



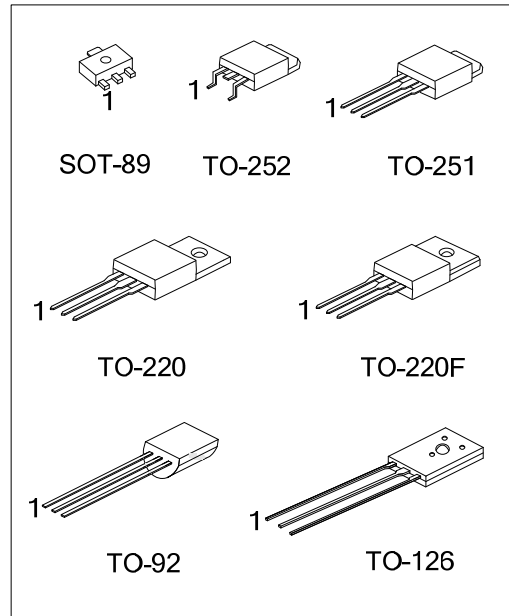
# 2SD1060

## NPN SILICON TRANSISTOR

### NPN PLANAR SILICON TRANSISTOR

■ FEATURES

\* Low collector-to-emitter saturation voltage:  
 $V_{CE(SAT)}=0.4V \text{ max}/I_C=3A, I_B=0.3A$



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2SD1060L-x-AB3-R	2SD1060G-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD1060L-x-T60-K	2SD1060G-x-T60-K	TO-126	B	C	E	Bulk
2SD1060L-x-T92-B	2SD1060G-x-T92-B	TO-92	E	C	B	Tape Box
2SD1060L-x-T92-K	2SD1060G-x-T92-K	TO-92	E	C	B	Bulk
2SD1060L-x-T92-R	2SD1060G-x-T92-R	TO-92	E	C	B	Tape Reel
2SD1060L-x-TA3-T	2SD1060G-x-TA3-T	TO-220	B	C	E	Tube
2SD1060L-x-TF3-T	2SD1060G-x-TF3-T	TO-220F	B	C	E	Tube
2SD1060L-x-TM3-T	2SD1060G-x-TM3-T	TO-251	B	C	E	Tube
2SD1060L-x-TN3-T	2SD1060G-x-TN3-T	TO-252	B	C	E	Tube
2SD1060L-x-TN3-R	2SD1060G-x-TN3-R	TO-252	B	C	E	Tape Reel

<p>2SD1060L-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, T: Tube  (2) AB3: SOT-89, T60: TO-126, T92: TO-92, TA3: TO-220, TM3: TO-251, TN3: TO-252  (3) x: refer to Classification of <math>h_{FE1}</math>  (4) L: Lead Free, G: Halogen Free</p>
---	---

■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector to Base Voltage		V <sub>CBO</sub>	60	V
Collector to Emitter Voltage		V <sub>CEO</sub>	50	V
Emitter to Base Voltage		V <sub>EBO</sub>	6	V
Collector Current		I <sub>C</sub>	5	A
Collector Current (Pulse)		I <sub>CP</sub>	9	A
Collector Dissipation	SOT-89	P <sub>C</sub>	500	mW
	TO-126/TO-251/TO-252		1	W
	TO-220/TO-220F		2	W
	TO-92		625	mW
Junction Temperature		T <sub>J</sub>	+150	°C
Storage Temperature		T <sub>STG</sub>	-40 ~ +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.

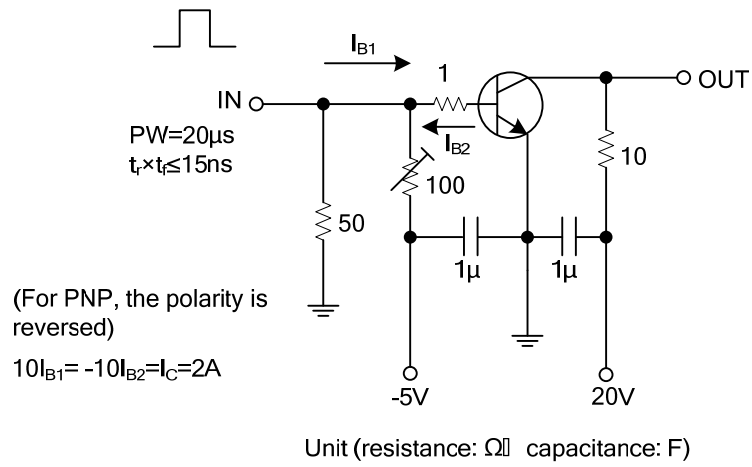
■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-to-Base Breakdown Voltage	BV <sub>CBO</sub>	I <sub>C</sub> = 1mA, I <sub>E</sub> = 0	60			V
Collector-to-Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> = 1mA, R <sub>BE</sub> = ∞	50			V
Emitter-to-Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>C</sub> = 0, I <sub>E</sub> = 1mA	6			V
Collector Cut-Off Current	I <sub>CBO</sub>	V <sub>CB</sub> = 40V, I <sub>E</sub> = 0			0.1	mA
Emitter Cut-Off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 4V, I <sub>C</sub> = 0			0.1	mA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A	70		360	
	h <sub>FE2</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 3A	30			
Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 5V, I <sub>C</sub> = 1A		30		MHZ
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10V, f = 1MHz		100		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	I <sub>C</sub> = 3A, I <sub>B</sub> = 0.3A			0.4	V
Turn-ON Time	t <sub>ON</sub>	See specified test circuit		0.1		μs
Storage Time	t <sub>STG</sub>	See specified test circuit		1.4		μs
Fall Time	t <sub>F</sub>	See specified test circuit		0.2		μs

