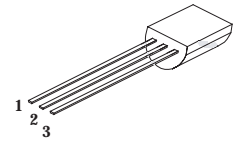
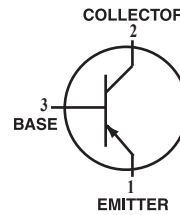


PNP General Purpose Transistors

 Lead(Pb)-Free



1. EMITTER
2. COLLECTOR
3. BASE

TO-92MOD

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-50	Vdc
Collector-Base Voltage	V_{CBO}	-50	Vdc
Emitter-Base Voltage	V_{EBO}	-5	Vdc
Collector Current-Continuous	I_C	-2.0	Adc

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation Alumina Substrate, (1) $T_A=25^\circ\text{C}$ Derate above 25°C	P_D	900	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	7.25	$\text{mW}/^\circ\text{C}$
Junction and Storage, Temperature	T_J, T_{stg}	138	$^\circ\text{C}/\text{W}$
		-55 to +150	$^\circ\text{C}$

DEVICE MARKING

2SA1020=A1020

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Max	Unit
-----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C=-10\text{ mAdc}, I_B=0$)	$V_{(BR)CEO}$	-50	-	Vdc
Collector Cutoff Current ($V_{CB}=-40\text{Vdc}, I_E=0$)	I_{CBO}	-	-0.1	μAdc
Emitter Cutoff Current ($V_{EB}=-5.0\text{Vdc}, I_C=0$)	I_{EBO}	-	-0.1	μAdc

