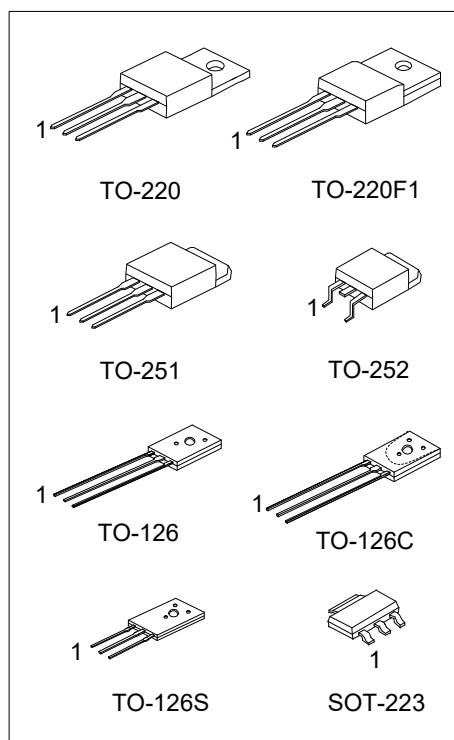


**2SD1691****NPN SILICON TRANSISTOR****LOW COLLECTOR
SATURATION VOLTAGE
LARGE CURRENT****■ FEATURES**

*High Power Dissipation

*Complementary to 2SB1151

**■ ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2SD1691L-x-AA3-R	2SD1691G-x-AA3-R	SOT-223	B	C	E	Tape Reel
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-R	2SD1691G-x-TN3-R	TO-252	B	C	E	Tape Reel
2SD1691L-x-T60-T	2SD1691G-x-T60-T	TO-126	E	C	B	Tube
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
2SD1691L-x-T6S-K	2SD1691G-x-T6S-K	TO-126S	E	C	B	Bulk

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

2SD1691G-x-AA3-R (1) Packing Type (2) Package Type (3) Rank (4) Green Package	(1) R: Tape Reel, T: Tube, K: Bulk (2) AA3: SOT-223, TA3: TO-220, TF1: TO-220F1, TN3: TO-252, TM3: TO-251, T60: TO-126, T6C: TO-126C, T6S: TO-126S (3) x: refer to Classification of h_{FE2} (4) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

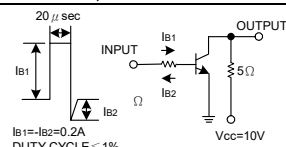
PACKAGE	MARKING
SOT-223	2SD1691 1 L: Lead Free G: Halogen Free Date Code
TO-220 / TO-220F1 TO-251 / TO-252	UTC 2SD1691 Lot Code 1 L: Lead Free G: Halogen Free Date Code
TO-126 TO-126C / TO-126S	UTC 2SD1691 1 Date Code L: Lead Free G: Halogen Free

■ **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	A
Base Current		I_{B}	1	A
Collector Power Dissipation ($T_C=25^{\circ}\text{C}$)	TO-220	P_{C}	54	W
	TO-220F1		23	W
	SOT-223		9	W
	TO-251/TO-252		36	W
	TO-126/TO-126C		20	W
	TO-126S			
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)

