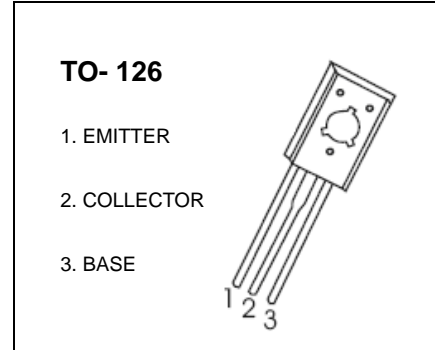


TO-126 Plastic-Encapsulate Transistors

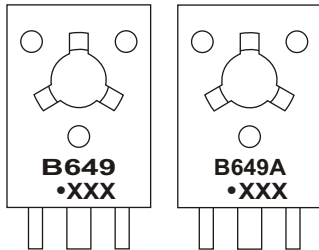
2SB649 / 2SB649A TRANSISTOR (PNP)

FEATURES

- Low Frequency Power Amplifier Complementary Pair with 2SD669 / 2SD669A

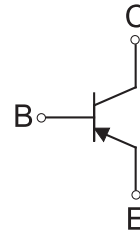


MARKING



B649 , B649A=Device code
 Solid dot = Green molding compound device, if none, the normal device
 XXX=Code

Equivalent Circuit



ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
2SB649	TO-126	Bulk	200pcs/Bag
2SB649A	TO-126	Bulk	200pcs/Bag
2SB649-TU	TO-126	Tube	60pcs/Tube
2SB649A-TU	TO-126	Tube	60pcs/Tube

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector- Base Voltage	-180	V
V _{CEO}	Collector-Emitter Voltage	2SB649	-120
		2SB649A	-160
V _{EBO}	Emitter-Base Voltage	-5	V
I _C	Collector Current -Continuous	-1.5	A
P _C	Collector Dissipation	1	W
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55-150	°C

ELECTRICAL CHARACTERISTICS

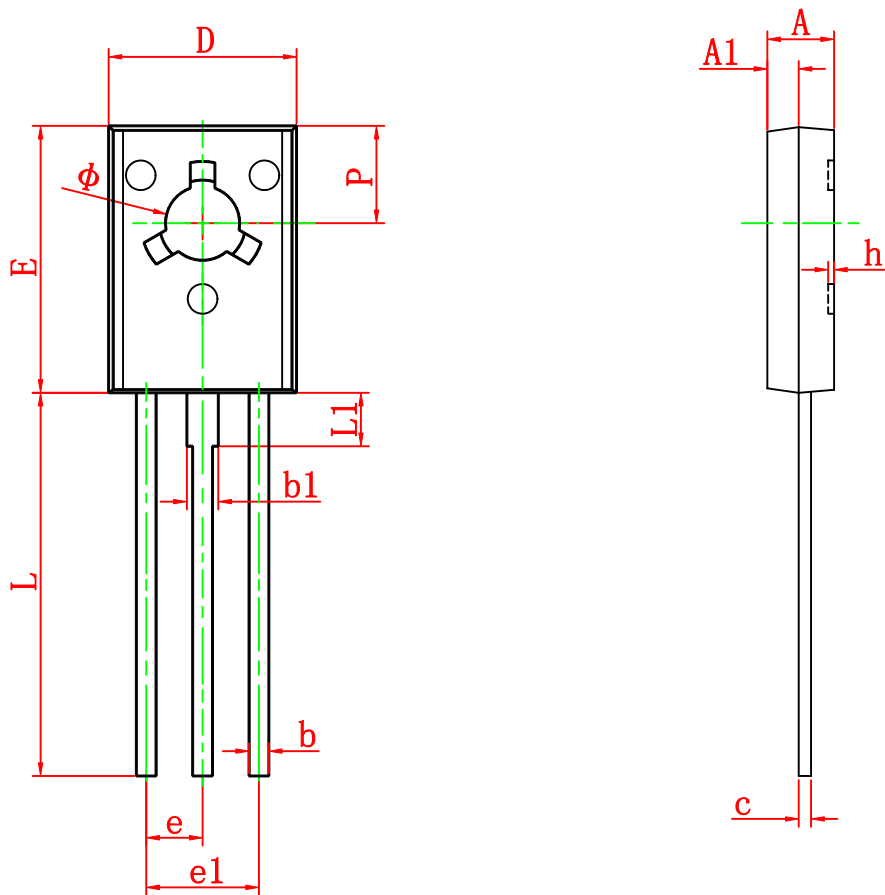
$T_a=25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -1\text{mA}, I_E = 0$	-180			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}, I_B = 0$	2SB649	-120		V
			2SB649A	-160		
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -1\text{mA}, I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -160\text{V}, I_E = 0$			-10	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4\text{V}, I_C = 0$			-10	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = -5\text{V}, I_C = -150\text{mA}$	2SB649	60		320
			2SB649A	60		200
	$h_{FE(2)}$	$V_{CE} = -5\text{V}, I_C = -500\text{mA}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -500\text{mA}, I_B = -50\text{mA}$			-1	V
Base-emitter voltage	V_{BE}	$V_{CE} = -5\text{V}, I_C = -150\text{mA}$			-1.5	V
Transition frequency	f_T	$V_{CE} = -5\text{V}, I_C = -150\text{mA}$		140		MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$		27		pF

CLASSIFICATION OF $h_{FE(1)}$

Rank		B	C	D
Range	2SB649	60-120	100-200	160-320
	2SB649A	60-120	100-200	

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