



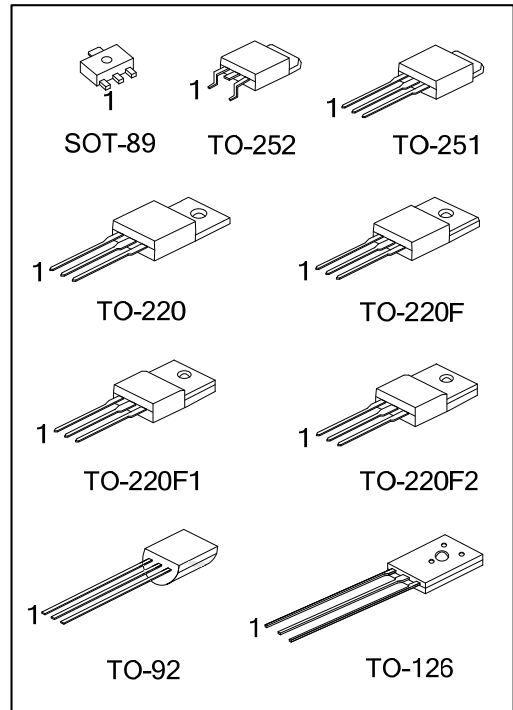
2SD1060

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-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

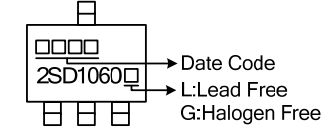
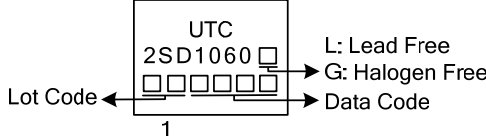
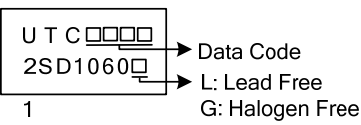
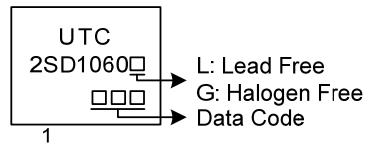
Note: Pin assignment: E: Emitter B: Base C: Collector

<p>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, 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 h_{FE1} (4) L: Lead Free, G: Halogen Free</p>
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2SD1060

NPN SILICON TRANSISTOR

MARKING

SOT-89	TO-220 / TO-220F / TO-220F1 TO-220F2 / TO-251 / TO-252
 <p> Date Code L: Lead Free G: Halogen Free </p>	 <p> Lot Code UTC 2SD1060 L: Lead Free G: Halogen Free Data Code </p>
TO-126	TO-92
 <p> Data Code L: Lead Free G: Halogen Free </p>	 <p> L: Lead Free G: Halogen Free Data Code </p>

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector to Base Voltage		V _{CBO}	60	V
Collector to Emitter Voltage		V _{CEO}	50	V
Emitter to Base Voltage		V _{EBO}	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		1	W
	TO-126/TO-251/TO-252		625	mW
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-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.

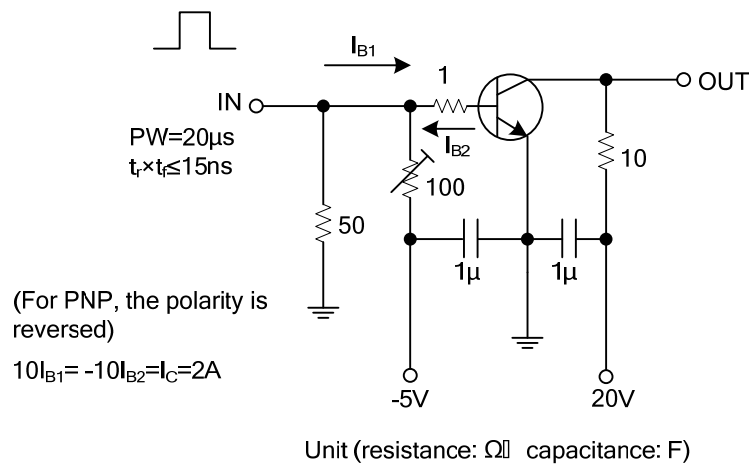
■ ELECTRICAL CHARACTERISTICS (T_A=25°C)

