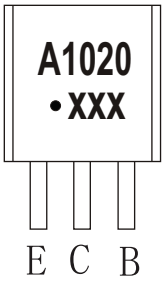
TO-92 Plastic-Encapsulate Transistors

FEATURES

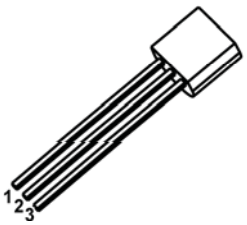
- Power Amplifier Applications

MARKING

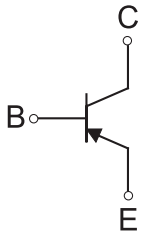


TO-92

1. EMITTER
2. COLLECTOR
3. BASE



Equivalent Circuit



ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SA1020	TO-92	Bulk	1000pcs/Bag

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-50	V
V_{CEO}	Collector-Emitter Voltage	-50	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-2	A
P_D	Collector Power Dissipation	625	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	200	℃ /W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

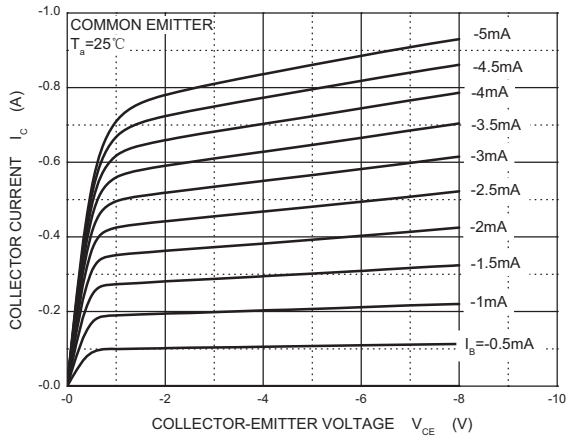
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C =-100μA,I_E=0	-50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C =-10mA,I_B=0	-50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-100μA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-50V,I_E=0			-1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-5V,I_C=0			-1	μA
DC current gain	$h_{FE(1)}$	V_{CE}=-2V,I_C=-0.5A	70		240	
	$h_{FE(2)}$	V_{CE}=-2V,I_C=-1.5A	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-1A,I_B=-50mA			-0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=-1A,I_B=-50mA			-1.2	V
Transition frequency	f_T	V_{CE}=-2V,I_C=-500mA		100		MHz
Collector output capacitance	C_{ob}	V_{CB}=-10V,I_E=0,f=1MHz		40		pF

