

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

## FEATURES

- Designed for general
- Low VCE(sat)

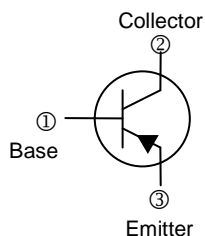
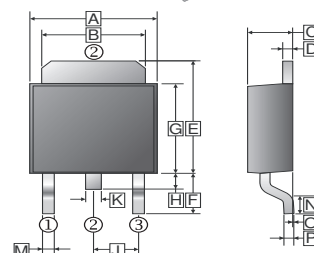
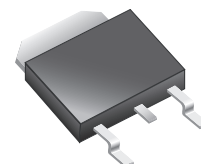
## CLASSIFICATION OF $h_{FE}$

Product-Rank	2SB1412-P	2SB1412-Q	2SB1412-R
Range	82~180	120~270	180~390

## PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-252	2.5K	13 inch

## D-Pack (TO-252)



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.35	6.8	J	2.30	REF.
B	5.20	5.50	K	0.64	0.90
C	2.15	2.40	M	0.50	1.1
D	0.45	0.58	N	0.9	1.65
E	6.8	7.5	O	0	0.15
F	2.40	3.0	P	0.43	0.58
G	5.40	6.25			
H	0.64	1.20			

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

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	$V_{CBO}$	-30	V
Collector to Emitter Voltage	$V_{CEO}$	-20	V
Emitter to Base Voltage	$V_{EBO}$	-6	V
Collector Current -Continuous	$I_C$	-5	A
Collector Power Dissipation	$P_C$	1	W
Junction and Storage Temperature Range	$T_J, T_{STG}$	150 , -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	$V_{(BR)CBO}$	-30	-	-	V	$I_C = -50\mu\text{A}, I_E = 0$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	-20	-	-	V	$I_C = -1\text{mA}, I_B = 0$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	-6	-	-	V	$I_E = -50\mu\text{A}, I_C = 0$
Collector cut-off current	$I_{CEO}$	-	-	-0.5	$\mu\text{A}$	$V_{CB} = -20\text{V}, I_E = 0$
Emitter cut-off current	$I_{EBO}$	-	-	-0.5	$\mu\text{A}$	$V_{EB} = -5\text{V}, I_C = 0$
DC current gain	$h_{FE}$	82	-	390		$V_{CE} = -2\text{V}, I_C = -0.5\text{A}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	-1	V	$I_C = -4\text{A}, I_B = -100\text{mA}$
Transition frequency	$f_T$	-	120	-	MHz	$V_{CE} = -6\text{V}, I_C = -50\text{mA}, f_T = 30\text{MHz}$
Collector output capacitance	$C_{ob}$	-	60	-	pF	$V_{CB} = -20\text{V}, f = 1\text{MHz}, I_E = 0$

**CHARACTERISTIC CURVES**

