

## TO-251-3L Plastic-Encapsulate Transistors

### 3DD13001 TRANSISTOR (NPN)

#### FEATURES

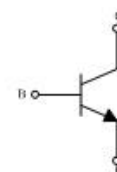
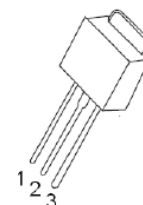
- power switching applications

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector -Base Voltage	600	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current -Continuous	0.2	A
$P_C$	Collector Power Dissipation	1.25	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55~+150	$^\circ\text{C}$

#### TO-251-3L

1. EMITTER
2. COLLECTOR
3. BASE



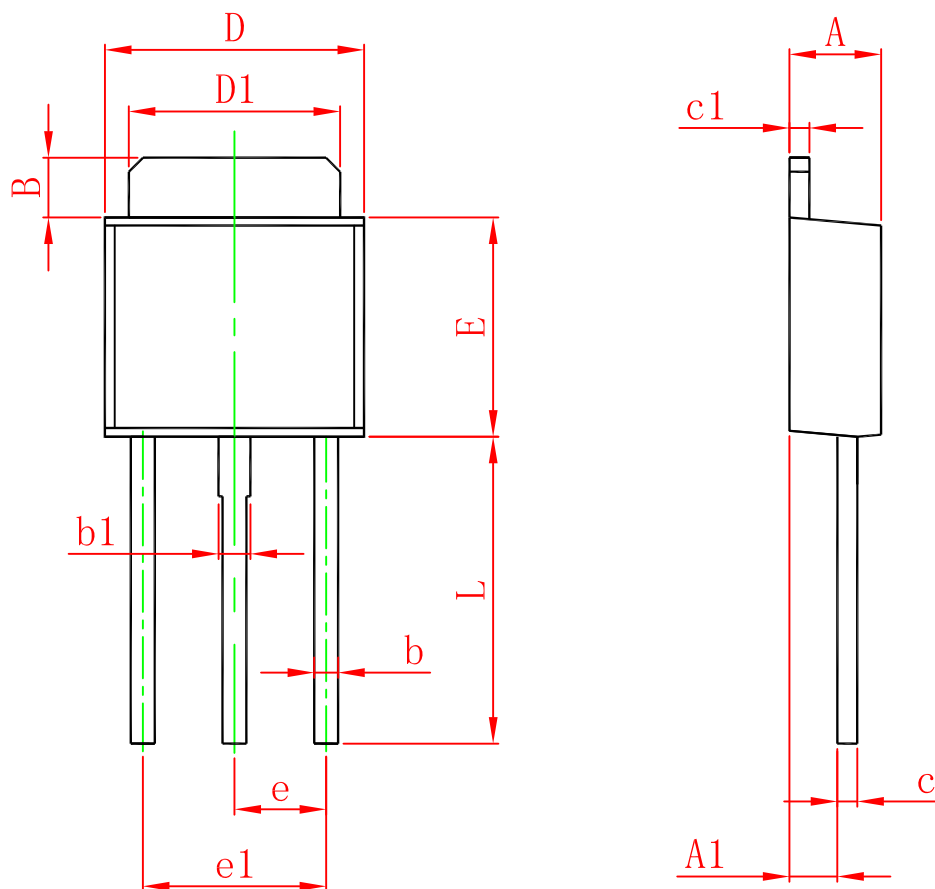
#### ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ unless otherwise specified)

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	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$ , $I_C = 0$	7			V
Collector cut-off current	$I_{CBO}$	$V_{CB} = 600\text{V}$ , $I_E = 0$			100	$\mu\text{A}$
Collector cut-off current	$I_{CEO}$	$V_{CE} = 400\text{V}$ , $I_B = 0$			200	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 7\text{V}$ , $I_C = 0$			100	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE} = 20\text{V}$ , $I_C = 20\text{mA}$	10		40	
	$h_{FE(2)}$	$V_{CE} = 10\text{V}$ , $I_C = 0.25\text{mA}$	5			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 50\text{mA}$ , $I_B = 10\text{mA}$			0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 50\text{mA}$ , $I_B = 10\text{mA}$			1.2	V
Transition frequency	$f_T$	$V_{CE} = 20\text{V}$ , $I_C = 20\text{mA}$ $f = 1\text{MHz}$	8			MHz
Fall time	$t_f$	$I_C = 50\text{mA}$ , $V_{CC} = 45\text{V}$ , $I_{B1} = -I_{B2} = 5\text{mA}$			0.3	$\mu\text{s}$
Storage time	$t_s$				1.5	$\mu\text{s}$

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

Range	10-13	13-16	16-19	19-22	22-25	25-28	28-31	31-34	34-37	37-40
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## TO-251-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311