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

■ CLASSIFICATION of h_{FE1}

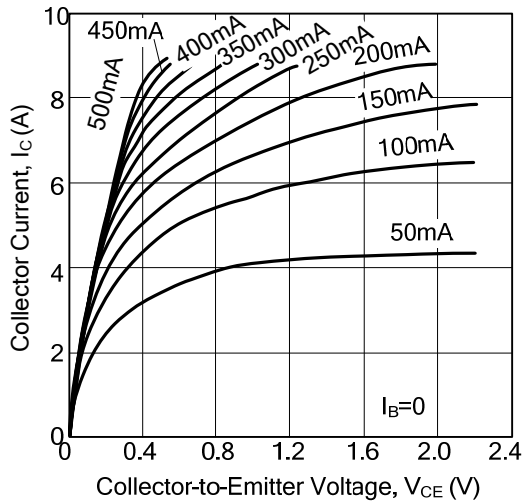
RANK	Q	R	S
RANGE	70-140	100-200	180-360

SWITCHING TIME TEST CIRCUIT

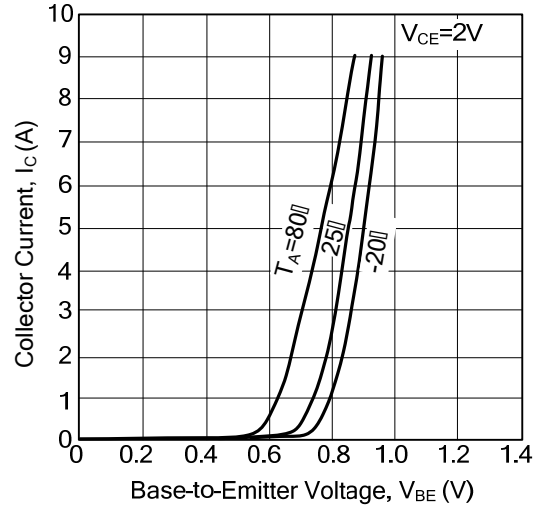


TYPICAL CHARACTERISTICS

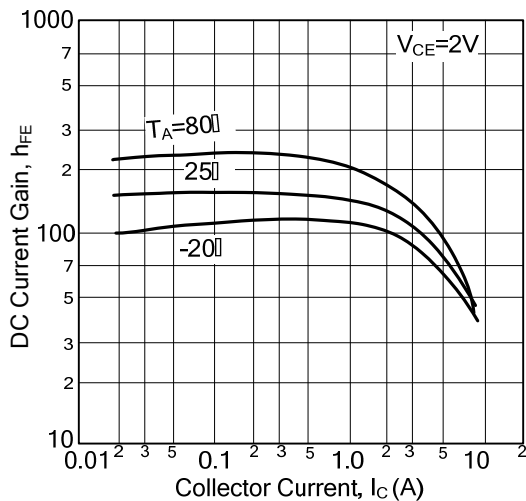
Collector Current vs. Collector-to-Emitter Voltage



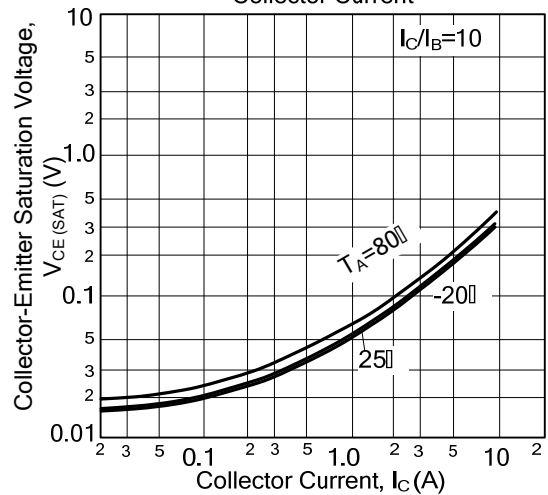
Collector Current vs. Base-to-Emitter Voltage



