



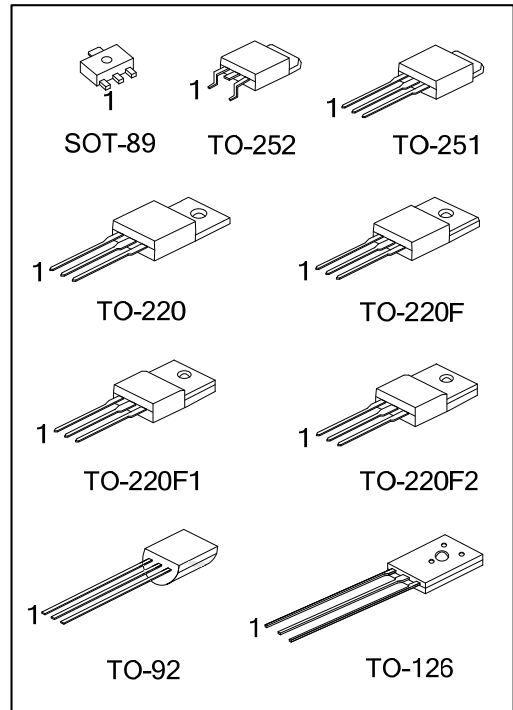
# 2SD1060/A

## 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	
-	2SD1060G-x-AB3-R	SOT-89	B	C	E	Tape Reel
-	2SD1060AG-x-AB3-R	SOT-89	B	C	E	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-TF1-T	2SD1060G-x-TF1-T	TO-220F1	B	C	E	Tube
2SD1060L-x-TF2-T	2SD1060G-x-TF2-T	TO-220F2	B	C	E	Tube
2SD1060L-x-TM3-T	2SD1060G-x-TM3-T	TO-251	B	C	E	Tube
2SD1060L-x-TN3-R	2SD1060G-x-TN3-R	TO-252	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

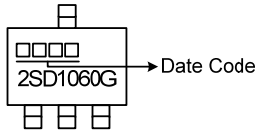
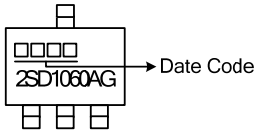
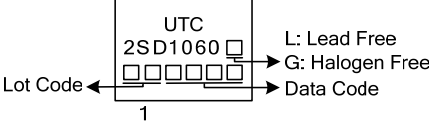
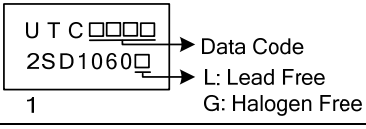
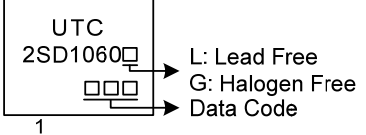
Note: Pin assignment: E: Emitter B: Base C: Collector

<p>2SD1060G-x-AB3-R</p> <p>(1)Packing Type          (2)Package Type          (3)Rank          (4)Green Package</p>	<p>(1)B: Tape Box, K: Bulk, R: Tape Reel, T: Tube          (2) AB3: SOT-89, TA3: TO-220, TF3: TO-220F          TF1: TO-220F1, TF2: TO-220F2, TM3: TO-251,          TN3: TO-252, T60: TO-126, T92: TO-92          (3) x: refer to Classification of <math>h_{FE1}</math>          (4) L: Lead Free, G: Halogen Free and Lead Free</p>
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# 2SD1060/A

## NPN SILICON TRANSISTOR

### MARKING

PACKAGE		MARKING	
		2SD1060	2SD1060A
SOT-89			
TO-220 TO-220F TO-220F1	TO-220F2 TO-251 TO-252		-
TO-126			-
TO-92			-

# 2SD1060/A

## NPN SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector to Base Voltage	2SD1060	$V_{CB0}$	60	V
	2SD1060A		100	V
Collector to Emitter Voltage		$V_{CE0}$	50	V
Emitter to Base Voltage		$V_{EB0}$	6	V
Collector Current		$I_C$	5	A
Collector Current (Pulse)		$I_{CP}$	9	A
Collector Dissipation	SOT-89	$P_C$	500	mW
	TO-220/TO-220F		2	W
	TO-220F1/TO-220F2			
	TO-126/TO-251		1	W
	TO-252			
TO-92	625	mW		
Junction Temperature		$T_J$	+150	$^\circ\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +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.

