

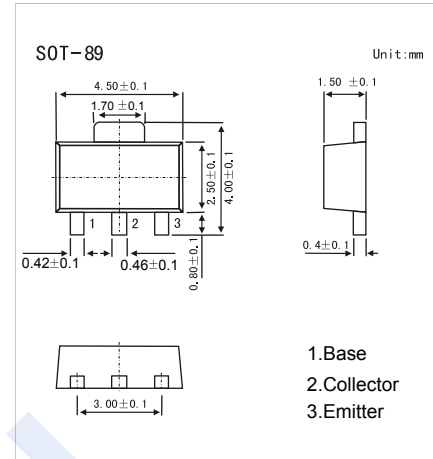
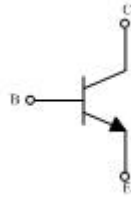
## NPN Transistors

### 3DD13002-HF

#### ■ Features

- Collector Current Capability  $I_C=1A$
- Collector Emitter Voltage  $V_{CE0}=400V$
- Power Switching Applications
- Pb-Free Package May be Available.

The G-Suffix Denotes a Pb-Free Lead Finish



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CB0}$	600	V
Collector - Emitter Voltage	$V_{CE0}$	400	
Emitter - Base Voltage	$V_{EB0}$	6	
Collector Current - Continuous	$I_C$	1	A
Collector Power Dissipation	$P_C$	0.5	W
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150	

#### ■ Electrical Characteristics $T_a = 25^\circ C$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CB0}$	$I_C = 100 \mu A, I_E = 0$	600			V
Collector- emitter breakdown voltage	$V_{CE0}$	$I_C = 1 mA, I_B = 0$	400			
Emitter - base breakdown voltage	$V_{EB0}$	$I_E = 100 \mu A, I_C = 0$	6			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 600 V, I_E = 0$			100	$\mu A$
Collector- emitter cut-off current	$I_{CEO}$	$V_{CE} = 400 V, I_E = 0$			100	
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 7 V, I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 200 mA, I_B = 40 mA$			0.5	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 200 mA, I_B = 40 mA$			1.1	
DC current gain	$h_{FE(1)}$	$V_{CE} = 10 V, I_C = 200 mA$	10		40	
	$h_{FE(2)}$	$V_{CE} = 10 V, I_C = 0.25 mA$	5			
Fall time	$t_f$	$I_C = 1 A, I_{B1} = -I_{B2} = 0.2 A$			0.5	$\mu s$
Storage time	$t_s$	$V_{CC} = 100 V$			2.5	
Transition frequency	$f_T$	$V_{CE} = 10 V, I_C = 100 mA, f = 1 MHz$	5			MHz

#### ■ Classification of $h_{FE(1)}$

Type	3DD13002A-HF	3DD13002B-HF	3DD13002C-HF	3DD13002D-HF	3DD13002E-HF	3DD13002F-HF
Range	10-15	15-20	20-25	25-30	35-35	35-40
Type	13002A <sub>F</sub>	13002B <sub>F</sub>	13002C <sub>F</sub>	13002D <sub>F</sub>	13002E <sub>F</sub>	13002F <sub>F</sub>

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### Typical Characteristics