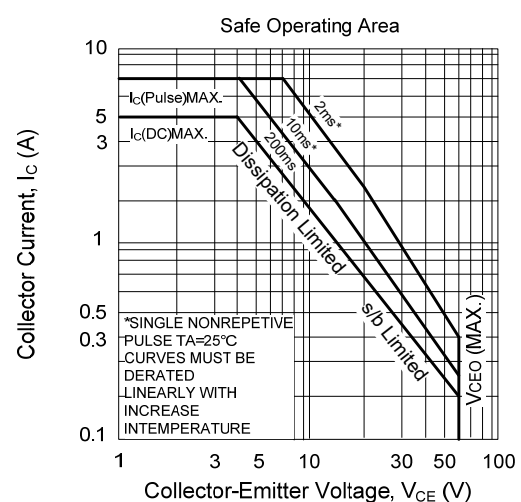
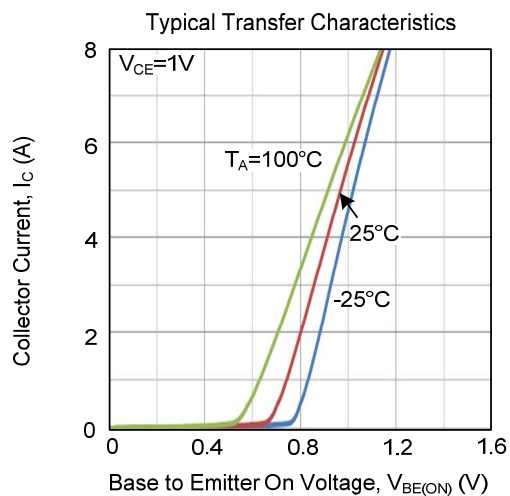
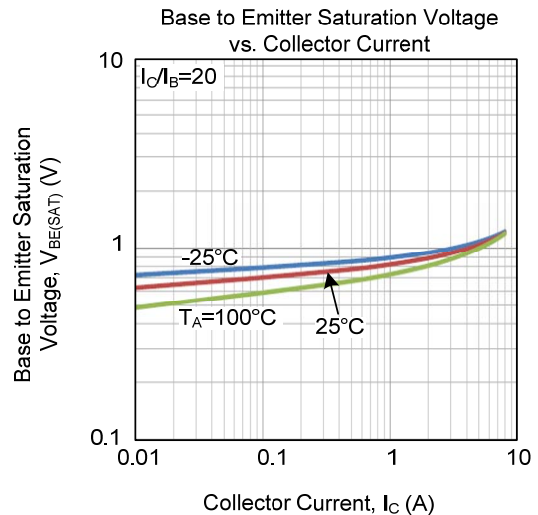
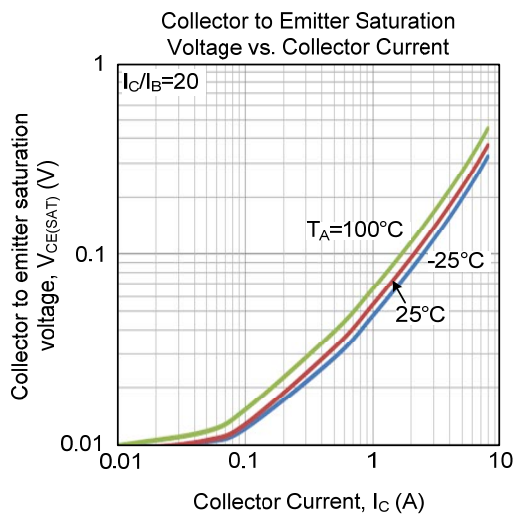
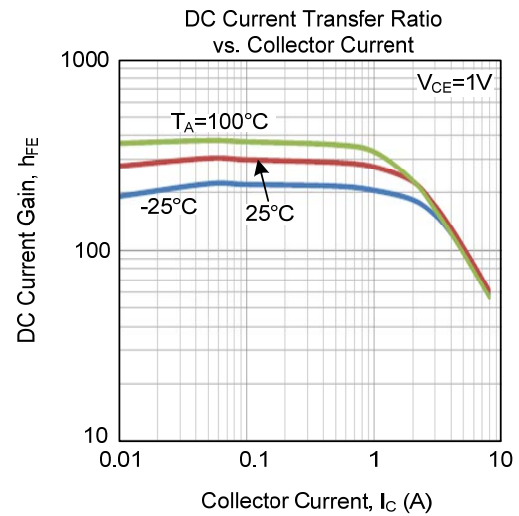
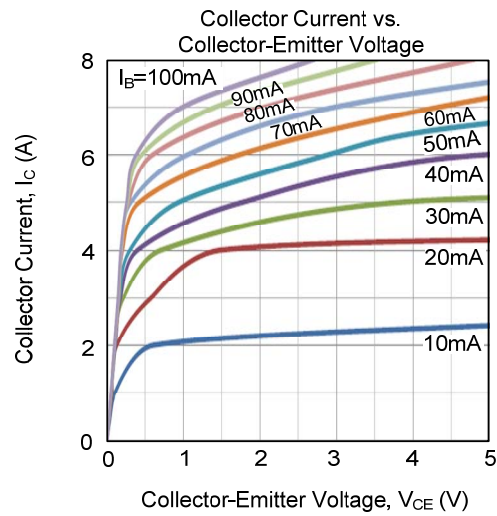
CHARACTERISTIC		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Cut-off Current		I_{CBO}	$V_{\text{CB}}=50\text{V}, I_{\text{E}}=0$			10	μA
Emitter Cut-off Current		I_{EBO}	$V_{\text{EB}}=7\text{V}, I_{\text{C}}=0$			10	μA
DC Current Gain		h_{FE1}	$V_{\text{CE}}=1\text{V}, I_{\text{C}}=0.1\text{A}$	60			
		h_{FE2}	$V_{\text{CE}}=1\text{V}, I_{\text{C}}=2\text{A}$	160		400	
		h_{FE3}	$V_{\text{CE}}=2\text{V}, I_{\text{C}}=5\text{A}$	50			
Collector-Emitter Saturation Voltage (Note)		$V_{\text{CE(SAT)}}$	$I_{\text{C}}=2\text{A}, I_{\text{B}}=0.2\text{A}$		0.1	0.3	V
Base-Emitter Saturation Voltage (Note)		$V_{\text{BE(SAT)}}$	$I_{\text{C}}=2\text{A}, I_{\text{B}}=0.2\text{A}$		0.9	1.2	V
Transition Frequency		F_{T}	$V_{\text{CE}}=10\text{V}, I_{\text{C}}=0.5\text{A}$	200	240		MHz
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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