CLASSIFIC ATION OF $h_{FE(1)}$

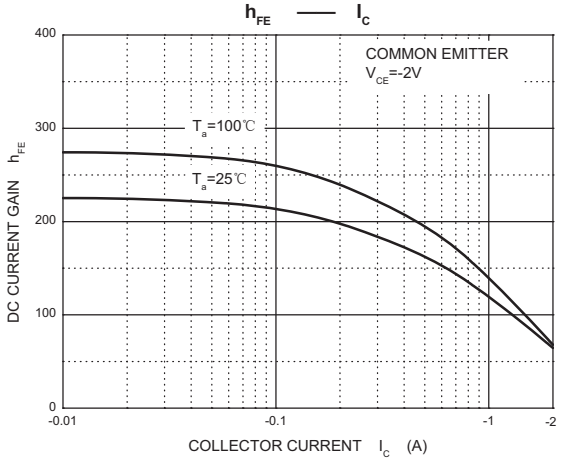
Rank	O	Y
Range	70-140	120-240

Typical Characteristics

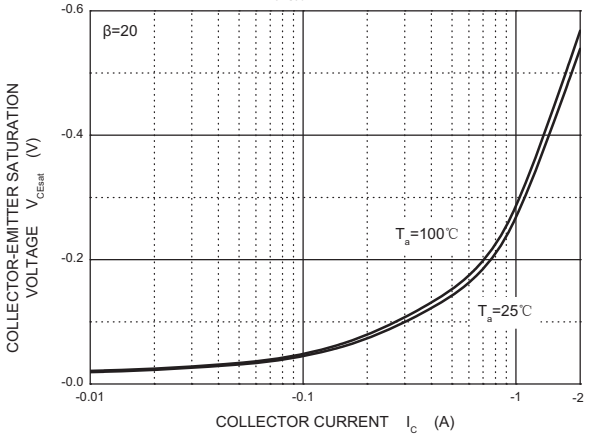
Static Characteristic



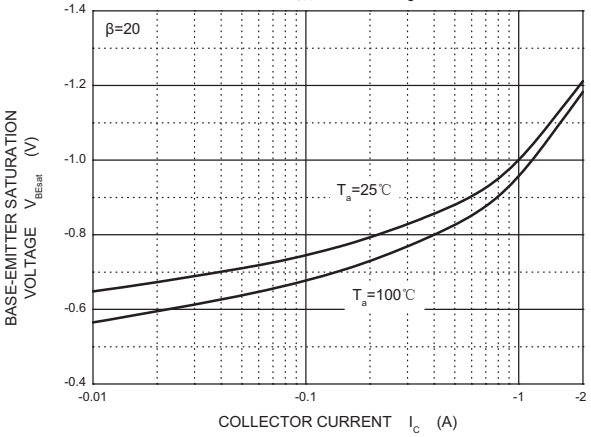
h_{FE} —— I_C



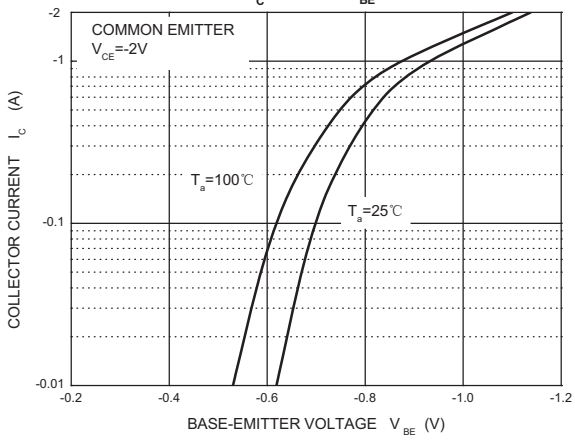
V_{CEsat} —— I_C



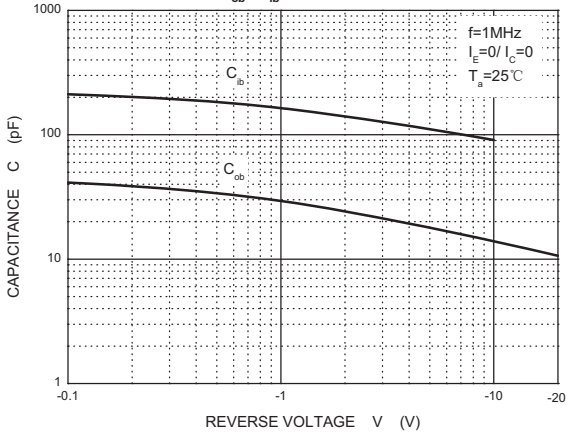
V_{BEsat} —— I_C



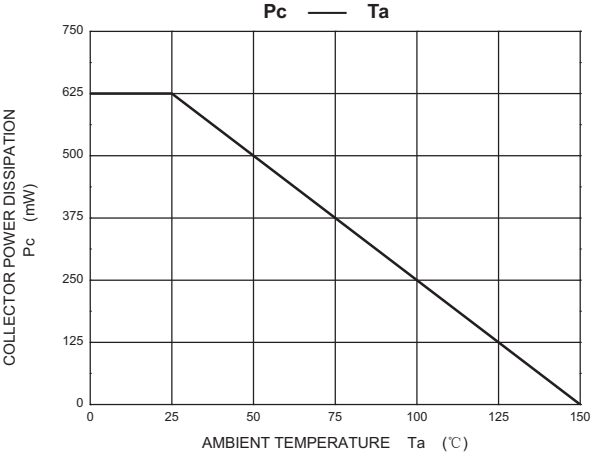
I_C —— V_{BE}

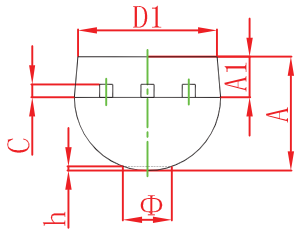


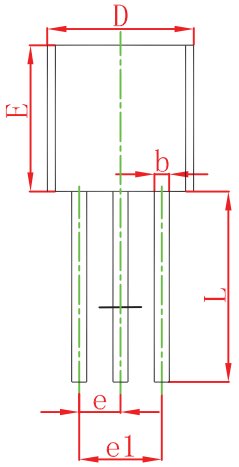
C_{ob}/ C_{ib} —— V_{CB}/ V_{EB}



Pc —— Ta

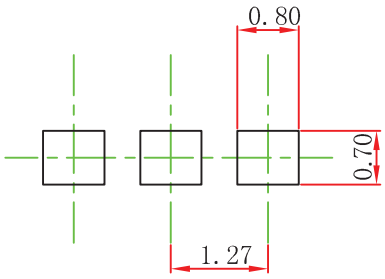






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

TO-92 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.