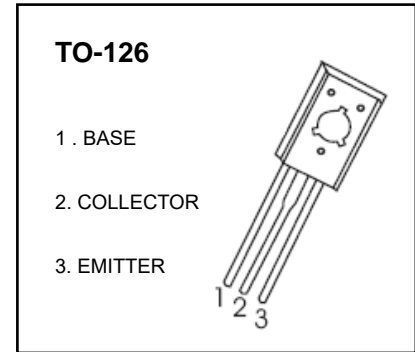


## TO-126 Plastic-Encapsulate Transistors

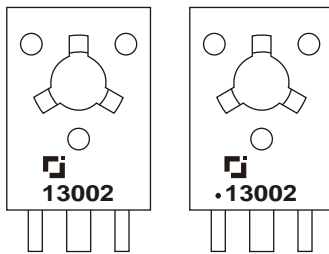
### 3DD13002 TRANSISTOR (NPN)

#### FEATURES

- Power switching applications

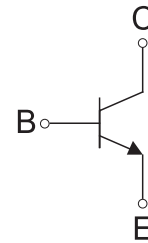


#### MARKING



Logo  
13002=Device code  
Solid dot= Green molding compound device, if none, the normal device

#### Equivalent Circuit



#### ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
3DD13002	TO-126	Bulk	200pcs/Bag
3DD13002-TU	TO-126	Tube	60pcs/Tube

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

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector -Base Voltage	600	V
V <sub>CE0</sub>	Collector-Emitter Voltage	400	V
V <sub>EB0</sub>	Emitter-Base Voltage	6	V
I <sub>C</sub>	Collector Current -Continuous	1	A
P <sub>C</sub>	Collector Power Dissipation	1.25	W
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55~150	°C

