



# TO-126 Plastic-Encapsulate Transistors

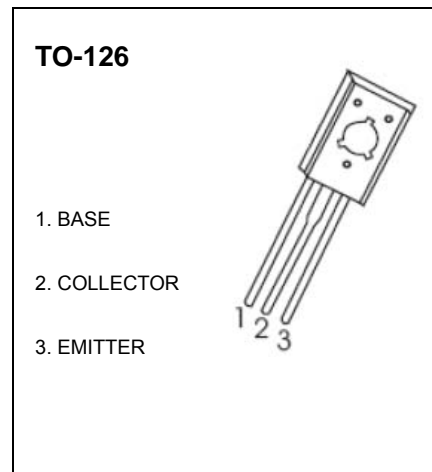
## 3DD13003N3D TRANSISTOR (NPN)

### FEATURES

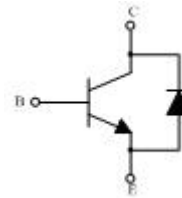
- Power switching applications
- Good high temperature
- Low saturation voltage
- High speed switching

### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-Base Voltage	700	V
V <sub>CEO</sub>	Collector-Emitter Voltage	400	V
V <sub>EBO</sub>	Emitter-Base Voltage	9	V
I <sub>C</sub>	Collector Current -Continuous	1.5	A
P <sub>C</sub>	Collector Power Dissipation	1.25	W
T <sub>J</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature	-55a150	°C



### CIRCUIT:



### ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 1mA, I <sub>E</sub> =0	700			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0	400			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =1mA, I <sub>C</sub> =0	9			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =700V, I <sub>E</sub> =0			100	μA
Collector cut-off current	I <sub>CEO</sub>	V <sub>CE</sub> =400V, I <sub>B</sub> =0			100	μA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =9V, I <sub>C</sub> =0			100	μA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =0.2A	10		40	
	h <sub>FE(2)</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =1mA	8			
	h <sub>FE(3)</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =1.5A	5			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =0.2A			0.5	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =0.25A			1.5	V
Storage time	t <sub>S</sub>	I <sub>C</sub> =250mA (UI9600)	2		4	μs
Emitter-Collector forward voltage	V <sub>JEC</sub>	I <sub>C</sub> =1A			1.5	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =100mA	5			MHz

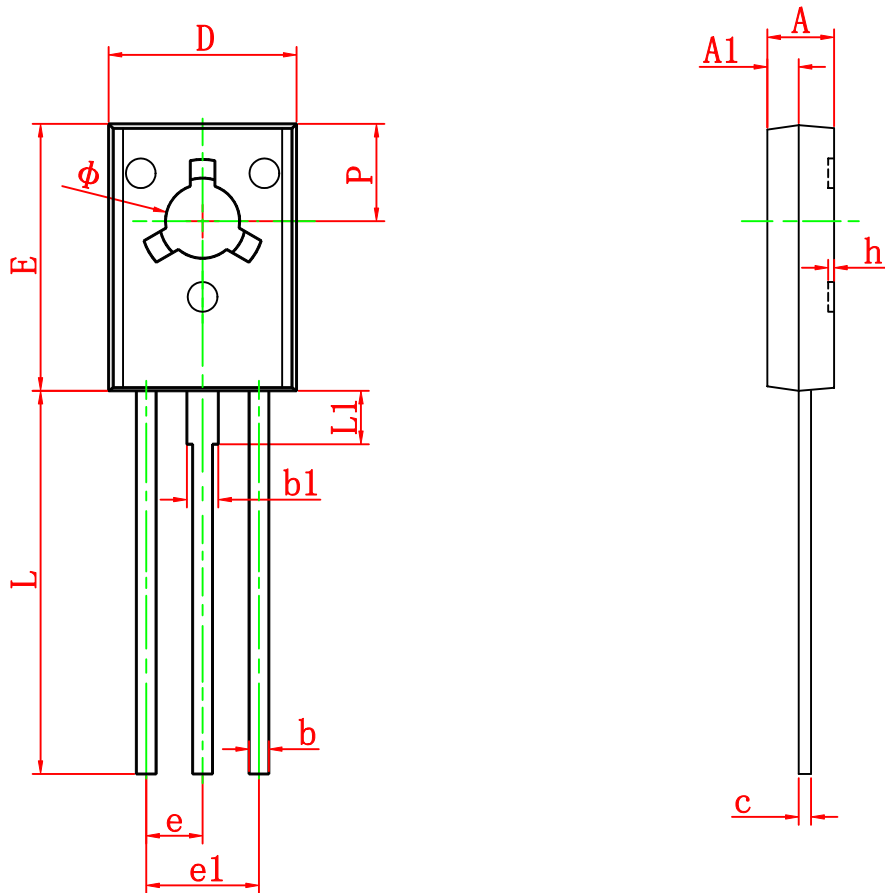
### CLASSIFICATION OF h<sub>FE(1)</sub>

Range	10-15	15-20	20-25	25-30	30-35	35-40
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### CLASSIFICATION OF t<sub>S</sub>

Rank	A1	A2	B1	B2
Range	2-2.5 (μs)	2.5-3(μs)	3-3.5(μs)	3.5-4 (μs)

# 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
$\phi$	3.000	3.200	0.118	0.126