

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

## FEATURES

- Power Amplifier Applications

## MARKING



## CLASSIFICATION OF $h_{FE}$

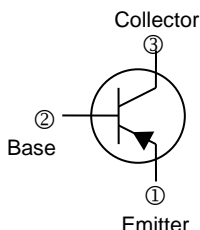
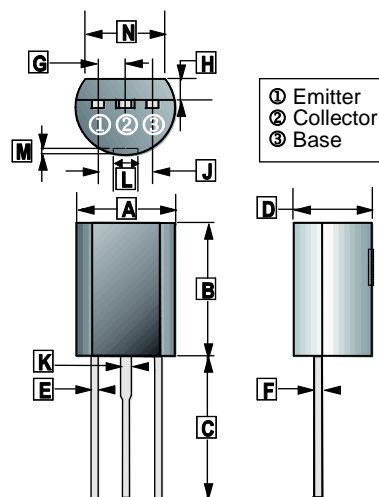
Product-Rank	2SA1020-O	2SA1020-Y
Range	70-140	120-240

## ORDER INFORMATION

Part Number	Type
2SA1020-□	Lead (Pb)-free
2SA1020-□-C	Lead (Pb)-free and Halogen-free

\*□= $h_{FE}$  Rank

## TO-92MOD



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.50	6.50	H	1.70	2.05
B	8.00	9.00	J	2.70	3.20
C	12.70	14.50	K	0.85	1.15
D	4.50	5.30	L	1.60 Max	
E	0.35	0.65	M	0.00	0.40
F	0.30	0.51	N	4.00 Min	
G	1.50 Typ.				

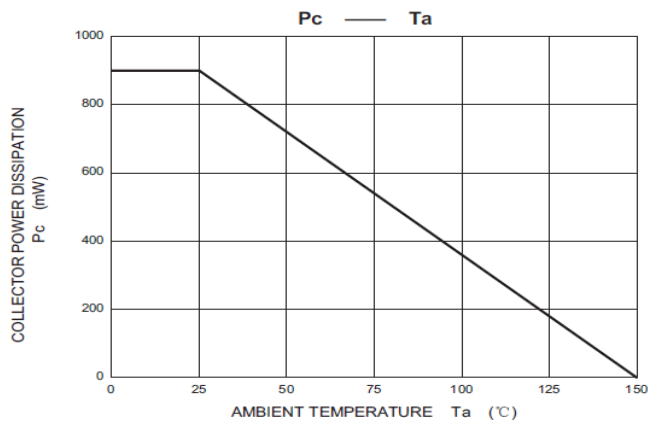
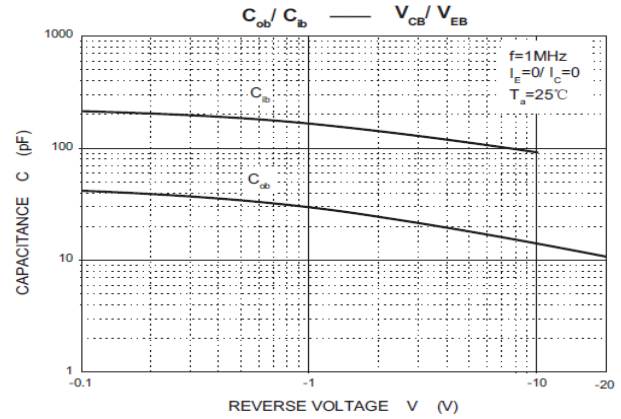
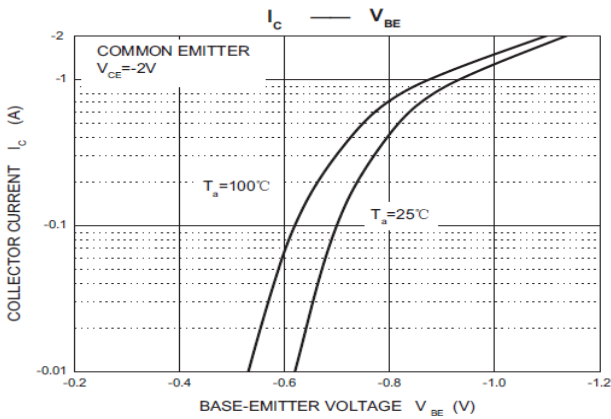
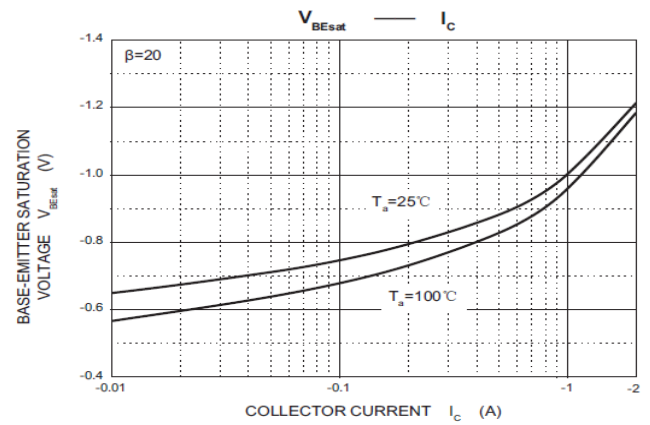
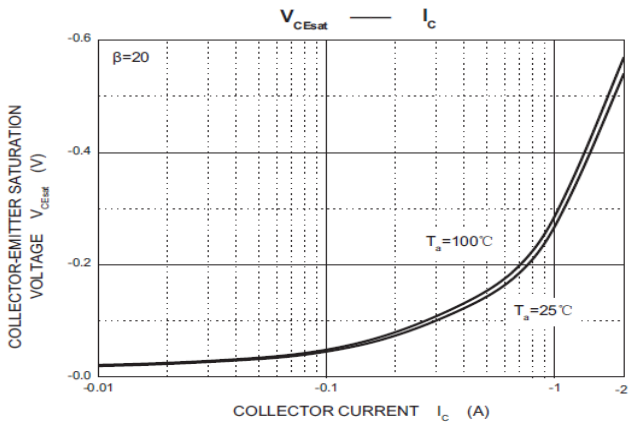
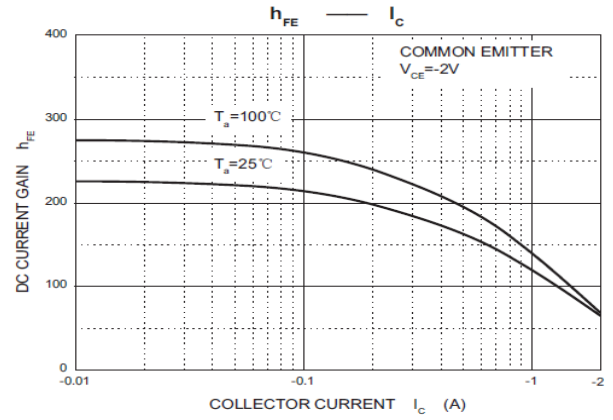
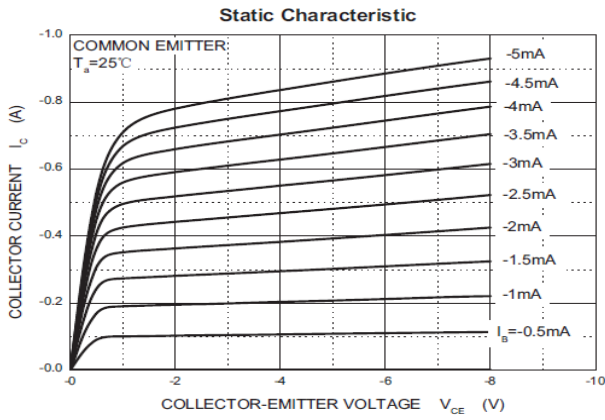
## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Collector-Base Voltage	$V_{CBO}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-50	
Emitter-Base Voltage	$V_{EBO}$	-5	
Collector Current-Continuous	$I_C$	-2	A
Collector Power Dissipation	$P_D$	900	mW
Thermal Resistance From Junction-Ambient	$R_{\theta JA}$	200	$^\circ\text{C}/\text{W}$
Junction, Storage Temperature Range	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$

