

RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

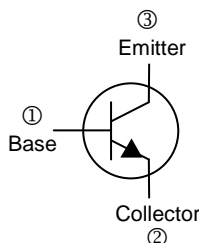
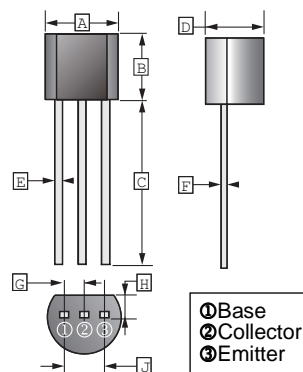
## FEATURES

- Power switching applications

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

Product-Rank	3DD13001-A	3DD13001-B
Range	17~23	20~26

## TO-92



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.70	F	0.30	0.51
B	4.30	4.70	G	1.27 TYP.	
C	12.70	-	H	1.10	1.40
D	3.30	3.81	J	2.42	2.66
E	0.36	0.56	K	0.36	0.76

## ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	$V_{CBO}$	600	V
Collector to Emitter Voltage	$V_{CEO}$	400	V
Emitter to Base Voltage	$V_{EBO}$	7	V
Collector Current - Continuous	$I_C$	0.2	A
Collector Power Dissipation	$P_C$	750	mW
Junction, Storage Temperature	$T_J, T_{STG}$	150, -55~150	$^\circ\text{C}$

## ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Collector to Base Breakdown Voltage	$V_{(BR)CBO}$	600	-	-	V	$I_C=0.1\text{mA}, I_E=0$
Collector to Emitter Breakdown Voltage	$V_{(BR)CEO}$	400	-	-	V	$I_C=1\text{mA}, I_B=0$
Emitter to Base Breakdown Voltage	$V_{(BR)EBO}$	7	-	-	V	$I_E=0.1\text{mA}, I_C=0$
Collector Cut – Off Current	$I_{CBO}$	-	-	100	$\mu\text{A}$	$V_{CB}=600\text{V}, I_E=0$
	$I_{CEO}$	-	-	200		$V_{CE}=400\text{V}, I_B=0$
Emitter Cut – Off Current	$I_{EBO}$	-	-	100	$\mu\text{A}$	$V_{EB}=7\text{V}, I_C=0$
DC Current Gain	$h_{FE(1)}$	17	-	26		$V_{CE}=20\text{V}, I_C=20\text{mA}$
	$h_{FE(2)}$	5	-	-		$V_{CE}=10\text{V}, I_C=0.25\text{mA}$
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	0.5	V	$I_C=50\text{mA}, I_B=10\text{mA}$
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	-	-	1.2	V	$I_C=50\text{mA}, I_B=10\text{mA}$
Transition Frequency	$f_T$	8	-	-	MHz	$V_{CE}=20\text{V}, I_C=20\text{mA}, f=1\text{MHz}$
Fall time	$t_F$	-	-	0.3	$\mu\text{s}$	$I_{B1}=-I_{B2}=5\text{mA}$
Storage time	$t_S$	-	-	1.5	$\mu\text{s}$	$V_{CC}=45\text{V}, I_C=50\text{mA}$

**CHARACTERISTIC CURVES**

