

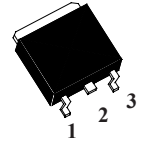
### PNP EPITAXIAL PLANAR TRANSISTOR

 Lead(Pb)-Free

#### Features:

- \* Excellent DC Current Gain Characteristics
- \* Low  $V_{CE(Sat)}$

1.BASE  
2.COLLECTOR  
3.EMITTER



**D-PAK(TO-252)**

#### Mechanical Data:

- \* Case : Molded Plastic
- \* Weight : 0.925 grams

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

Rating	Symbol	Value	Unit
Collector to Base Voltage	<small>www.DataSheet4U.com</small> $V_{CBO}$	-30	V
Collector to Emitter Voltage	$V_{CEO}$	-20	V
Collector to Base Voltage	$V_{EBO}$	-6	V
Collector Current	$I_C$	-5	A
Total Device Dissipation $T_A = 25^{\circ}C$	$P_D$	1.0	W
Junction Temperature	$T_j$	+150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-55 to +150	$^{\circ}C$

#### Device Marking

2SB1412 = B1412

## ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage $I_C = -50\mu A, I_E = 0$	$BV_{CBO}$	-30	-	-	V
Collector-Emitter Breakdown Voltage $I_C = -1.0mA, I_B = 0$	$BV_{CEO}$	-20	-	-	V
Emitter-Base Breakdown Voltage $I_E = -50\mu A, I_C = 0$	$BV_{EBO}$	-6	-	-	V
Collector Cut-Off Current $V_{CB} = -20V, I_E = 0$	$I_{CBO}$	-	-	-500	nA
Emitter-Cut-Off Current $V_{EB} = -5V, I_C = 0$	$I_{EBO}$	-	-	-500	nA

## ON CHARACTERISTICS

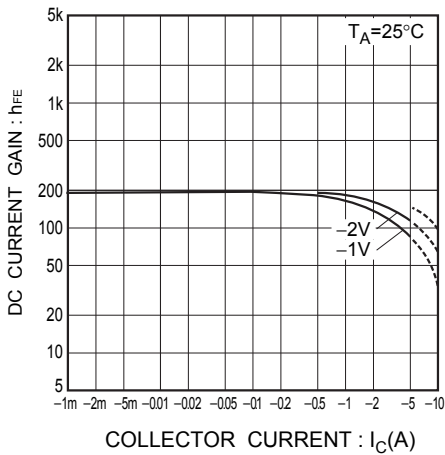
DC Current Gain $V_{CE} = -2V, I_C = -0.5A$	$h_{FE}$	82	-	390	-
Collector-Emitter Saturation Voltage $I_C = -4A, I_B = -0.1A$	$V_{CE(sat)}$	-	-	-1.0	V

## DYNAMIC CHARACTERISTICS

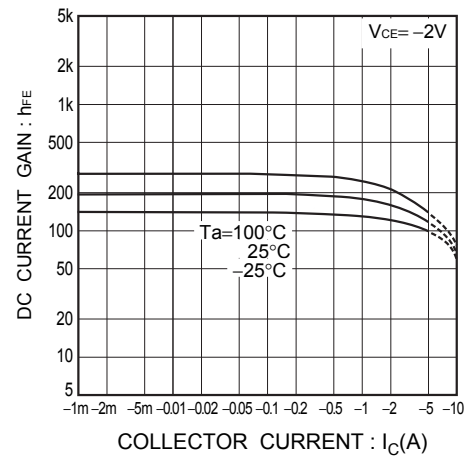
Transition Frequency $V_{CE} = -6V, I_E = -50mA, f = 30MHz$	$f_T$	-	120	-	MHz
Output Capacitance $V_{CB} = -20V, I_E = 0, f = 1.0MHz$	$C_{ob}$	-	60	-	pF

CLASSIFICATION OF  $h_{FE}$ 

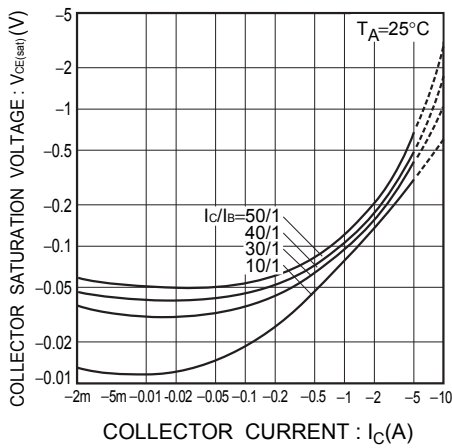
Rank	P	Q	R
Range	82 - 180	120 - 270	180 - 390



