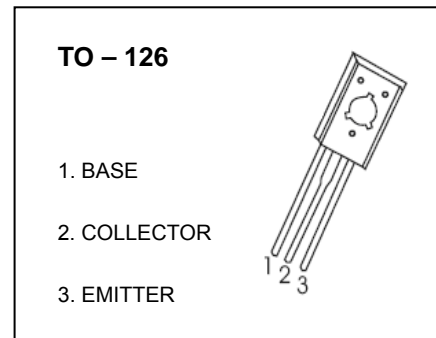


## TO-126 Plastic-Encapsulate Transistors

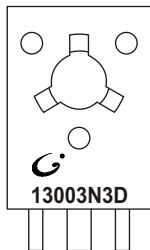
### 3DD13003N3D TRANSISTOR (NPN)

#### FEATURES

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

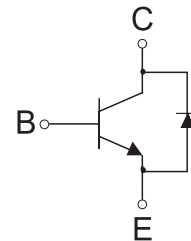


#### MARKING



JCET Logo  
13003N3D=Device code

#### Equivalent Circuit



#### ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
3DD13003N3D	TO-126	Bulk	200pcs/Bag
3DD13003N3D-TU	TO-126	Tube	60pcs/Tube

#### MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	700	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	9	V
$I_C$	Collector Current -Continuous	1.5	A
$P_C$	Collector Power Dissipation	1.25	W
$T_j$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55~150	$^{\circ}\text{C}$

## ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=1\text{mA}, I_E=0$	700			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	400			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=1\text{mA}, I_C=0$	9			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=700\text{V}, I_E=0$			100	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE}=400\text{V}, I_B=0$			100	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=9\text{V}, I_C=0$			100	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=5\text{V}, I_C=0.2\text{A}$	10		40	
	$h_{FE(2)}$	$V_{CE}=5\text{V}, I_C=1\text{mA}$	8			
	$h_{FE(3)}$	$V_{CE}=5\text{V}, I_C=1.5\text{A}$	5			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1\text{A}, I_B=0.2\text{A}$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1\text{A}, I_B=0.25\text{A}$			1.5	V
Storage time	$t_S$	$I_C=250\text{mA}$ (UI9600)	2		4	$\mu\text{s}$
Emitter-Collector forward voltage	$V_{FEC}$	$I_C=1\text{A}$			1.5	V
Transition frequency	$f_T$	$V_{CE}=10\text{V}, I_C=100\text{mA}$	5			MHz

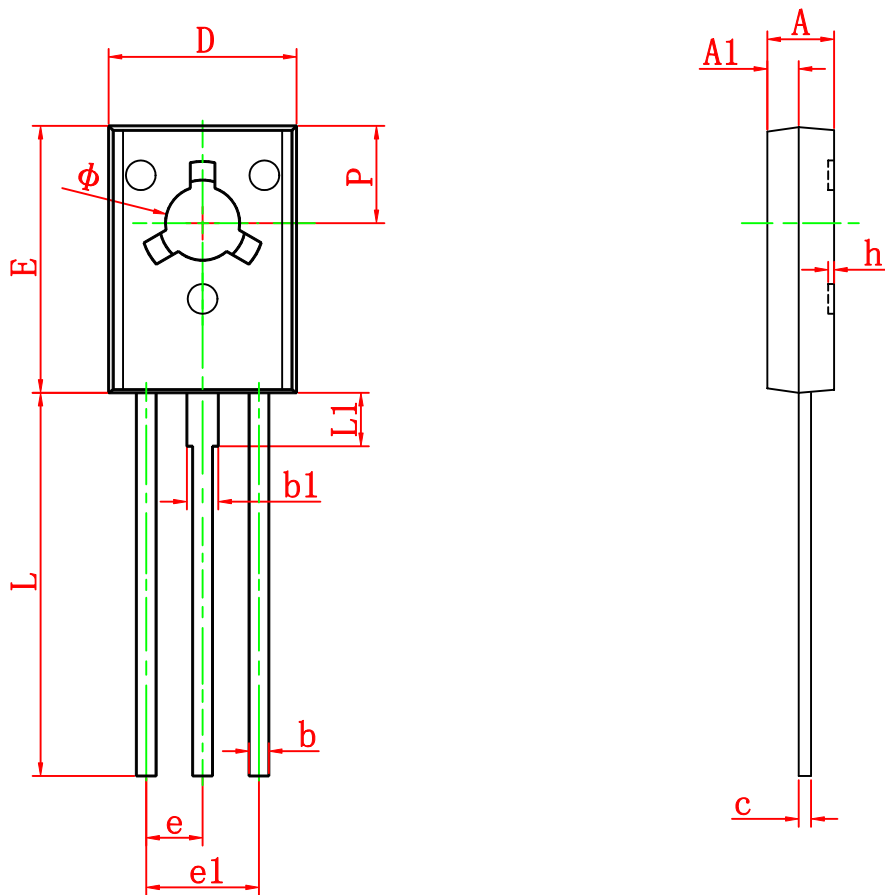
### CLASSIFICATION OF $h_{FE(1)}$

Range	10-15	15-20	20-25	25-30	30-35	35-40

### CLASSIFICATION OF $t_S$

Rank	A1	A2	B1	B2
Range	2-2.5 ( $\mu\text{s}$ )	2.5-3 ( $\mu\text{s}$ )	3-3.5 ( $\mu\text{s}$ )	3.5-4 ( $\mu\text{s}$ )

# 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