■ CLASSIFICATION of h<sub>FE1</sub>

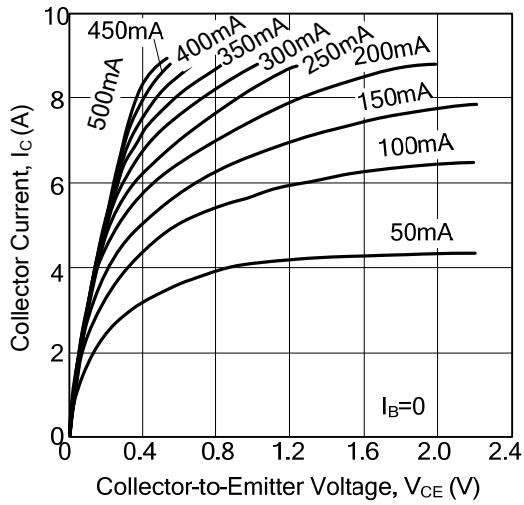
RANK	Q	R	S
RANGE	70-140	100-200	180-360

### SWITCHING TIME TEST CIRCUIT

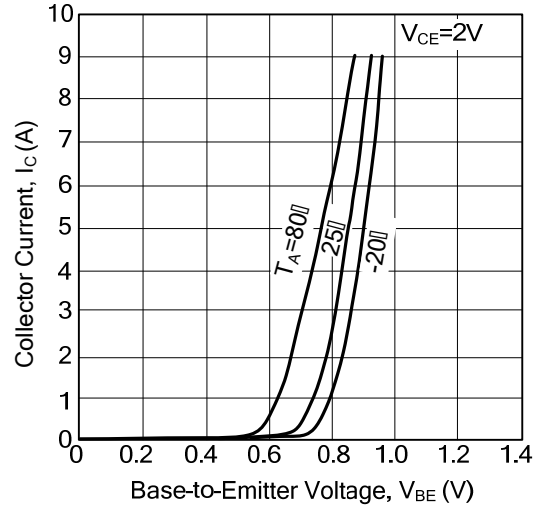


## TYPICAL CHARACTERISTICS

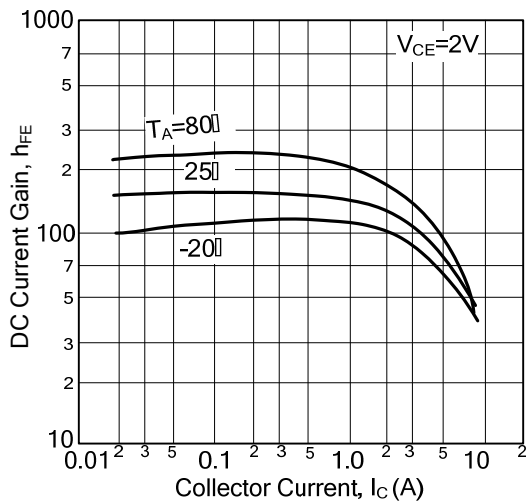
Collector Current vs. Collector-to-Emitter Voltage



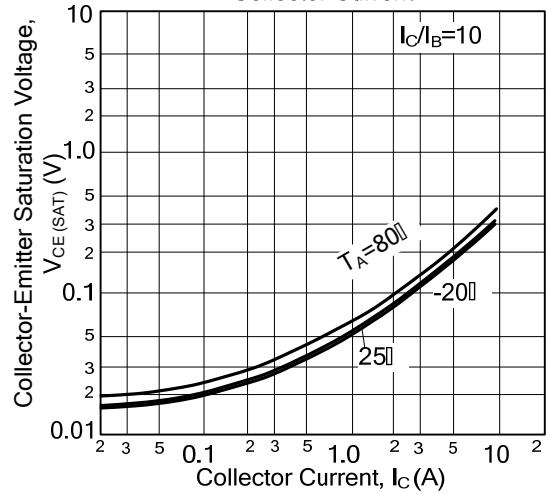
Collector Current vs. Base-to-Emitter Voltage



