



# 2SA1020

# PNP SILICON TRANSISTOR

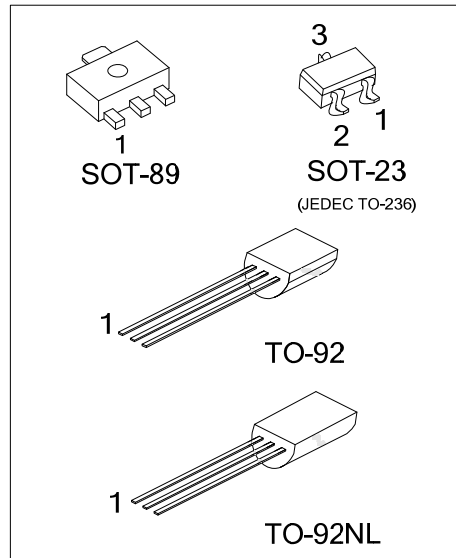
## SILICON PNP EPITAXIAL TRANSISTOR

### 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	
2SA1020L-x-AE3-R	2SA1020G-x-AE3-R	SOT-23	E	B	C	Tape Reel
2SA1020L-x-AB3-R	2SA1020G-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SA1020L-x-T92-B	2SA1020G-x-T92-B	TO-92	E	B	C	Tape Box
2SA1020L-x-T92-K	2SA1020G-x-T92-K	TO-92	E	B	C	Bulk
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> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Rank</li> <li>(4) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) B: Tape Box, K: Bulk, R: Tape Reel</li> <li>(2) AE3: SOT-23, AB3: SOT-89, T92: TO-92, T9N: TO-92NL</li> <li>(3) x: refer to Classification of <math>h_{FE1}</math></li> <li>(4) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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### MARKING

SOT-89	SOT-23
<p>□□□□ → Data Code          2SA1020 □ → L: Lead Free          G: Halogen Free</p>	<p>A10 □ → L: Lead Free          G: Halogen Free</p>
TO-92	TO-92NL
<p>UTC          A1020 □ → L: Lead Free          G: Halogen Free          □□□ → Data Code</p>	<p>UTC          2SA1020 □ → L: Lead Free          G: Halogen Free          □□□□ → Data Code</p>

■ 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-92		900	mW
	TO-92NL			
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.

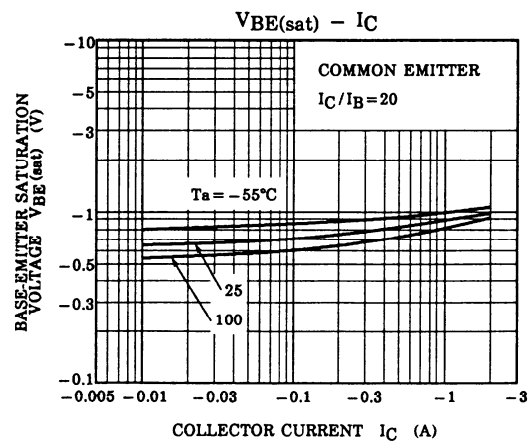
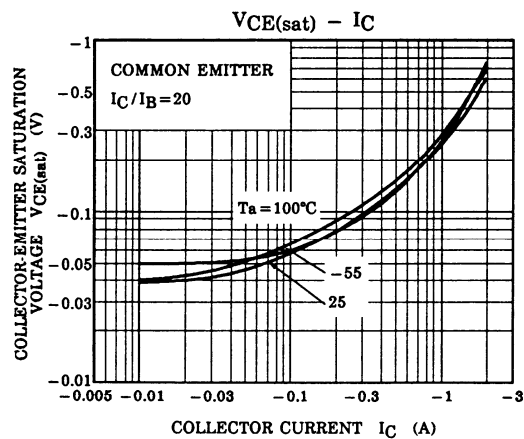
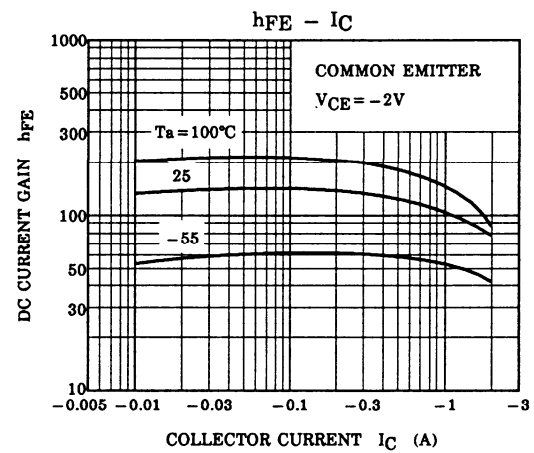
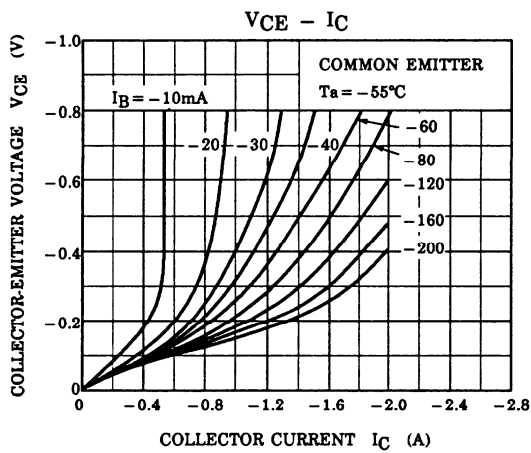
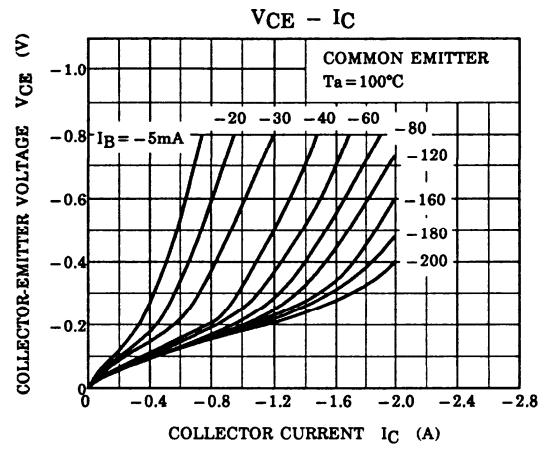
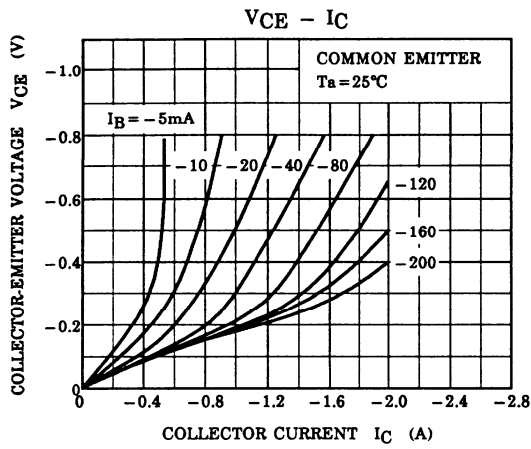
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

