



# 2SA1020

# PNP SILICON TRANSISTOR

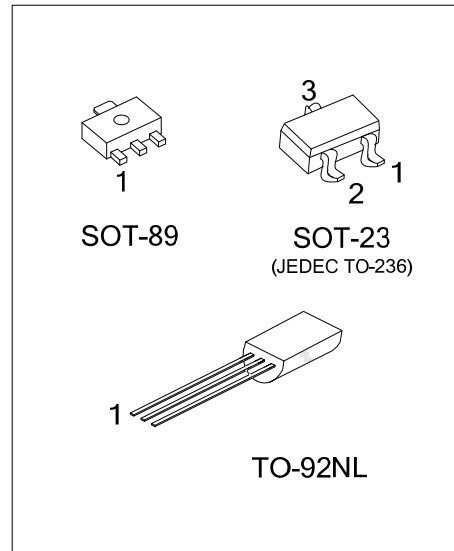
## SILICON PNP EPITAXIAL TRANSISTOR

### DESCRIPTION

The UTC **2SA1020** is designed for power amplifier and power switching applications.

### FEATURES

- \*Low collector saturation voltage:  
 $V_{CE(SAT)} = -0.5V_{(MAX)}$  ( $I_C = -1A$ )
- \*High speed switching time:  $t_{STG} = 1.0\mu s$  (TYP)
- \*Complement to UTC 2SC2655



### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	2SA1020G-x-AE3-R	SOT-23	E	B	C	Tape Reel
-	2SA1020G-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SA1020L-x-T9N-B	2SA1020G-x-T9N-B	TO-92NL	E	C	B	Tape Box
2SA1020L-x-T9N-K	2SA1020G-x-T9N-K	TO-92NL	E	C	B	Bulk

Note: Pin Assignment: B: Base C: Collector E: Emitter

<p>2SA1020G-x-AE3-R</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel                  (2) AE3: SOT-23, AB3: SOT-89, T9N: TO-92NL                  (3) x: refer to Classification of <math>h_{FE1}</math>                  (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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### MARKING

SOT-23	SOT-89	TO-92NL

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## PNP SILICON TRANSISTOR

■ 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	V
Emitter-Base Voltage		$V_{EBO}$	-5	V
Collector Current		$I_C$	-2	A
Collector Power Dissipation	SOT-23	$P_C$	300	mW
	SOT-89		500	mW
	TO-92NL		900	mW
Junction Temperature		$T_J$	150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

