

# TO-251/TO-252-2L Plastic-Encapsulate Transistors

## 2SD1815 TRANSISTOR (NPN)

### FEATURES

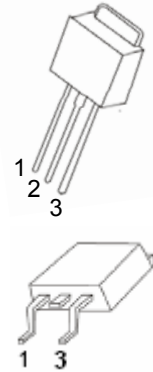
- Low collector-to-emitter saturation voltage
- Excellent linearity of  $h_{FE}$
- High  $f_T$
- Fast switching time

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

Symbol	Parameter	Value	Units
$V_{CB0}$	Collector-Base Voltage	120	V
$V_{CEO}$	Collector-Emitter Voltage	100	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current -Continuous	3	A
$P_C$	Collector Power Dissipation	1	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55 to +150	$^\circ\text{C}$

TO-251  
TO-252-2L

1. BASE
2. COLLECTOR
3. EMITTER



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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	120			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	100			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=100\text{V}, I_E=0$			1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE}=5\text{V}, I_C=500\text{mA}$	70		400	
	$h_{FE(2)}$	$V_{CE}=5\text{V}, I_C=2\text{A}$	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1.5\text{A}, I_B=150\text{mA}$			0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=1.5\text{A}, I_B=150\text{mA}$			1.2	V
Transition frequency	$f_T$	$V_{CE}=10\text{V}, I_C=500\text{mA}$		180		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$		25		pF
Turn-on time	$t_{on}$	$V_{CC}=50\text{V}, I_C=1.5\text{A}, I_{B1}=-I_{B2}=-0.15\text{A}$		100		nS
Storage time	$t_s$			900		nS
Fall time	$t_f$			50		nS

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

Rank	Q	R	S	T
Range	70-140	100-200	140-280	200-400

# Typical Characteristics

# 2SD1815