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	$t_{ON}$			0.1		$\mu\text{s}$
	Storage Time	$t_{STG}$			1.0		$\mu\text{s}$
	Fall Time	$t_F$			0.1		$\mu\text{s}$

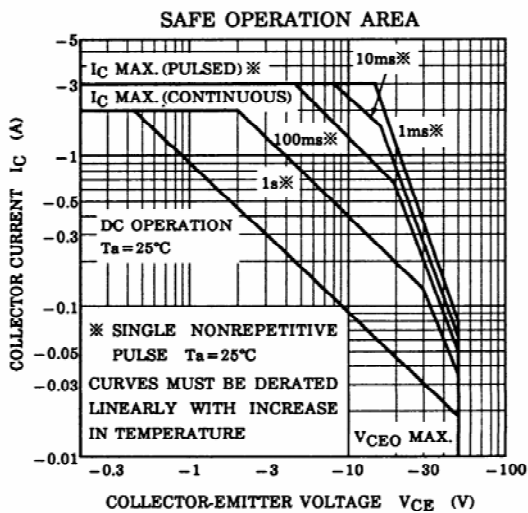
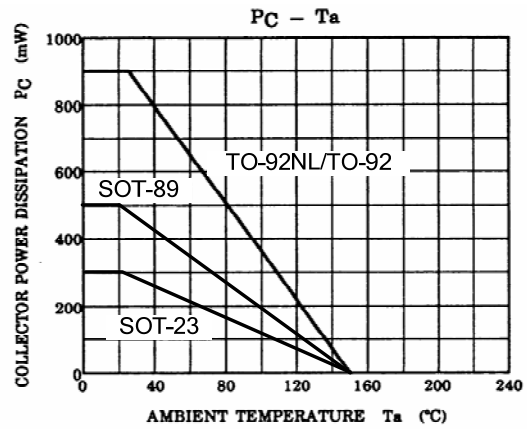
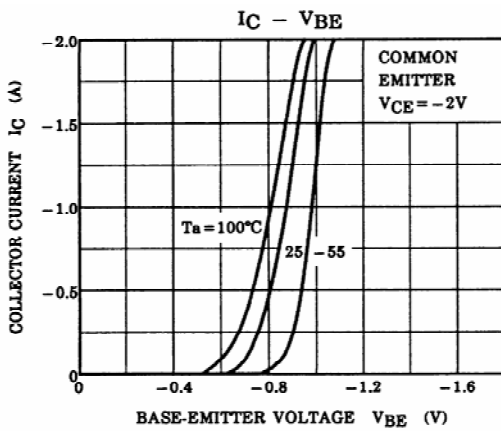
■ CLASSIFICATION OF  $h_{FE1}$

RANK	O	Y
RANGE	70 - 140	120 - 240

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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