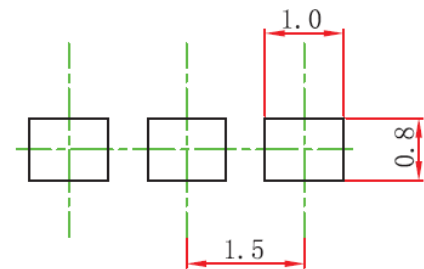
## ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-50	-	-	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-50	-	-		$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-	-		$I_E = -100\mu\text{A}, I_C = 0$
Collector Cut-off Current	$I_{CBO}$	-	-	-1	$\mu\text{A}$	$V_{CB} = -50\text{V}, I_E = 0$
Emitter Cut-off Current	$I_{EBO}$	-	-	-1	$\mu\text{A}$	$V_{EB} = -5\text{V}, I_C = 0$
DC Current Gain	$h_{FE}$	70	-	240		$V_{CE} = -2\text{V}, I_C = -0.5\text{A}$
		40	-	-		$V_{CE} = -2\text{V}, I_C = -1.5\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	-0.5	V	$I_C = -1\text{A}, I_B = -50\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	-1.2	V	$I_C = -1\text{A}, I_B = -50\text{mA}$
Transition Frequency	$f_T$	-	100	-	MHz	$V_{CE} = -2\text{V}, I_C = -500\text{mA}$
Collector Output Capacitance	$C_{ob}$	-	40	-	pF	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$
Turn-on Time	$T_{on}$	-	0.1	-	$\mu\text{s}$	$V_{CC} = -30\text{V}, I_C = -1\text{A}$ $I_{B1} = -I_{B2} = -0.05\text{A}$
Storage Time	$T_s$	-	1	-		
Fall Time	$T_f$	-	0.1	-		

**CHARACTERISTIC CURVES**



**Mounting Pad Layout**



\*Dimensions in millimeters