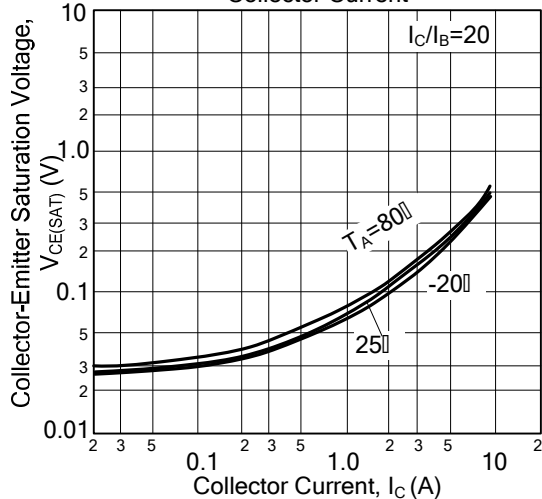
DC Current Gain vs. Collector Current



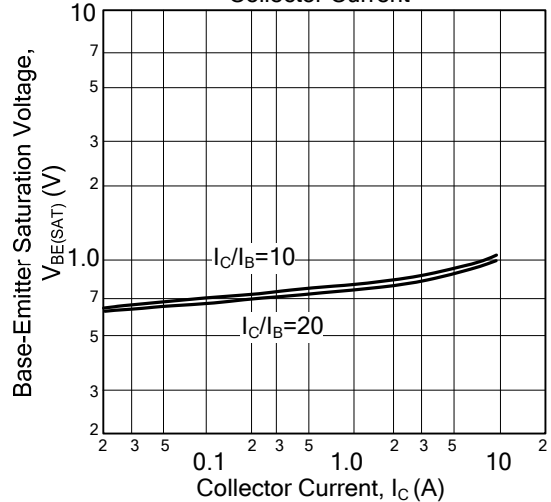
Collector-Emitter Saturation Voltage vs. Collector Current



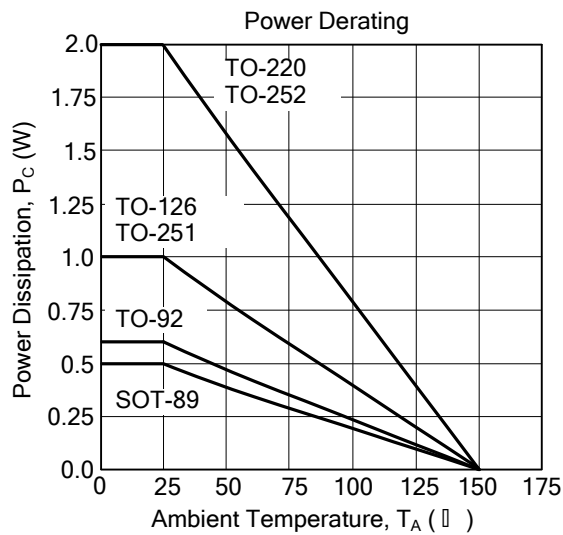
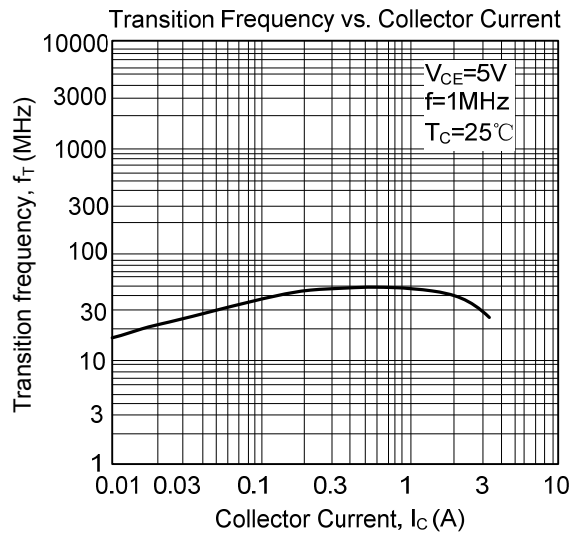
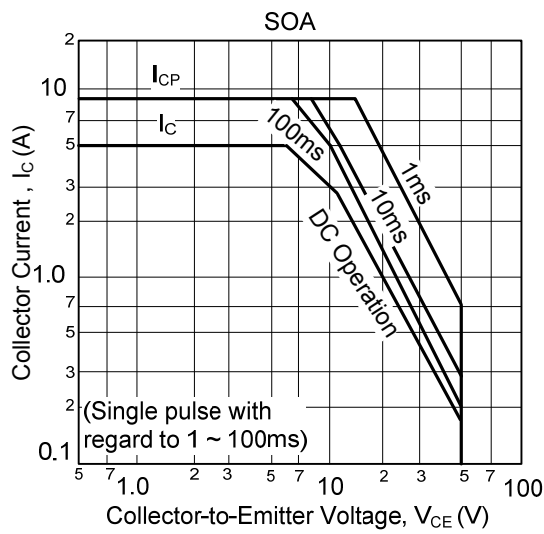
Collector-Emitter Saturation Voltage vs. Collector Current



Base-Emitter Saturation Voltage vs. Collector Current



■ TYPICAL CHARACTERISTICS(Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.