

Application

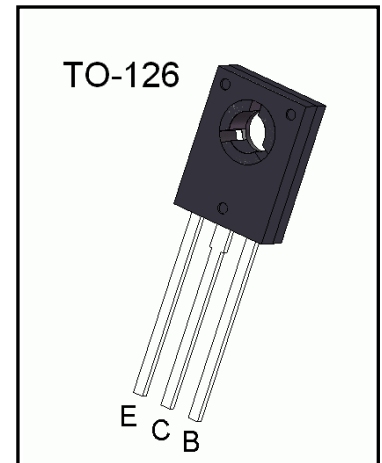
Low frequency power amplifiers and Mid-speed Switching.

Features

- Large current capacity and low $V_{CE(sat)}$: $I_{C(DC)} = 5.0\text{ A}$ $V_{CE(sat)} = 0.1\text{ V typ.}$ ($I_C = 2.0\text{ A}$, $I_B = 0.2\text{ A}$)
- Large power dissipation TO-126 type power transistor $P_T = 1.3\text{ W}$ ($T_a = 25^\circ\text{C}$), 20 W ($T_c = 25^\circ\text{C}$)
- Complementary transistor: 2SB1151

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
		2SD1691	
Collector-Base Voltage	BV_{CBO}	60	V
Collector-Emitter Voltage	BV_{CEO}	60	V
Emitter-Base Voltage	BV_{EBO}	7	V
Collector Current	I_C	5	A
Collector Power Dissipation	P_C	1.3	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$



Electrical Characteristics ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	BV_{CBO}	$I_C = 100\mu\text{A}$, $I_E = 0$	60			V
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = 1\text{mA}$, $I_B = 0$	60			V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = 100\mu\text{A}$, $I_C = 0$	7			V
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}^*	$V_{CE}=1.0\text{V}$, $I_C = 0.1\text{A}$	60			
	h_{FE2}^*	$V_{CE}=1.0\text{V}$, $I_C = 2.0\text{A}$	100		400	
	h_{FE3}^*	$V_{CE}=1.0\text{V}$, $I_C = 5.0\text{A}$	50			
Collector-emitter saturation voltage	V_{CESAT}^*	$I_C = 2.0\text{A}$, $I_B = 0.2\text{A}$			0.3	V
base -emitter saturation voltage	V_{BESAT}^*	$I_C = 2.0\text{A}$, $I_B = 0.2\text{A}$			1.2	V
Transition frequency	f_T	$V_{CE} = 5\text{V}$, $I_B = 150\text{mA}$	140			MHz

