



2SD1691

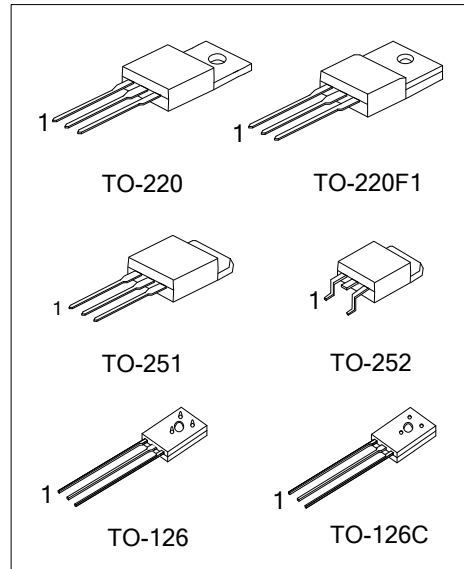
NPN SILICON TRANSISTOR

LOW COLLECTOR SATURATION VOLTAGE LARGE CURRENT

■ FEATURES

*High Power Dissipation

*Complementary to 2SB1151



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free Plating	Halogen Free		1	2	3	
2SD1691L-x-TA3-T	2SD1691G-x-TA3-T	TO-220	B	C	E	Tube
2SD1691L-x-TF1-T	2SD1691G-x-TF1-T	TO-220F1	B	C	E	Tube
2SD1691L-x-TM3-T	2SD1691G-x-TM3-T	TO-251	B	C	E	Tube
2SD1691L-x-TN3-T	2SD1691G-x-TN3-T	TO-252	B	C	E	Tape Reel
2SD1691L-x-T60-K	2SD1691G-x-T60-K	TO-126	E	C	B	Bulk
2SD1691L-x-T6C-K	2SD1691G-x-T6C-K	TO-126C	E	C	B	Bulk

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

2SD1691L-x-TA3-T (1) Packing Type (2) Package Type (3) Rank (4) Green Package	(1) K: Bulk, T: Tube, R: Tape Reel (2) TA3: TO-220, TF1: TO-220F1, TN3: TO-252 TM3: TO-251, T60: TO-126, T6C: TO-126C (3) x: refer to Classification of h_{FE2} (4) L: Lead Free, G: Halogen Free and Lead Free
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■ MARKING

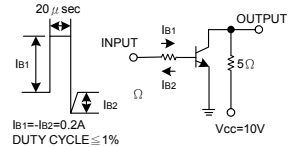
TO-220 / TO-220F1 / TO-251 / TO-252	TO-126 / TO-126C
UTC 2SD1691 Lot Code L: Lead Free G: Halogen Free Data Code	UTC 2SD1691 Data Code L: Lead Free G: Halogen Free

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

PARAMETER		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	60	V
Collector-Emitter Voltage		V_{CEO}	60	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	5	A
	Pulse ($PW \leq 10\text{ms}$, Duty Cycle $\leq 50\%$)	I_{CP}	8	
Base Current		I_B	1	A
Collector Power Dissipation ($T_c=25^{\circ}\text{C}$)	TO-220F1	P_C	23	W
	TO-220		54	
	TO-251/TO-252		36	
	TO-126/ TO-126C		20	
Junction Temperature		T_J	150	$^{\circ}\text{C}$
Storage Temperature Range		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)