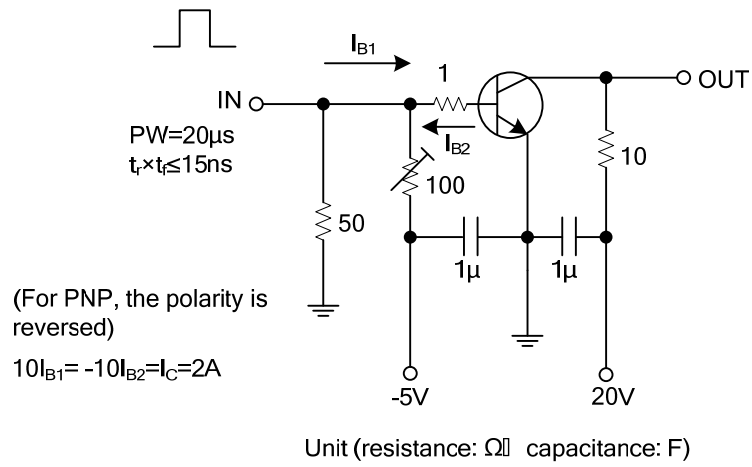
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-to-Base Breakdown Voltage	$BV_{CB0}$	$I_C=1\text{mA}, I_E=0$	2SD1060	60		V
			2SD1060A	100		V
Collector-to-Emitter Breakdown Voltage	$BV_{CE0}$	$I_C=1\text{mA}, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$BV_{EB0}$	$I_C=0, I_E=1\text{mA}$	6			V
Collector Cut-Off Current	$I_{CB0}$	$V_{CB}=40\text{V}, I_E=0$			0.1	mA
Emitter Cut-Off Current	$I_{EB0}$	$V_{EB}=4\text{V}, I_C=0$			0.1	mA
DC Current Gain	$h_{FE1}$	$V_{CE}=2\text{V}, I_C=1\text{A}$	70		360	
	$h_{FE2}$	$V_{CE}=2\text{V}, I_C=3\text{A}$	30			
Gain Bandwidth Product	$f_T$	$V_{CE}=5\text{V}, I_C=1\text{A}$		30		MHZ
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, f=1\text{MHz}$		100		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=3\text{A}, I_B=0.3\text{A}$			0.4	V
Turn-ON Time	$t_{ON}$	See specified test circuit		0.1		$\mu\text{s}$
Storage Time	$t_{STG}$	See specified test circuit		1.4		$\mu\text{s}$
Fall Time	$t_F$	See specified test circuit		0.2		$\mu\text{s}$