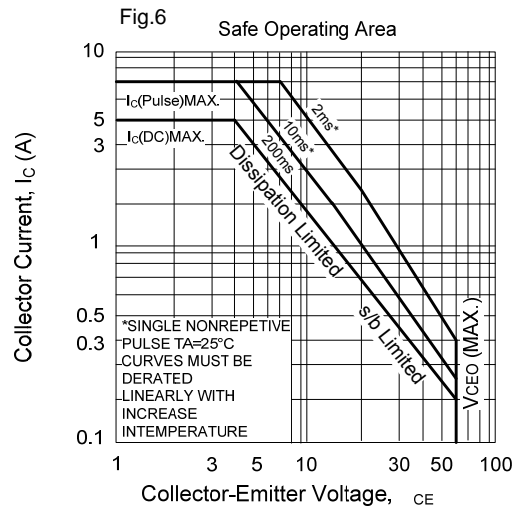
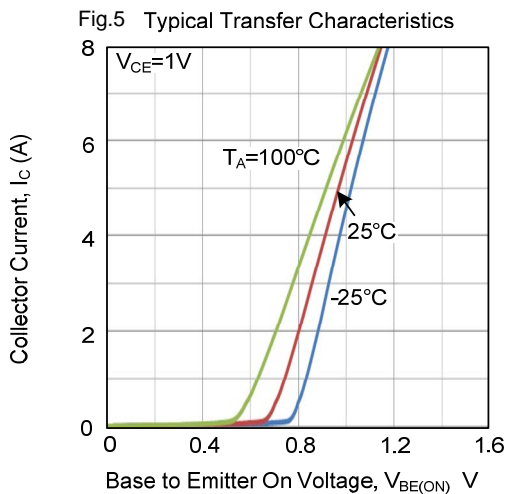
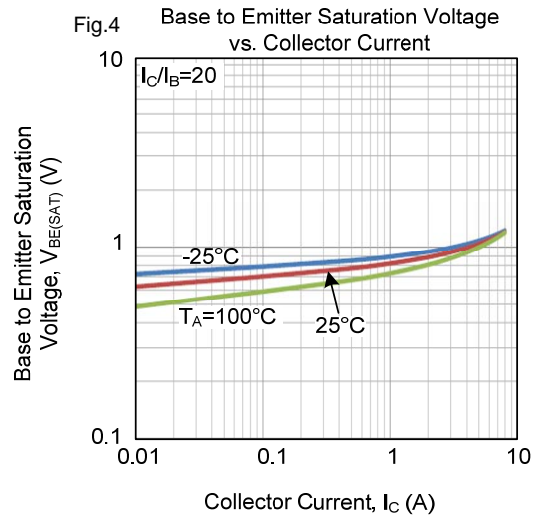
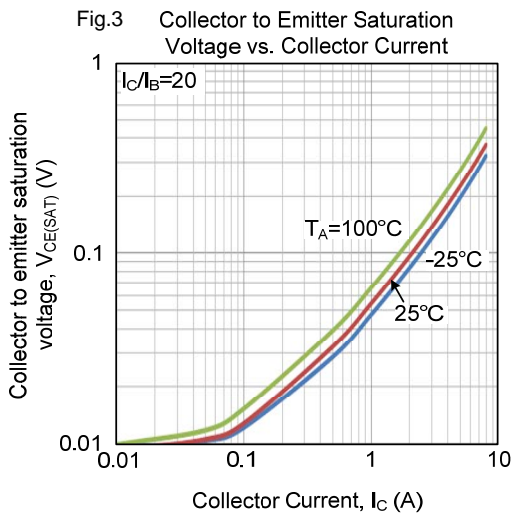
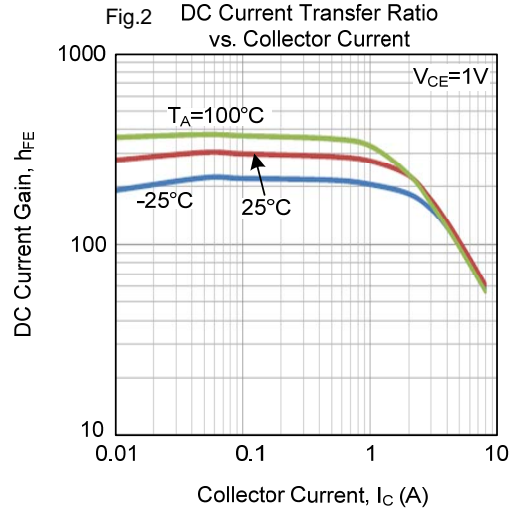
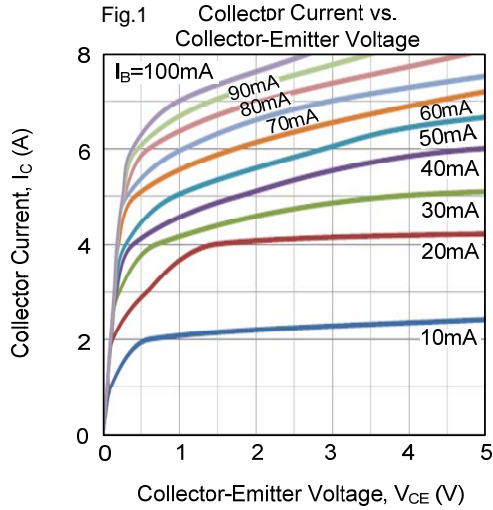
* Pulse Test: $PW=350\mu\text{s}$, duty Cycle = 2% Pulsed

hFE Classification

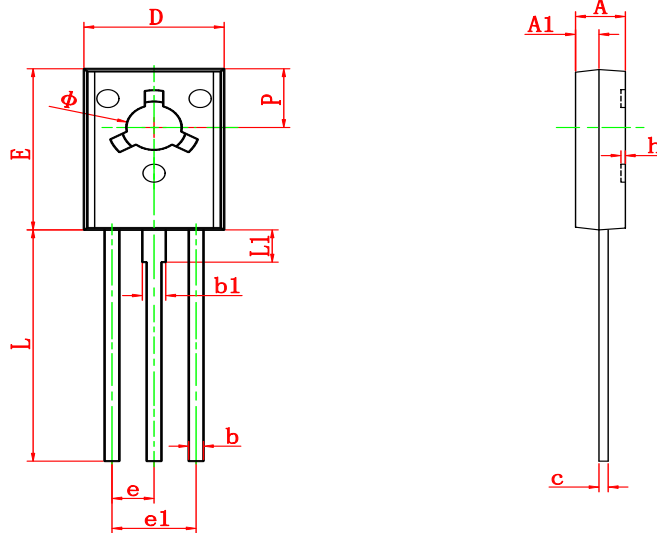
Classification	M	L	K
Range	100-200	160-320	200-400



Typical Characteristics



Package Dimension:TO-126



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.500	2.900	0.098	0.114
A1	1.100	1.500	0.043	0.059
b	0.660	0.860	0.026	0.034
b1	1.170	1.370	0.046	0.054
c	0.450	0.600	0.018	0.024
D	7.400	7.800	0.291	0.307
E	10.600	11.000	0.417	0.433
e	2.290 TYP		0.090 TYP	
e1	4.480	4.680	0.176	0.184
h	0.000	0.300	0.000	0.012
L	15.300	15.700	0.602	0.618
L1	2.100	2.300	0.083	0.091
P	3.900	4.100	0.154	0.161
φ	3.000	3.200	0.118	0.126

ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SD1691-B/P	TO-126	Bulk	200pcs/Bag
2SD1691-T/P	TO-126	Tube	60pcs/Tube