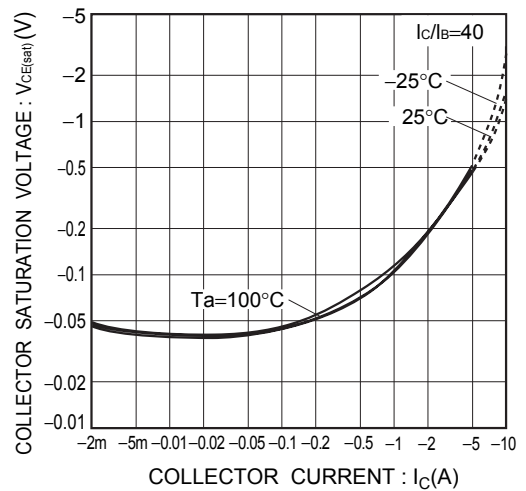
**Fig.1 DC current gain vs collector current**



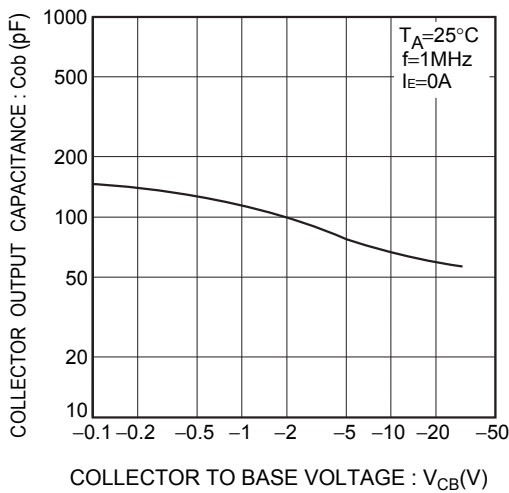
**Fig.2 DC current gain vs. collector current**



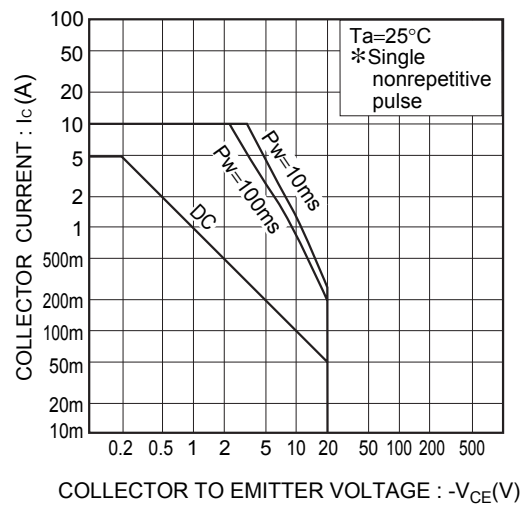
**Fig.3 Collector-emitter saturation voltage vs. collector current**



**Fig.4 Collector-emitter saturation voltage vs. collector current**



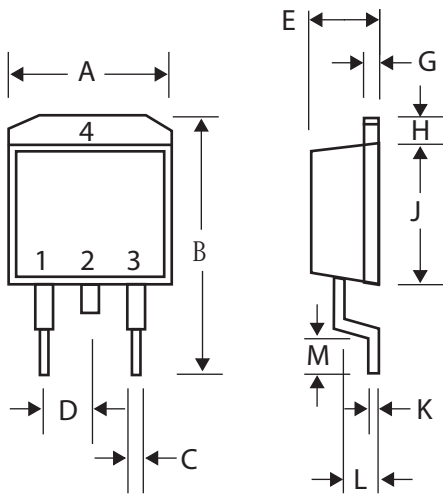
**Fig.5 Collector output capacitance vs. collector-base voltage**



**Fig.6 Safe operation area**

**TO-252 Outline Dimensions**

unit:mm



TO-252		
Dim	Min	Max
A	6.40	6.80
B	9.00	10.00
C	0.50	0.80
D	-	2.30
E	2.20	2.50
G	0.45	0.55
H	1.00	1.60
J	5.40	5.80
K	0.30	0.64
L	0.70	1.70
M	0.90	1.50