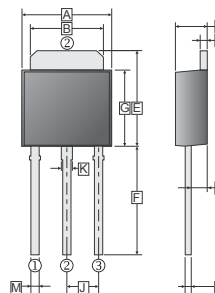
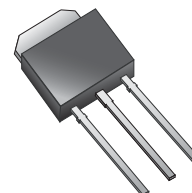


RoHS Compliant Product  
A suffix of "-C" specifies halogen & lead-free

## FEATURES

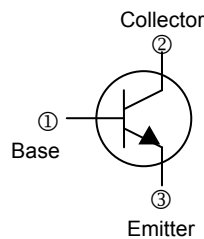
- Low Collector-to-Emitter Saturation Voltage
- Excellent Linearity of  $h_{FE}$
- High  $f_T$
- Fast Switching Time

## TO-251



## CLASSIFICATION OF $h_{FE}$

Product-Rank	2SD1815-Q	2SD1815-R	2SD1815-S
Range	70~140	100~200	140~280



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.80	G	5.40	6.25
B	4.90	5.50	H	0.85	1.50
C	2.15	2.40	J	2.30	
D	0.43	0.90	K	0.60	1.05
E	6.50	7.50	M	0.50	0.90
F	7.20	9.65	P	0.43	0.62

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

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

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	120	-	-	V	$I_C=10\mu\text{A}$ , $I_E=0$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	100	-	-	V	$I_C=1\text{mA}$ , $I_B=0$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	6	-	-	V	$I_E=10\mu\text{A}$ , $I_C=0$
Collector cut-off current	$I_{CBO}$	-	-	1	$\mu\text{A}$	$V_{CB}=100\text{V}$ , $I_E=0$
Emitter cut-off current	$I_{EBO}$	-	-	1	$\mu\text{A}$	$V_{EB}=4\text{V}$ , $I_C=0$
DC current gain	$h_{FE}$	70	-	280		$V_{CE}=5\text{V}$ , $I_C=500\text{mA}$
		40	-	-		$V_{CE}=5\text{V}$ , $I_C=2\text{A}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.4	V	$I_C=1.5\text{A}$ , $I_B=150\text{mA}$
Base-emitter saturation voltage	$V_{BE(sat)}$	-	-	1.2	V	$I_C=1.5\text{A}$ , $I_B=150\text{mA}$
Transition frequency	$f_T$	-	180	-	MHz	$V_{CE}=10\text{V}$ , $I_C=500\text{mA}$
Collector Output Capacitance	$C_{OB}$	-	25	-	pF	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$
Turn-on time	$t_{on}$	-	100	-	nS	$V_{CC}=50\text{V}$ , $I_C=1.5\text{A}$ , $I_{B1}=-I_{B2}=-0.15\text{A}$
Storage time	$t_s$	-	900	-		
Fall time	$t_f$	-	50	-		

**CHARACTERISTIC CURVES**