1. Alumina=0.4 x 0.3 x 0.024 in. 99.5% alumina

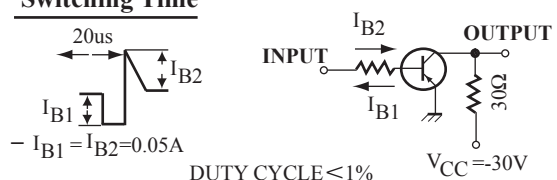
2SA1020



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

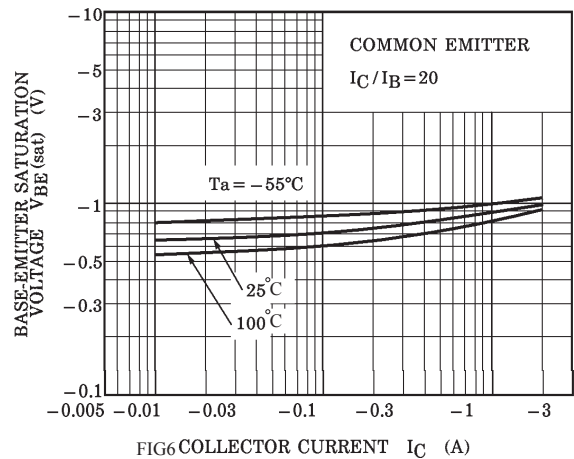
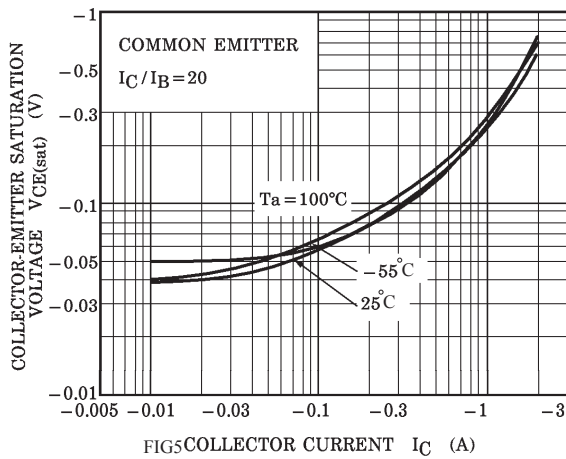
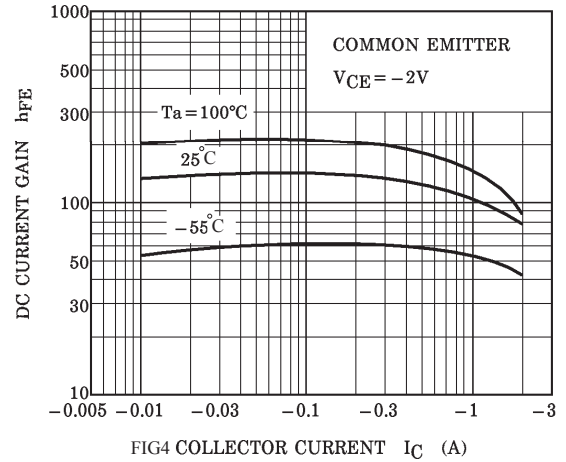
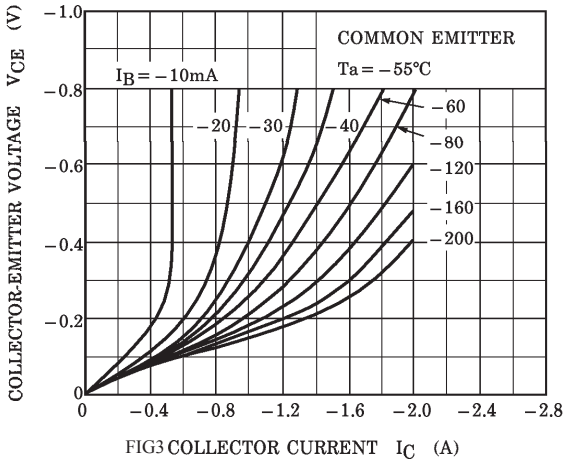
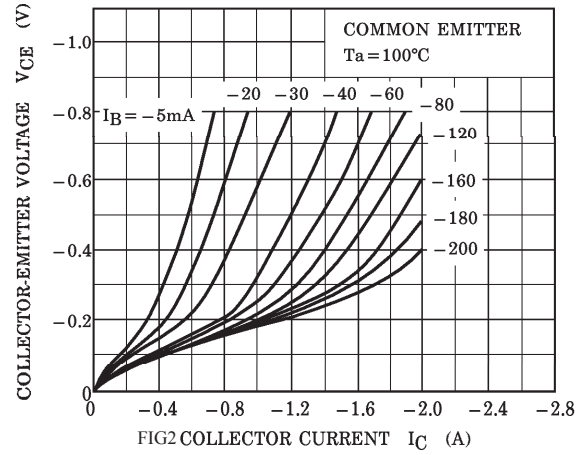
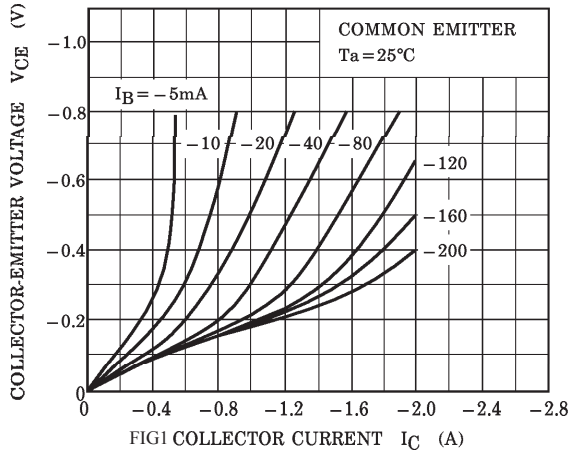
Characteristics	Symbol	Min	Typ	Max	Unit
-----------------	--------	-----	-----	-----	------

ON CHARACTERISTICS

DC Current Gain ($I_C=-500\text{ mAdc}$, $V_{CE}=-2.0\text{ Vdc}$) ($I_C=-1500\text{ mAdc}$, $V_{CE}=-2.0\text{ Vdc}$)	$h_{FE}^{(1)}$ $h_{FE}^{(2)}$	70 40	- -	240 -	- -	
Collector-Emitter Saturation Voltage ($I_C=-1000\text{ mAdc}$, $I_B=-50\text{ mAdc}$)	$V_{CE(sat)}$	-	-	-0.5	Vdc	
Base-Emitter Saturation Voltage ($I_C=-1000\text{ mAdc}$, $I_B=-50\text{ mAdc}$)	$V_{BE(sat)}$	-	-	-1.2	Vdc	
Current-Gain-Bandwidth Product ($I_C=-500\text{ mAdc}$, $V_{CE}=-2\text{ Vdc}$)	f_T	100	-	-	MHz	
Collector Output Capacitance $V_{CB}=-10\text{V}$, $I_E=0$, $f=1\text{MHz}$	C_{ob}	-	-40	-	PF	
Switching Time  <p>$I_{B1} = I_{B2} = 0.05\text{A}$ DUTY CYCLE $\leq 1\%$ $V_{CC} = -30\text{V}$</p>	Turn-on time	t_{on}	-	0.1	-	
	Storage time	t_{stg}	-	1.0	-	us
	Fall time	t_f	-	0.1	-	-

