



# TO-251-3L Plastic-Encapsulate Transistors

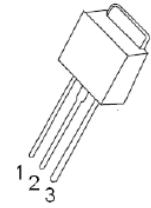
## 2SA1615 TRANSISTOR (PNP)

### FEATURES

- Large Current Capacity
- High  $h_{FE}$  and Low Collector Saturation Voltage

TO – 251-3L

1. BASE
2. COLLECTOR
3. EMITTER



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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	-30	V
$V_{CEO}$	Collector-Emitter Voltage	-20	V
$V_{EBO}$	Emitter-Base Voltage	-10	V
$I_C$	Collector Current	-10	A
$P_C$	Collector Power Dissipation	1	W
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	125	$^{\circ}\text{C}/\text{W}$
$T_j$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55~+150	$^{\circ}\text{C}$

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

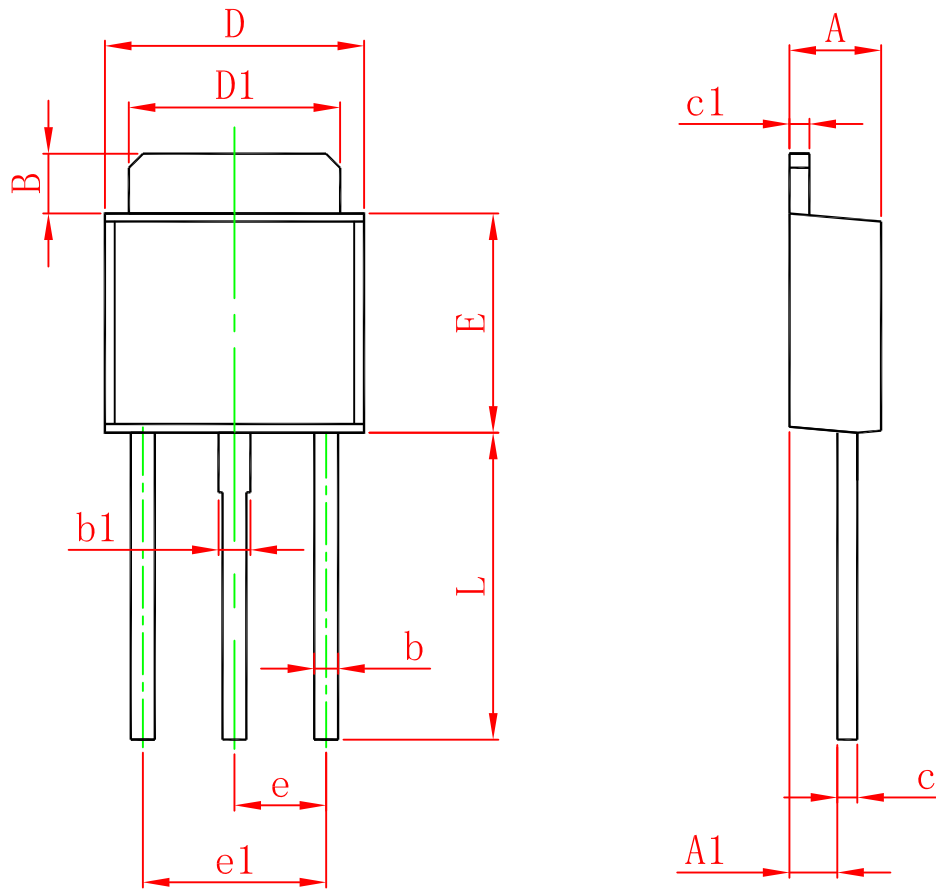
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-1\text{mA}, I_E=0$	-30			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-10\text{mA}, I_B=0$	-20			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-1\text{mA}, I_C=0$	-10			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-20\text{V}, I_E=0$			-1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-8\text{V}, I_C=0$			-1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$ *	$V_{CE}=-2\text{V}, I_C=-0.5\text{A}$	200		600	
	$h_{FE(2)}$ *	$V_{CE}=-2\text{V}, I_C=-4\text{A}$	160			
Collector-emitter saturation voltage	$V_{CE(sat)}$ *	$I_C=-4\text{A}, I_B=-0.05\text{A}$			-0.25	V
Base-emitter saturation voltage	$V_{BE(sat)}$ *	$I_C=-4\text{A}, I_B=-0.05\text{A}$			-1.2	V
Collector output capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, I_E=0, f=1\text{MHz}$		220		pF
Transition frequency	$f_T$	$V_{CE}=-5\text{V}, I_C=-1.5\text{A}$		180		MHz

\*Pulse test: pulse width  $\leq 10\text{ms}$ , duty cycle  $\leq 50\%$ .

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

RANK	L	K
RANGE	200-400	300-600

# 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