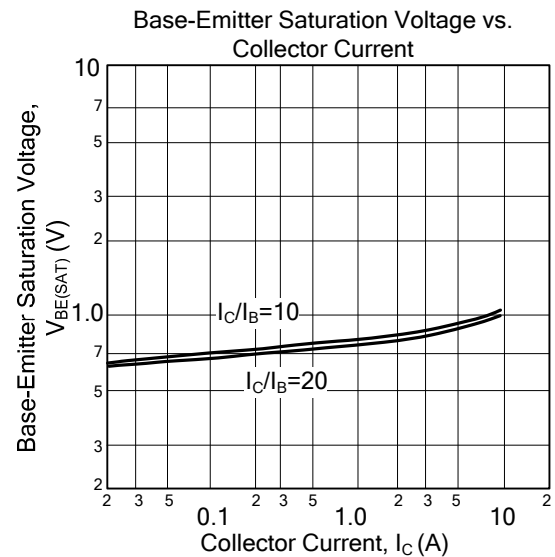
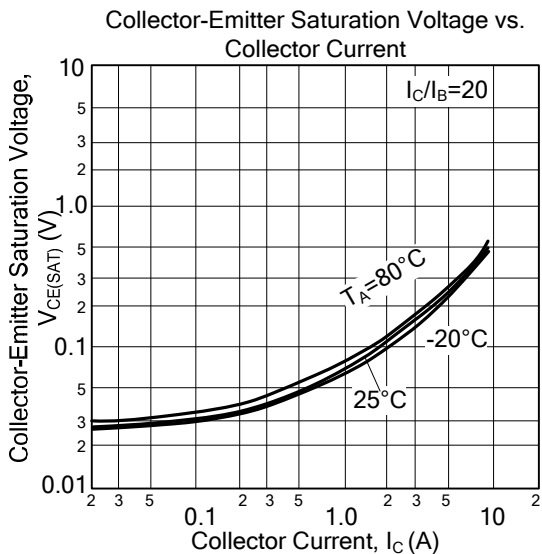
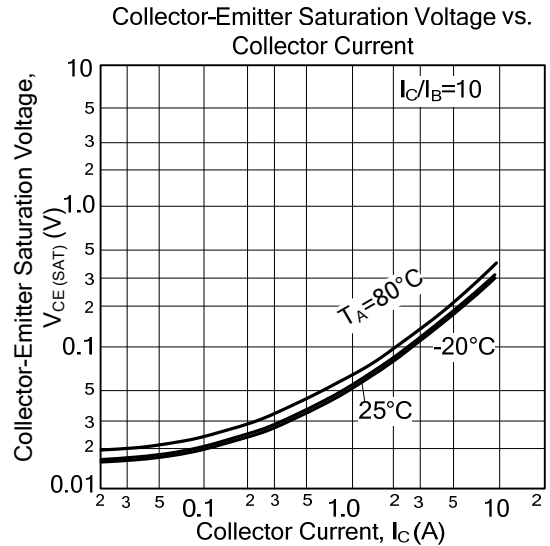
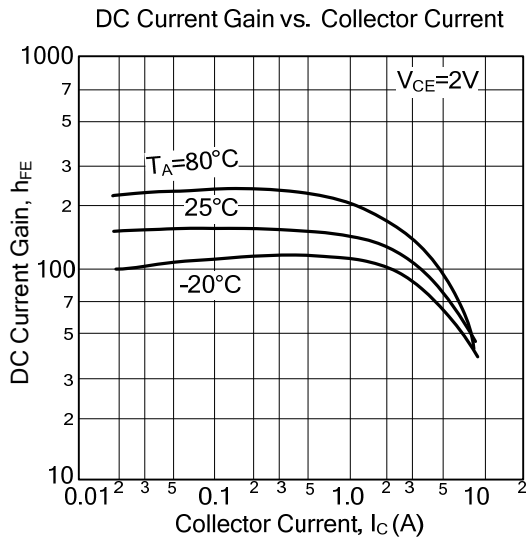
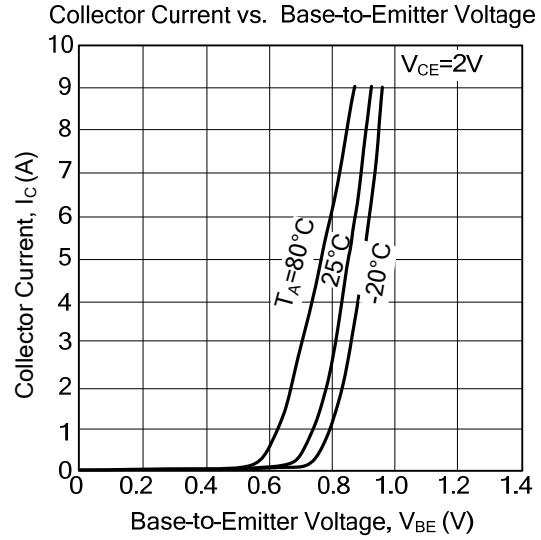
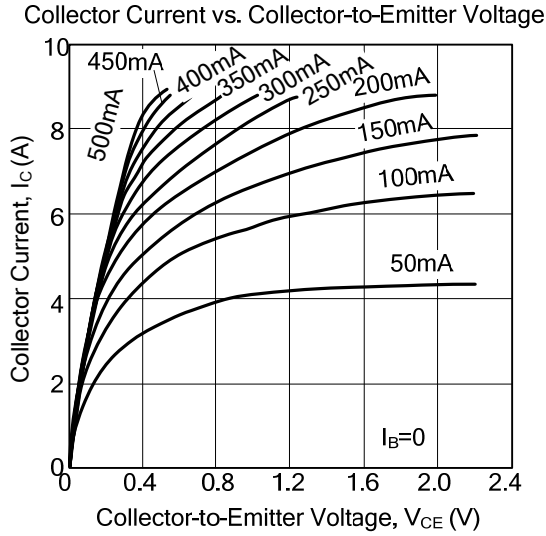
■ CLASSIFICATION of  $h_{FE1}$

