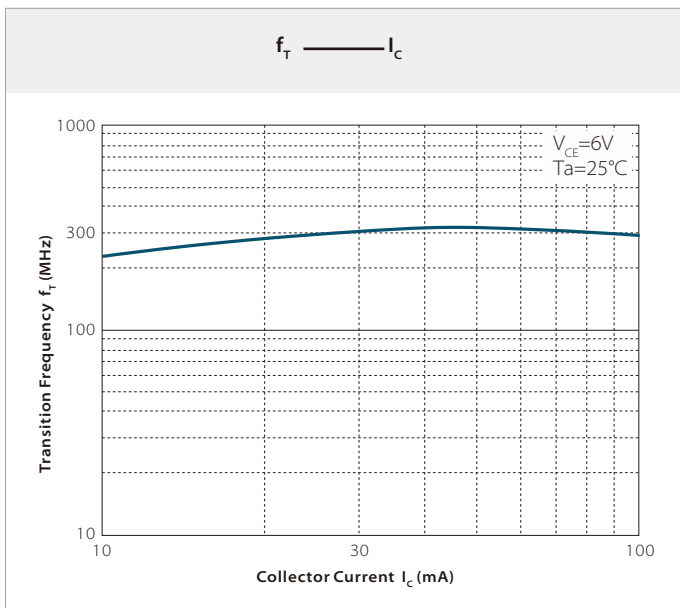
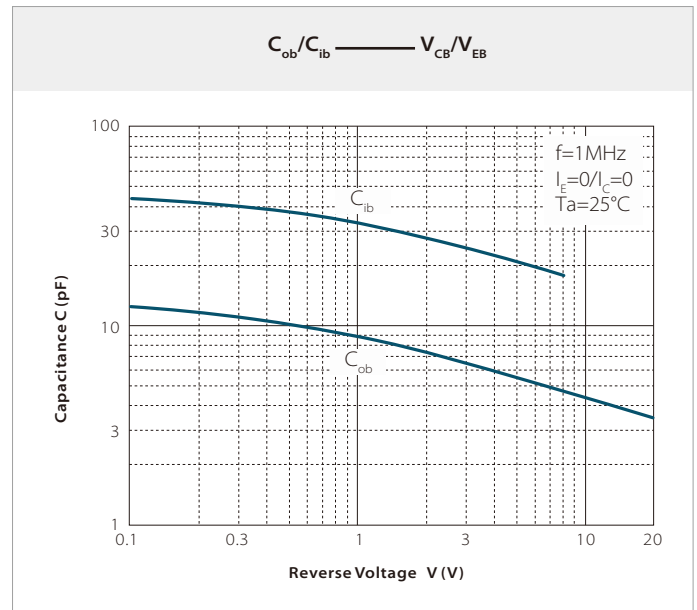
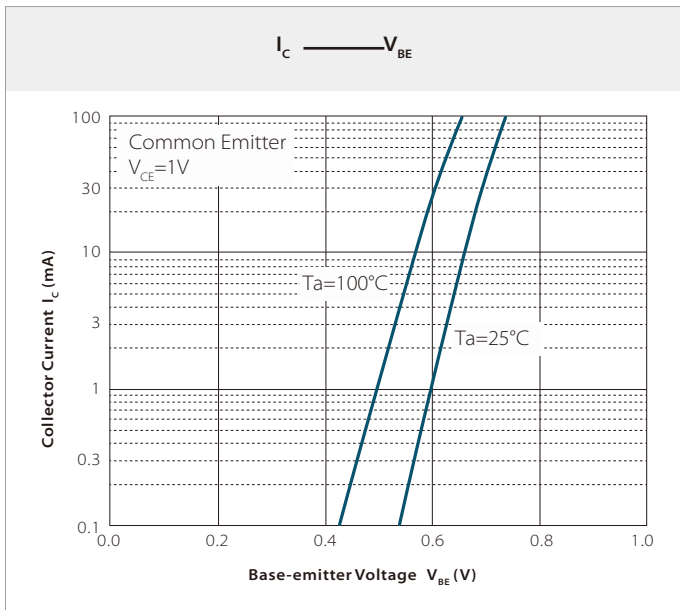


$V_{CE\text{sat}} \text{ — } I_C$



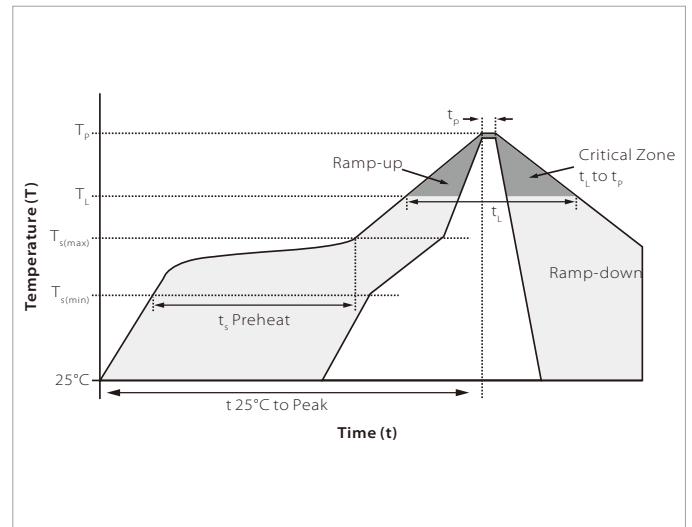
$V_{BE\text{sat}} \text{ — } I_C$



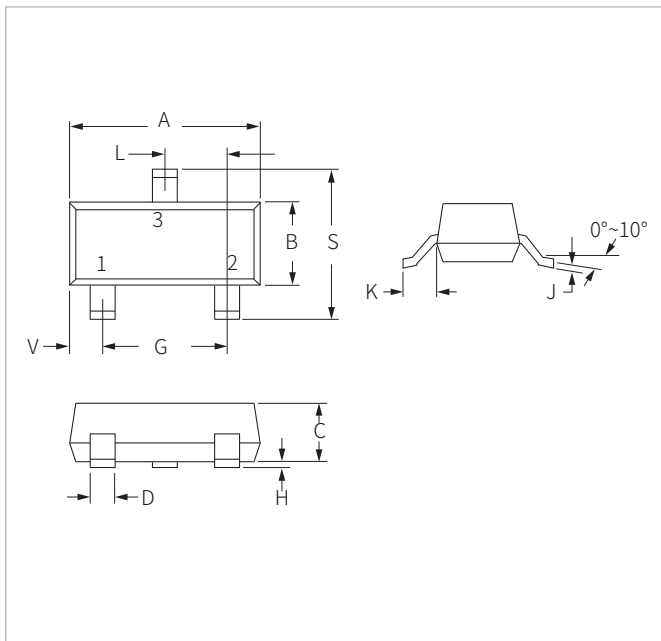


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

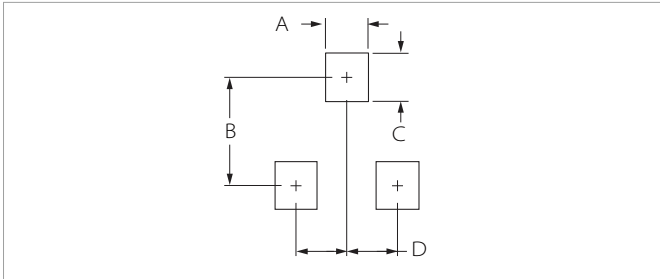


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
S9013	SOT-23	3000PCS	7"

To find your local partner within Semiwell's website : www.semiwell.com

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