

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

FEATURES

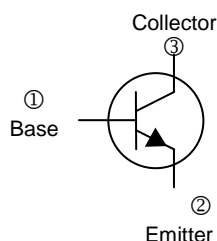
- High Collector Current
- Excellent HFE Linearity

CLASSIFICATION OF h_{FE}

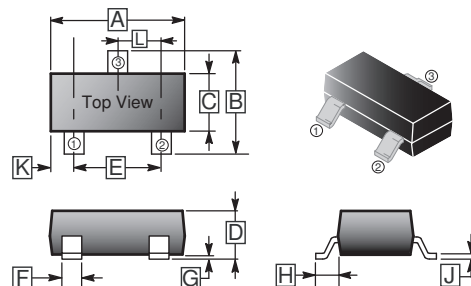
Product-Rank	S9013W-L	S9013W-H	S9013W-J
Range	120~200	200~350	300~400
Marking Code	J3		

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOT-323	3K	7 inch



SOT-323



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.100	REF.
B	1.80	2.45	H	0.525	REF.
C	1.15	1.35	J	0.08	0.25
D	0.80	1.10	K	-	-
E	1.20	1.40	L	0.650	TYP.
F	0.20	0.40			

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	25	V
Emitter to Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	500	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	625	$^\circ\text{C} / \text{W}$
Junction, Storage Temperature	T_J, T_{STG}	150, -55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	40	-	-	V	$I_C=100\mu\text{A}, I_E=0$
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	25	-	-	V	$I_C=1\text{mA}, I_B=0$
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	5	-	-	V	$I_E=100\mu\text{A}, I_C=0$
Collector Cut-Off Current	I_{CBO}	-	-	0.1	μA	$V_{CB}=40\text{V}, I_E=0$
Collector Cut-Off Current	I_{CEO}	-	-	0.1	μA	$V_{CE}=20\text{V}, I_B=0$
Emitter Cut-Off Current	I_{EBO}	-	-	0.1	μA	$V_{EB}=5\text{V}, I_C=0$
DC Current Gain	h_{FE}	120	-	400		$V_{CE}=1\text{V}, I_C=50\text{mA}$
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.6	V	$I_C=500\text{mA}, I_B=50\text{mA}$
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	1.2	V	$I_C=500\text{mA}, I_B=50\text{mA}$
Base to Emitter Voltage	V_{BE}	-	-	0.7	V	$I_C=10\text{mA}, V_{CE}=1\text{V}$
Transition Frequency	f_T	150	-	-	MHz	$V_{CE}=6\text{V}, I_C=20\text{mA}, f=30\text{MHz}$
Collector output capacitance	C_{ob}	-	-	8	pF	$V_{CB}=6\text{V}, I_E=0, f=1\text{MHz}$