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

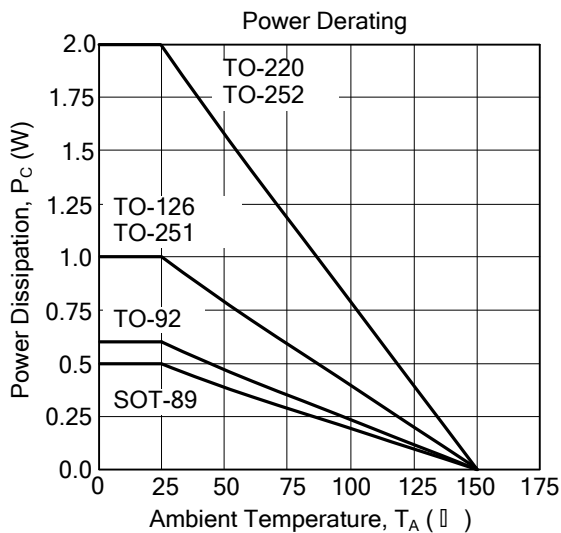
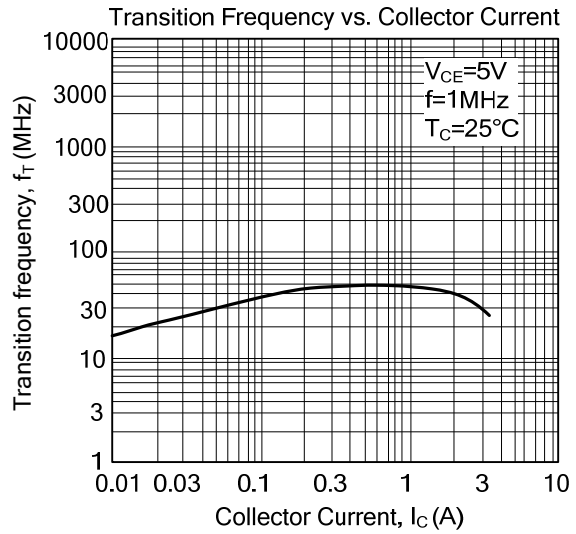
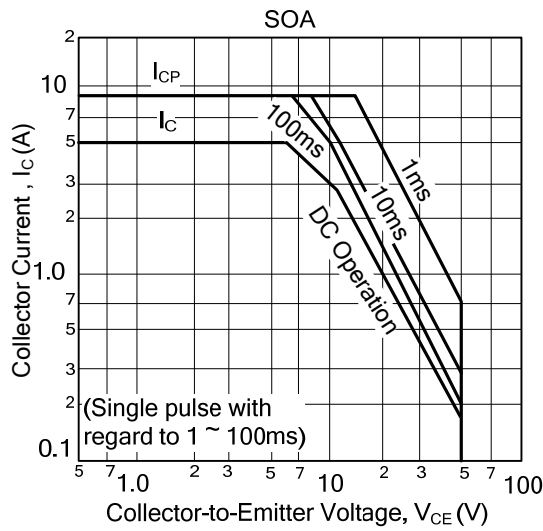
### SWITCHING TIME TEST CIRCUIT



## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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