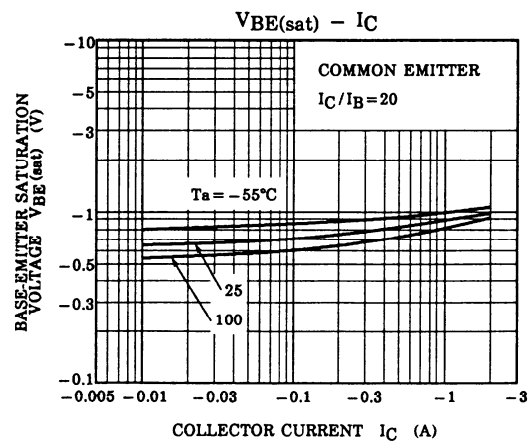
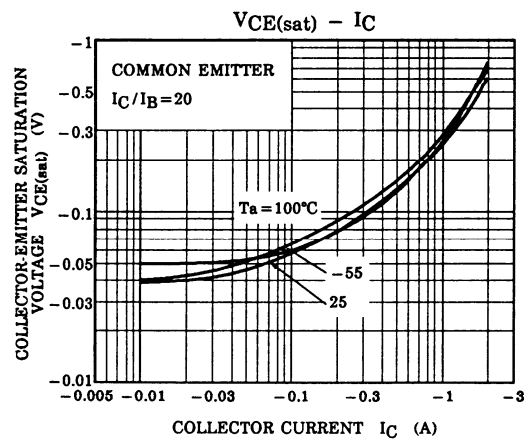
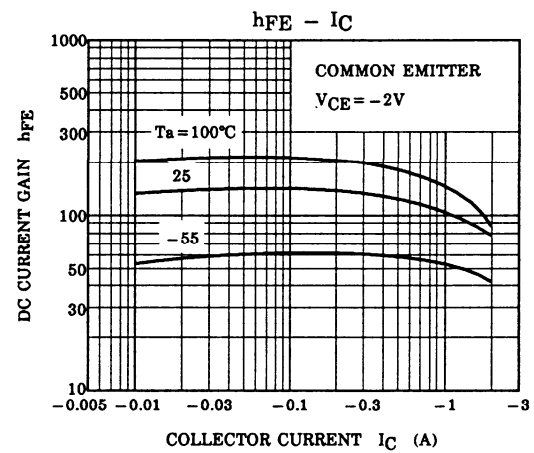
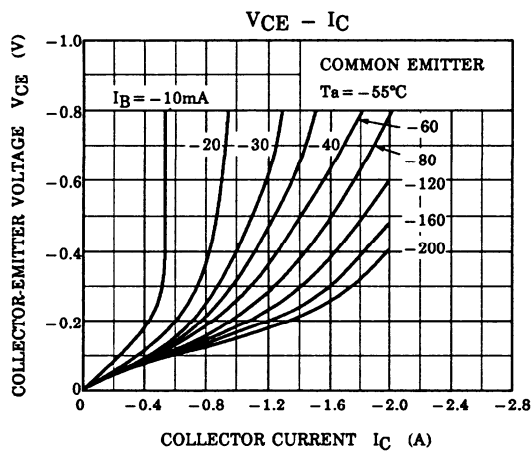
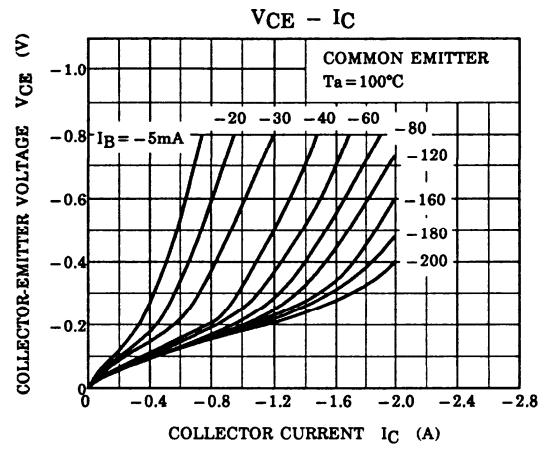
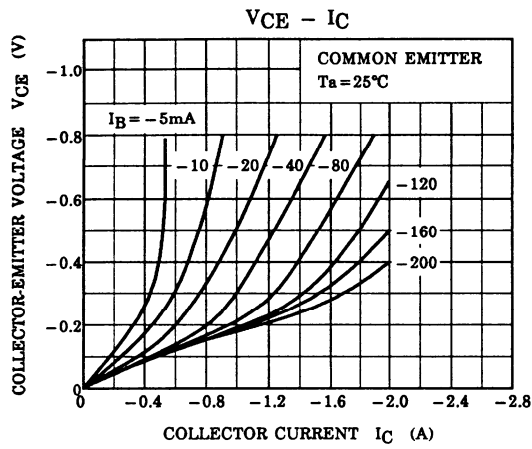
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector to Emitter Breakdown Voltage		$BV_{CEO}$	$I_C=-10\text{mA}$ , $I_B=0$	-50			V
Collector Cut-off Current		$I_{CBO}$	$V_{CB}=-50\text{V}$ , $I_E=0$			-1.0	$\mu\text{A}$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB}=-5\text{V}$ , $I_C=0$			-1.0	$\mu\text{A}$
DC Current Gain		$h_{FE1}$	$V_{CE}=-2\text{V}$ , $I_C=-0.5\text{A}$	70		240	
		$h_{FE2}$	$V_{CE}=-2\text{V}$ , $I_C=-1.5\text{A}$	40			
Collector to Emitter Saturation Voltage		$V_{CE(SAT)}$	$I_C=-1\text{A}$ , $I_B=-0.05\text{A}$			-0.5	V
Base to Emitter Saturation Voltage		$V_{BE(SAT)}$	$I_C=-1\text{A}$ , $I_B=-0.05\text{A}$			-1.2	V
Transition Frequency		$f_T$	$V_{CE}=-2\text{V}$ , $I_C=-0.5\text{A}$		100		MHz
Collector Output Capacitance		$C_{OB}$	$V_{CB}=-10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		40		pF
Switching Time	Turn-on Time	$t_{ON}$	<p> <math>20\mu\text{s}</math> INPUT <math>I_{B2}</math> OUTPUT  <math>I_{B1}</math> <math>I_{B2}</math> <math>I_{B1}</math> <math>I_{B2}</math>  <math>-I_{B1} = I_{B2} = 0.05\text{A}</math> <math>V_{CC} = -30\text{V}</math>            DUTY CYCLE <math>\leq 1\%</math> </p>		0.1	$\mu\text{s}$	
	Storage Time	$t_{STG}$			1.0	$\mu\text{s}$	
	Fall Time	$t_F$			0.1	$\mu\text{s}$	

