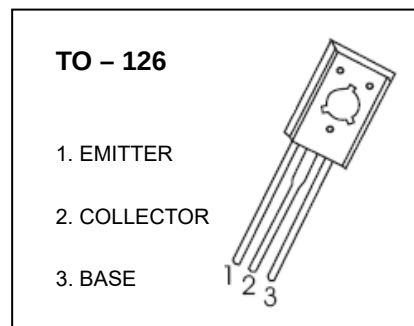
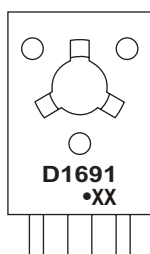
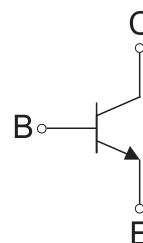


**TO-126 Plastic-Encapsulate Transistors****KSD1691** TRANSISTOR (NPN)**FEATURES**

- Low Collector-Emitter Saturation Voltage & Large Collector Current
- High Power Dissipation: $P_C = 1.3W$ ($T_a = 25^\circ C$)

**MARKING**

D1691=Device code
Solid dot= Green molding compound device, if none, the normal device
XX=Code

Equivalent Circuit**ORDERING INFORMATION**

Part Number	Package	Packing Method	Pack Quantity
KSD1691	TO-126	Bulk	200pcs/Bag
KSD1691-TU	TO-126	Tube	60pcs/Tube

MAXIMUM RATINGS ($T_a = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	5	A
P_C	Collector Power Dissipation ($T_a = 25^\circ C$)	1.3	W
	Collector Power Dissipation ($T_c = 25^\circ C$)	20	W
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55-150	$^\circ C$

ELECTRICAL CHARACTERISTICS

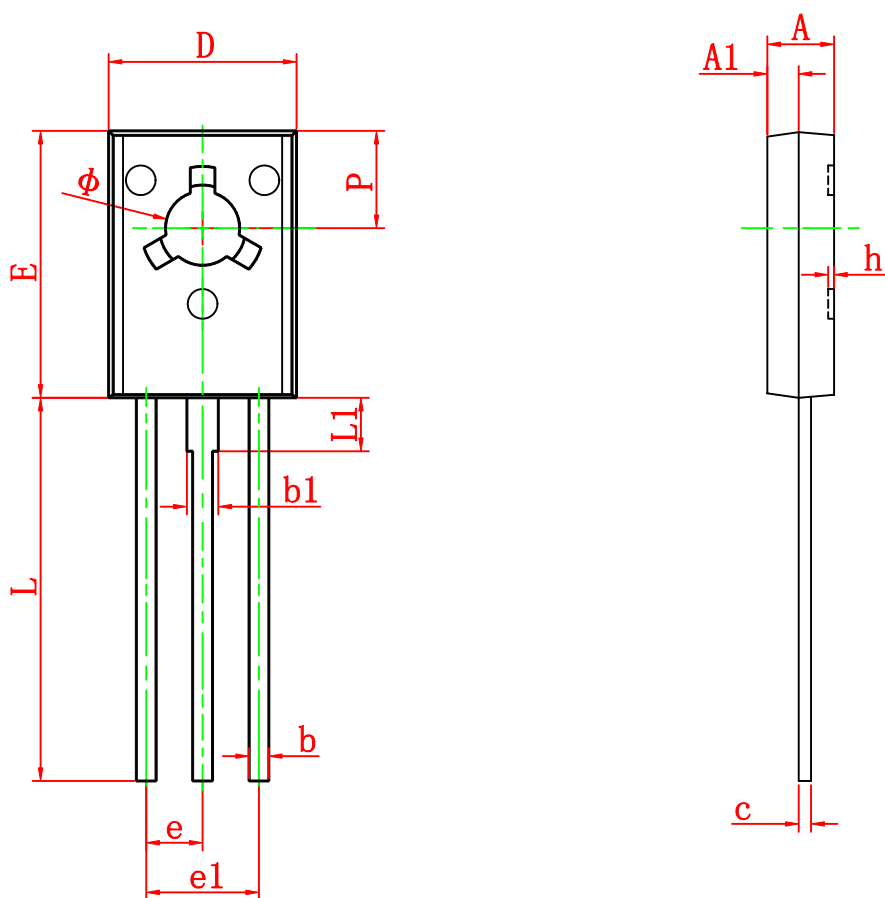
$T_a=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	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	$h_{FE(1)}$	$V_{CE}=1\text{V}, I_C=2\text{A}$	100		400	
	$h_{FE(2)}$	$V_{CE}=1\text{V}, I_C=0.1\text{A}$	60			
	$h_{FE(3)}$	$V_{CE}=1\text{V}, I_C=5\text{A}$	50			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=2\text{A}, I_B=0.2\text{A}$			0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=2\text{A}, I_B=0.2\text{A}$			1.2	V
Turn ON Time	t_{on}	$V_{CC} = 10\text{V}, I_C = 2\text{A},$ $I_{B1}=-I_{B2}=0.2\text{A}, R_L=5\Omega$			1	μS
Storage Time	t_{stg}				2.5	μS
Fall Time	t_f				1	μS
Transition frequency	f_T	$V_{CE}=5\text{V}, I_C=1\text{A}$	10			MHz

CLASSIFICATION OF $h_{FE(1)}$

Rank	O	Y	G
Range	100-200	160-320	200-400

TO-126 Package Outline Dimensions



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