CLASSIFICATION OF h_{FE}

Rank	O	Y
Range	70-140	120-240



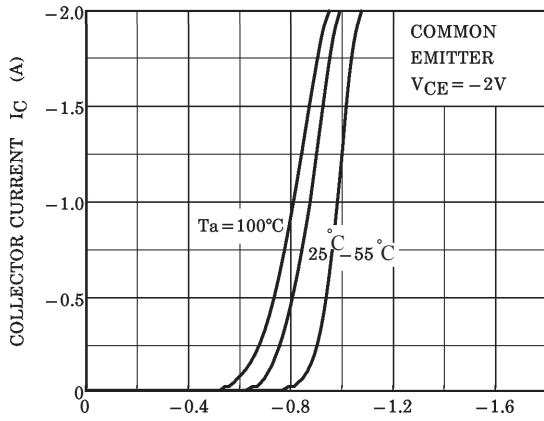


FIG7 BASE-EMITTER VOLTAGE V_{BE} (V)

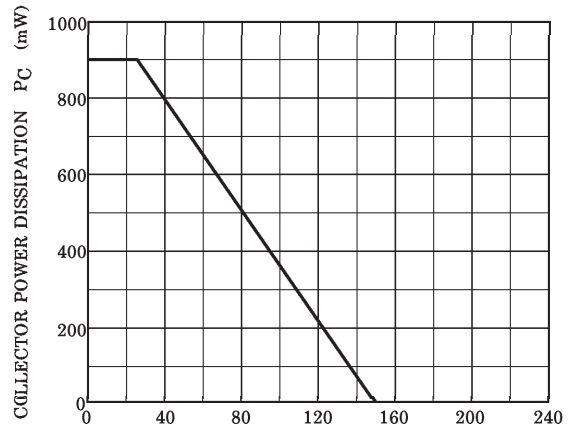


FIG8 AMBIENT TEMPERATURE T_a ($^\circ C$)

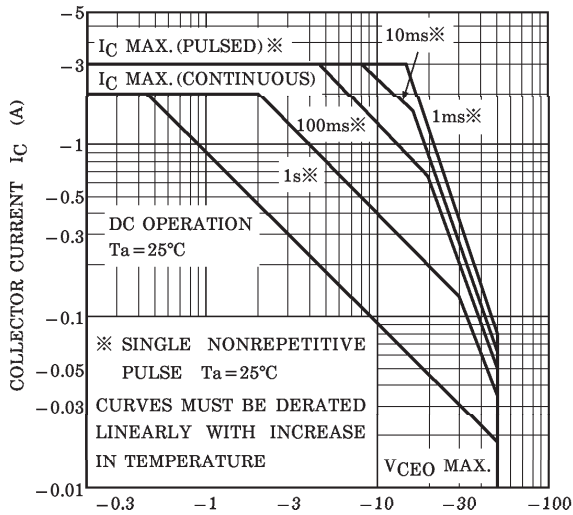
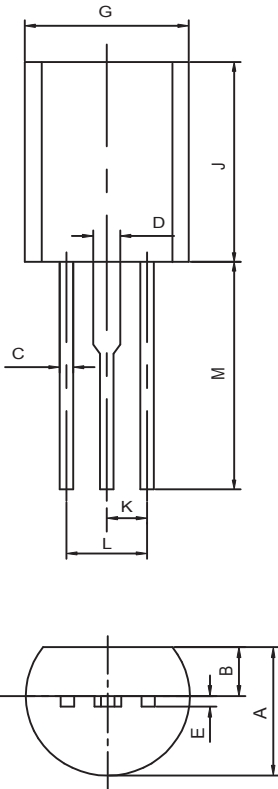


FIG9 COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

TO-92MOD Outline Dimensions

unit:mm



TO-92MOD		
Dim	Min	Max
A	4.700	5.100
B	1.730	2.030
C	0.400	0.600
D	0.900	1.100
E	0.400	0.500
G	5.800	6.200
J	8.400	8.800
K	1.500TYP	
L	2.900	3.100
M	12.20	13.450