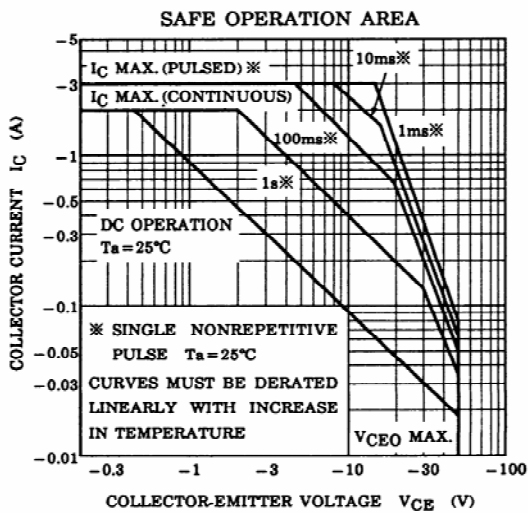
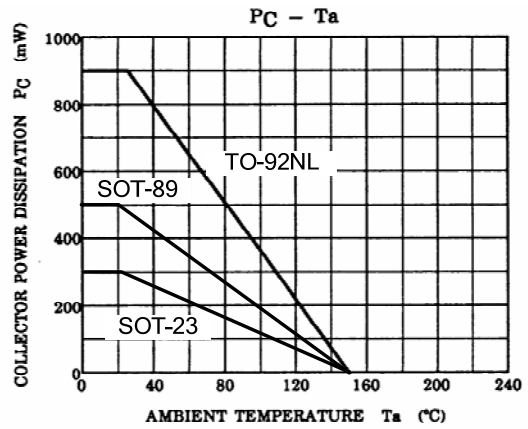
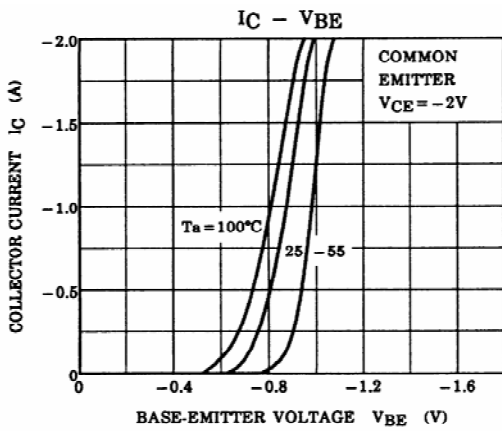
■ CLASSIFICATION OF  $h_{FE1}$

RANK	O	Y
RANGE	70 - 140	120 - 240

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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