



## 2SA1020

## PNP SILICON TRANSISTOR

### SILICON PNP EPITAXIAL TRANSISTOR

#### DESCRIPTION

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

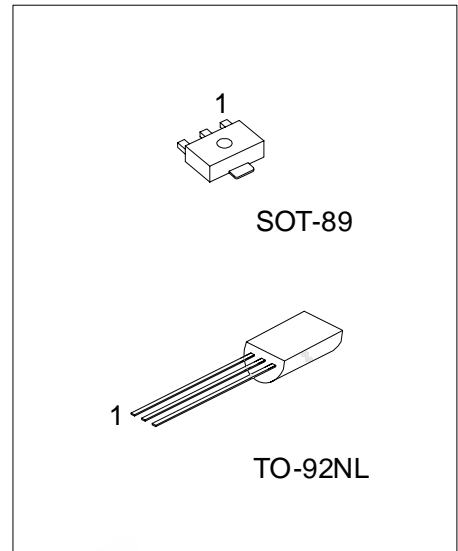
#### FEATURES

\*Low collector saturation voltage:

$$V_{CE(SAT)} = -0.5V(\text{max.}) \quad (I_C = -1A)$$

\*High speed switching time:  $t_{STG} = 1.0\mu s(\text{Typ.})$

\*Complement to UTC 2SC2655



\*Pb-free plating product number: 2SA1020L

#### ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
2SA1020-x-AB3-R	2SA1020L-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SA1020-x-T9N-B	2SA1020L-x-T9N-B	TO-92NL	E	C	B	Tape Box
2SA1020-x-T9N-K	2SA1020L-x-T9N-K	TO-92NL	E	C	B	Bulk

<p>2SA1020L-x-AB3-R</p> <p>(1) Packing Type (2) Package Type (3) Rank (4) Lead Plating</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AB3: SOT-89, T9N: TO-92NL (3) x: refer to Classification of <math>h_{FE1}</math> (4) L: Lead Free Plating Blank: Pb/Sn</p>
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### ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°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	TO-92NL	$P_C$	900	mW
	SOT-89		500	mW
Junction Temperature		$T_J$	150	°C
Storage Temperature		$T_{STG}$	-55 ~ +150	°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.

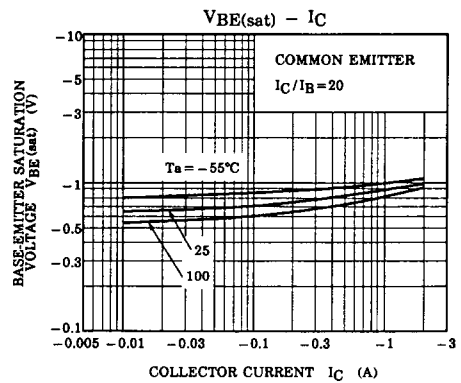
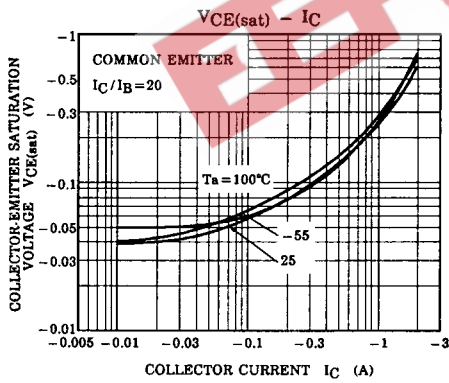
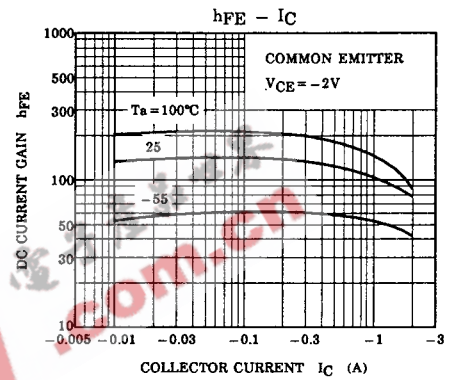
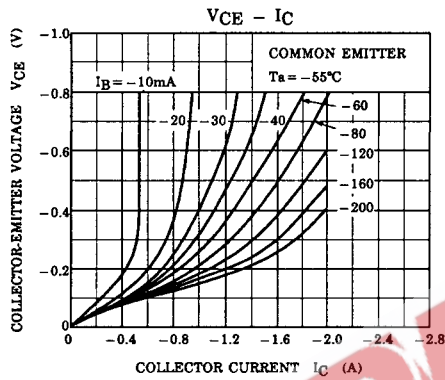
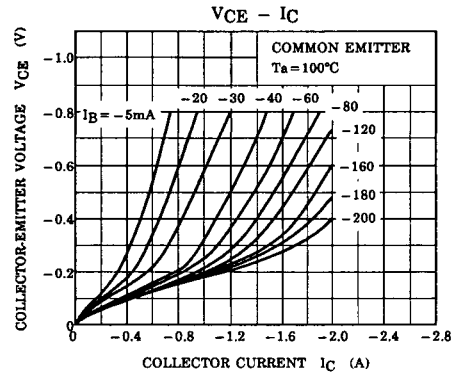
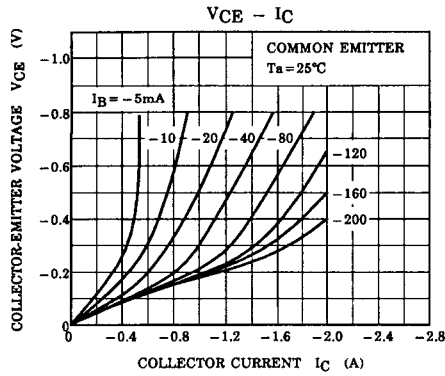
### ■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