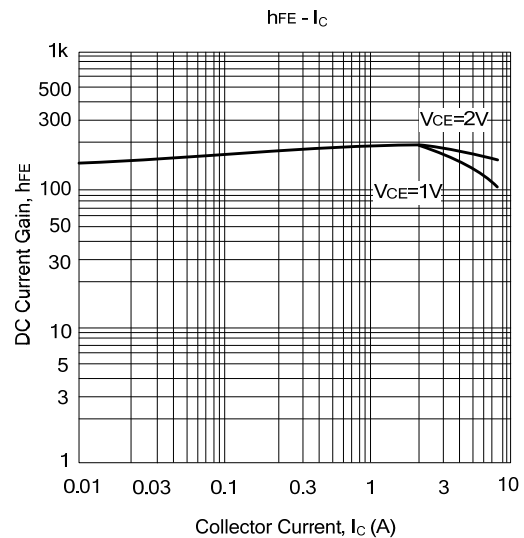
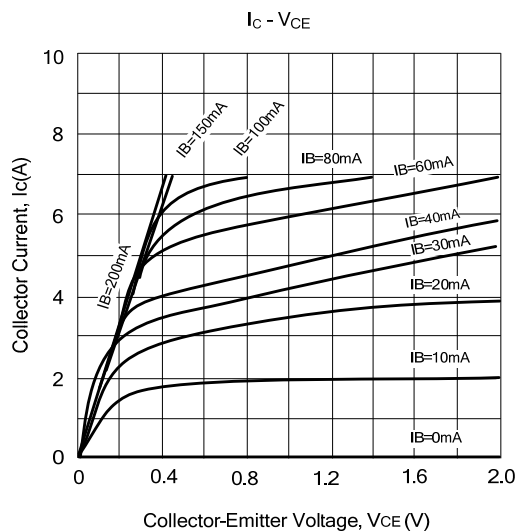
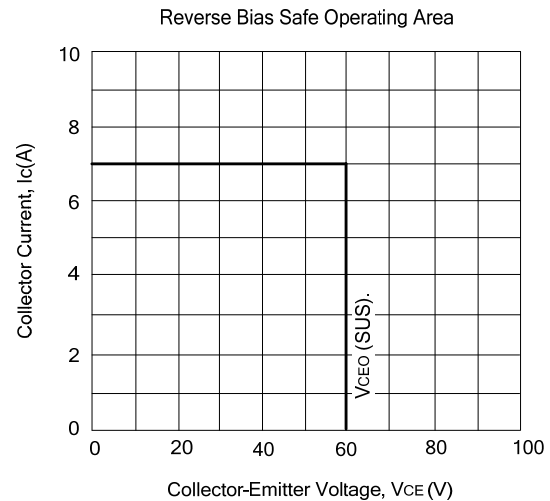
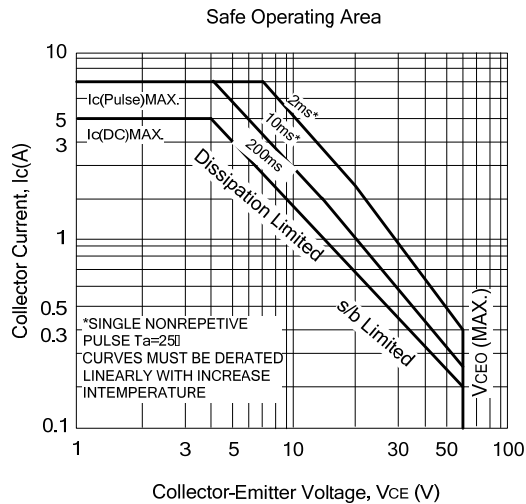
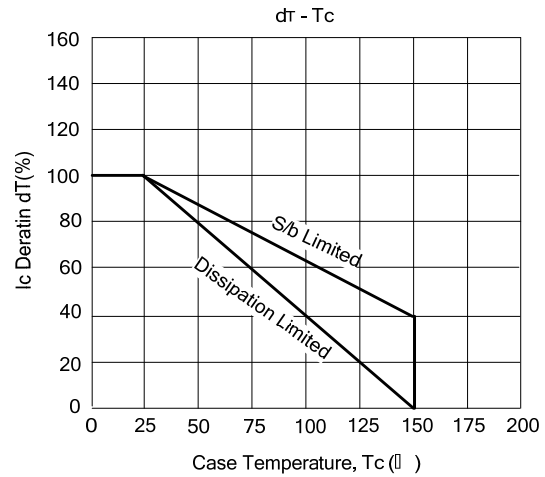
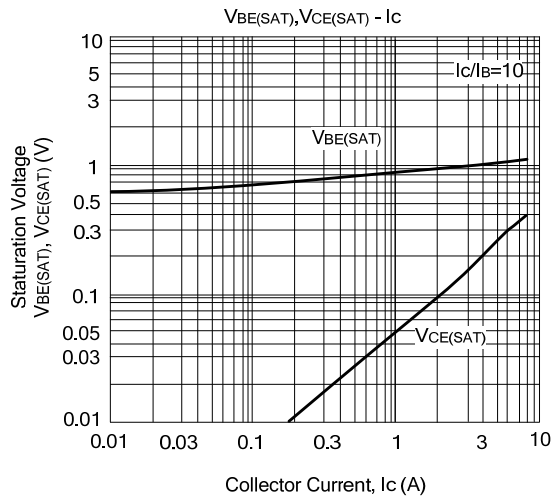
CHARACTERISTIC		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB}=50\text{V}$, $I_E=0$			10	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB}=7\text{V}$, $I_C=0$			10	μA
DC Current Gain		h_{FE1}	$V_{CE}=1\text{V}$, $I_C=0.1\text{A}$	60			
		h_{FE2}	$V_{CE}=1\text{V}$, $I_C=2\text{A}$	160		400	
		h_{FE3}	$V_{CE}=2\text{V}$, $I_C=5\text{A}$	50			
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$ (Note)	$I_C=2\text{A}$, $I_B=0.2\text{A}$		0.1	0.3	V
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$ (Note)	$I_C=2\text{A}$, $I_B=0.2\text{A}$		0.9	1.2	V
Switching Time	Turn On Time	T_{ON}			0.2	1	μs
	Storage Time	T_{STG}			1.1	2.5	
	Fall Time	T_F			0.2	1	

Note: Pulse test: $P_W \leq 50\mu\text{S}$, Duty Cycle $\leq 2\%$ Pulse

■ **CLASSIFICATION OF h_{FE2}**

RANK	O	Y
RANGE	160-320	200-400

■ TYPICAL CHARACTERISTICS



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