## ELECTRICAL CHARACTERISTICS

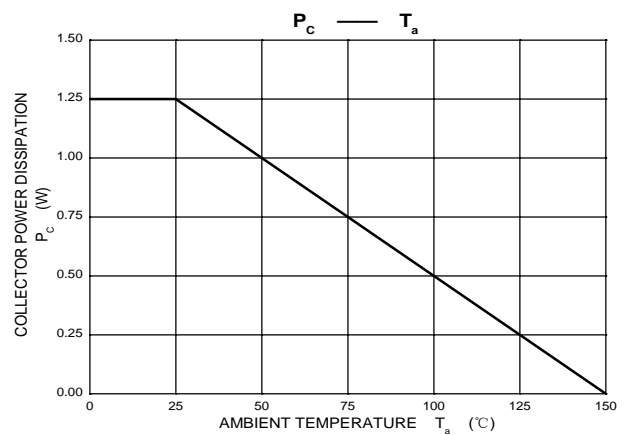
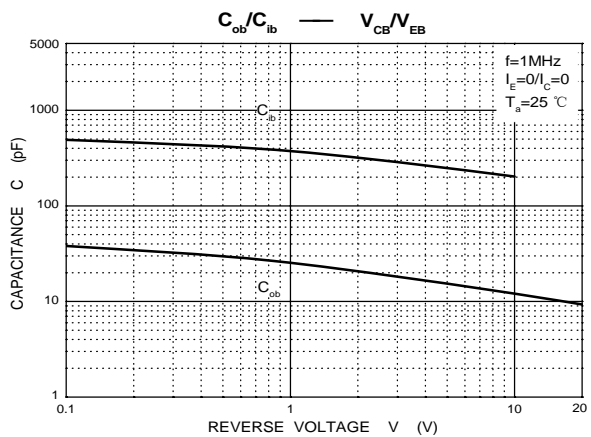
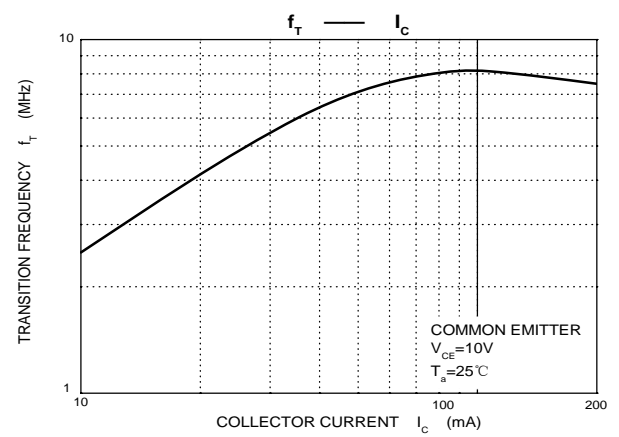
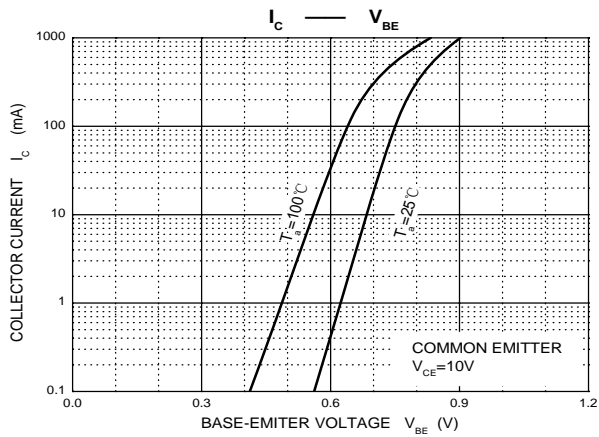
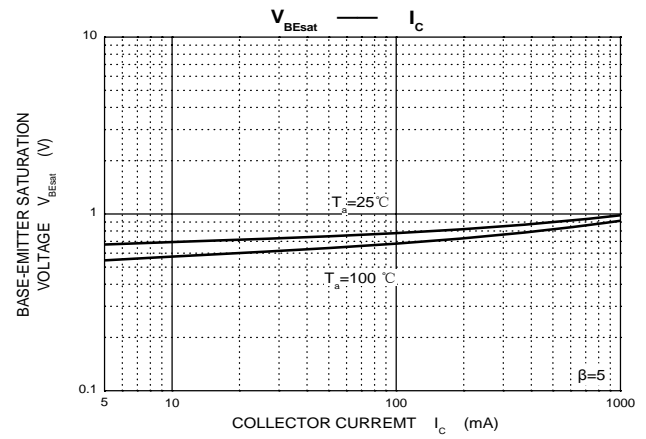
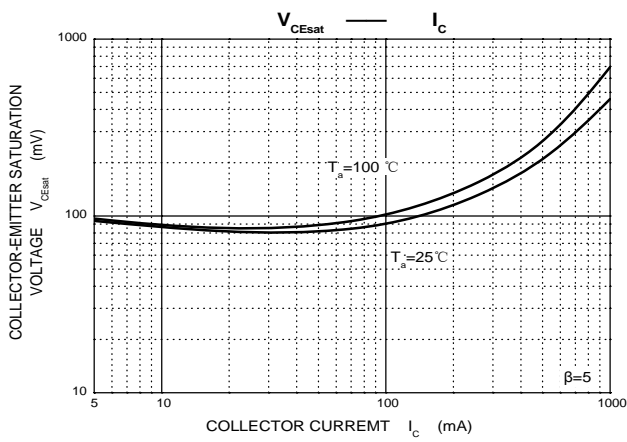
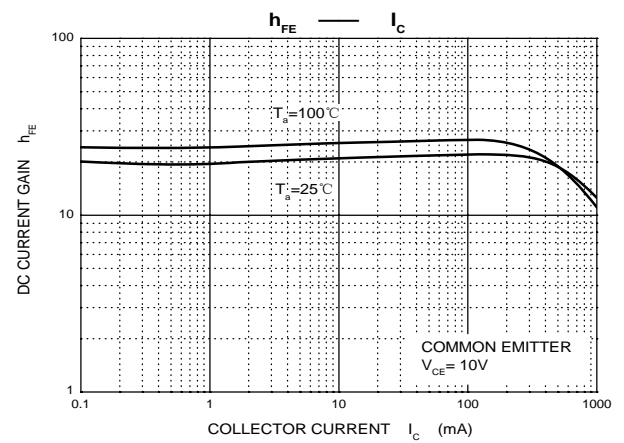
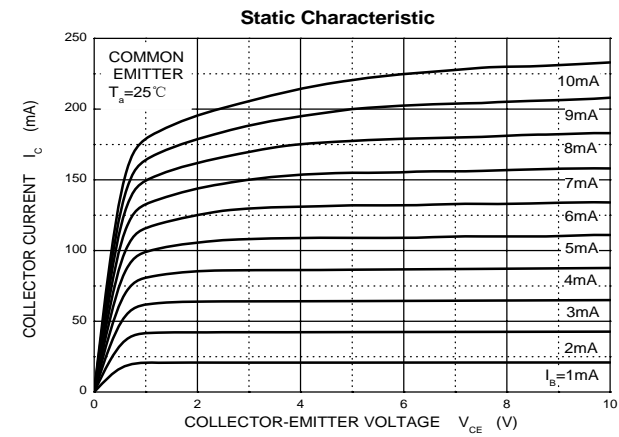
$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}$ , $I_E=0$	600			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}$ , $I_B=0$	400			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}$ , $I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=600\text{V}$ , $I_E=0$			100	$\mu\text{A}$
	$I_{CEO}$	$V_{CB}=400\text{V}$ , $I_E=0$			100	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=7\text{V}$ , $I_C=0$			100	$\mu\text{A}$
Dc current gain	$h_{FE1}$	$V_{CE}=10\text{V}$ , $I_C=200\text{mA}$	9		40	
	$h_{FE2}$	$V_{CE}=10\text{V}$ , $I_C=0.25\text{mA}$	5			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=200\text{mA}$ , $I_B=40\text{mA}$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=200\text{mA}$ , $I_B=40\text{mA}$			1.1	V
Transition frequency	$f_T$	$V_{CE}=10\text{V}$ , $I_C=100\text{mA}$ $f=1\text{MHz}$	5			MHz
Fall time	$t_f$	$I_C=1\text{A}$ , $I_{B1}=-I_{B2}=0.2\text{A}$ $V_{CC}=100\text{V}$			0.5	$\mu\text{s}$
Storage time	$t_s$				2.5	$\mu\text{s}$

### CLASSIFICATION OF $h_{FE1}$

Range	9-15	15-20	20-25	25-30	30-35	35-40

# Typical Characteristics



# 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