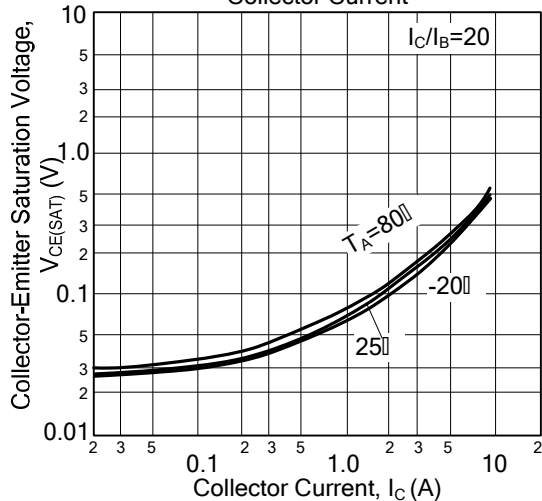
DC Current Gain vs. Collector Current



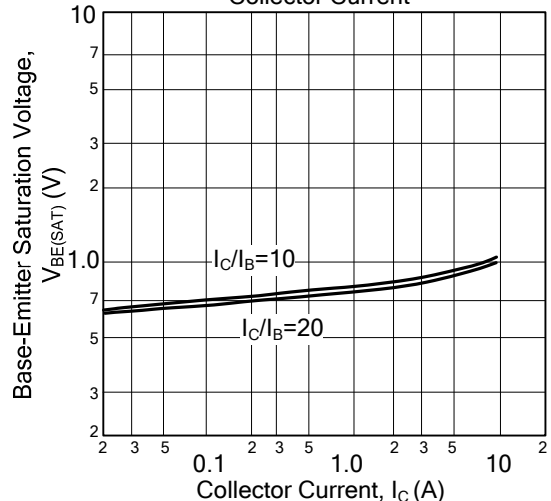
Collector-Emitter Saturation Voltage vs. Collector Current



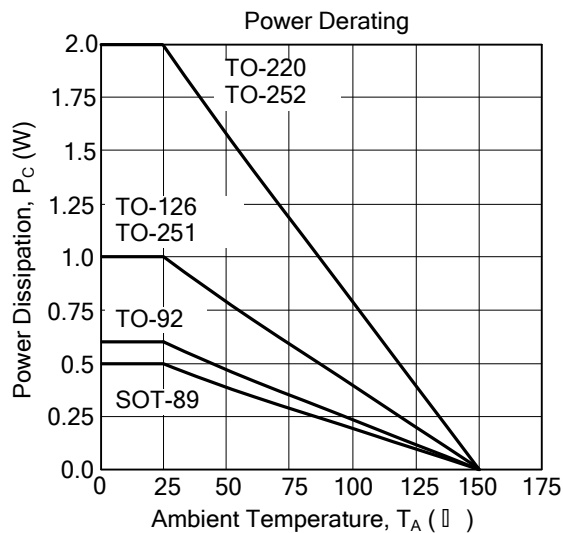
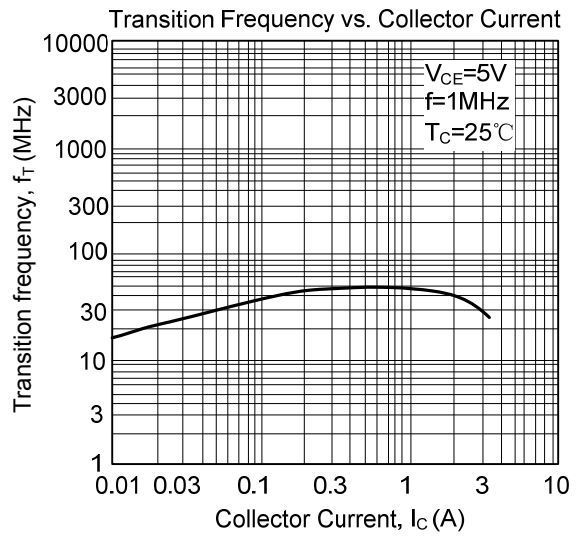
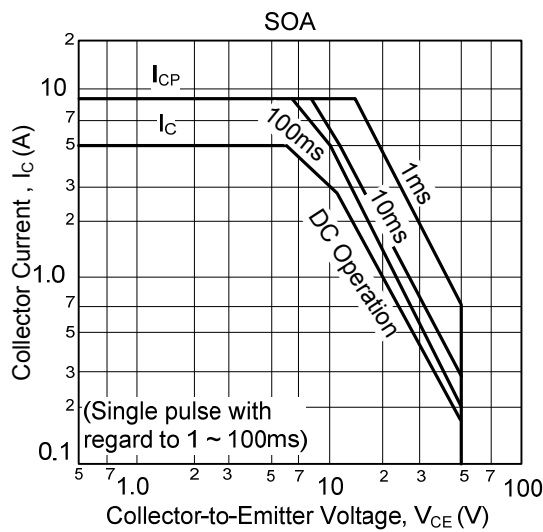
Collector-Emitter Saturation Voltage vs. Collector Current



Base-Emitter Saturation Voltage vs. Collector Current



■ TYPICAL CHARACTERISTICS(Cont.)



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