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

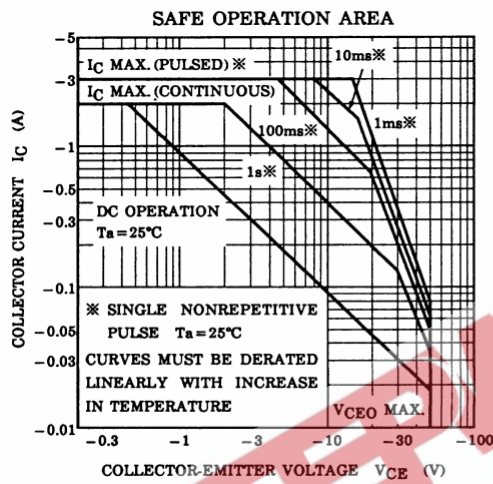
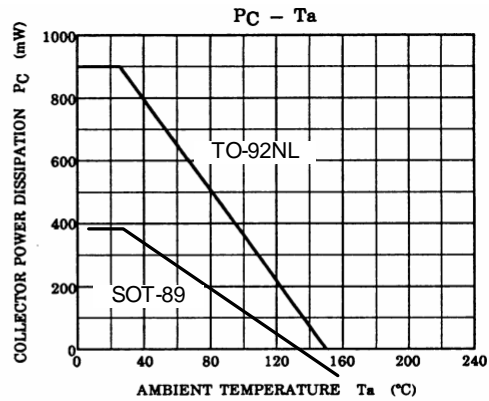
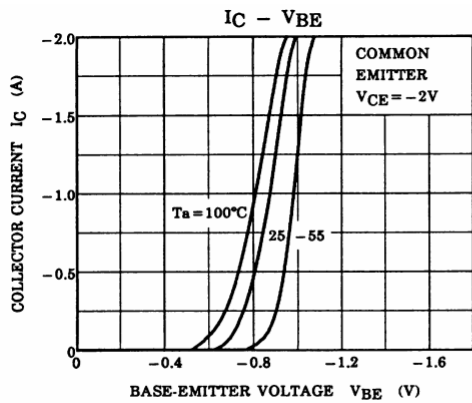
### ■ CLASSIFICATION OF $h_{FE1}$

RANK	O	Y
RANGE	70 - 140	120 - 240

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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