

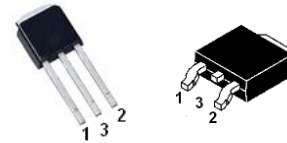
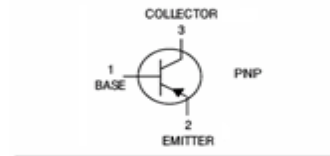
Low Frequency Transistor

2SB1412I 2SB1412

FEATURES

- Low $V_{CE(sat)}$
 $V_{CE(sat)} = -0.35V(Typ)$
($I_C/I_B = -4A/-0.1A$)
- Excellent DC current gain characteristics
- Complements the 2SD2118
- RoHS compliant with Halogen-free

HF



TO-251

TO-252

Ordering Information

Part Number	Package	Shipping	Marking Code
2SB1412I-P	TO-251	80/Tube	B1412
2SB1412I-Q	TO-251	80/Tube	B1412
2SB1412I-R	TO-251	80/Tube	B1412
2SB1412-P	TO-252	80/Tube or 2500/Tape Reel	B1412
2SB1412-Q	TO-252	80/Tube or 2500/Tape Reel	B1412
2SB1412-R	TO-252	80/Tube or 2500/Tape Reel	B1412

MAXIMUM RATING operating temperature range applies unless otherwise specified

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	-30	V
V_{CEO}	Collector-Emitter Voltage	-20	V
V_{EBO}	Emitter-Base Voltage	-6	V
I_C	Collector Current	-5	A
I_{CP}	Collector Power Dissipation	-10	A
P_C	Collector Power Dissipation	1	W
T_j, T_{stg}	Junction and Storage temperature range	-55 to +150	°C

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	V_{CBO}	$I_C=-50\mu\text{A}, I_E=0$	-30			
Collector-emitter breakdown voltage	V_{CEO}	$I_C=-1\text{mA}, I_B=0$	-20			V
Emitter-base breakdown voltage	V_{EBO}	$I_E=-50\mu\text{A}, I_C=0$	-6			V
Collector cut-off current	I_{CBO}	$V_{CB}=-20\text{V}, I_E=0$			-0.5	μA
Emitter cut-off current	I_{EBO}	$V_{EBO}=-5\text{V}, I_C=0$			-0.5	μA
DC current gain	h_{FE}	$V_{CE}=-2\text{V}, I_C=-0.5\text{A}$	82		390	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-4\text{A}, I_B=-0.1\text{A}$		-0.35	-1.0	V
Transition frequency	f_T	$V_{CE}=-6\text{V}, I_E=50\text{mA}$ $f=100\text{MHz}$		120		MHz
Output capacity	C_{ob}	$V_{CB}=-20\text{V}, I_E=0, f=1\text{MHz}$		60		pF

CLASSIFICATION OF $h_{FE(1)}$

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

TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified

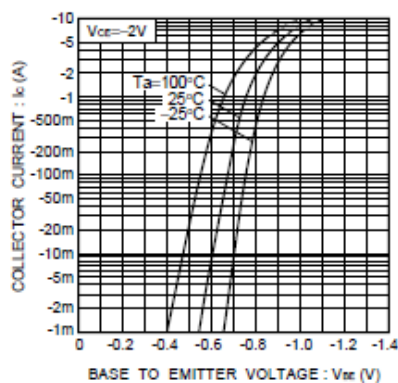


Fig.1 Grounded emitter propagation characteristics

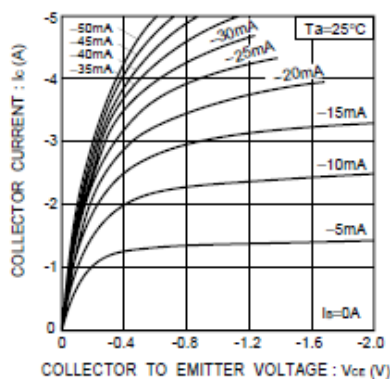


Fig.2 Grounded emitter output characteristics

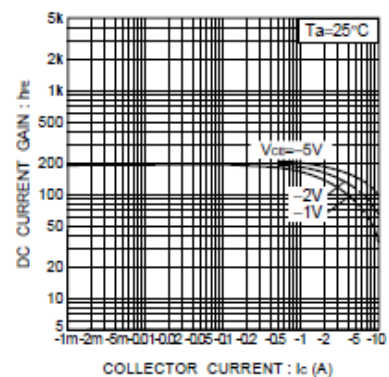


Fig.3 DC current gain vs. collector current (I_c)

Low Frequency Transistor

2SB1412I 2SB1412

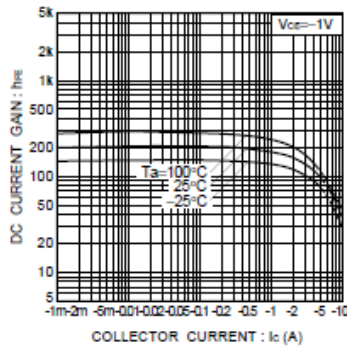


Fig.4 DC current gain vs. collector current (II)

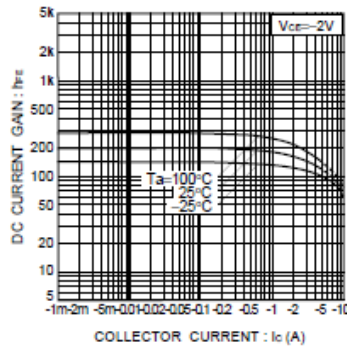


Fig.5 DC current gain vs. collector current (III)

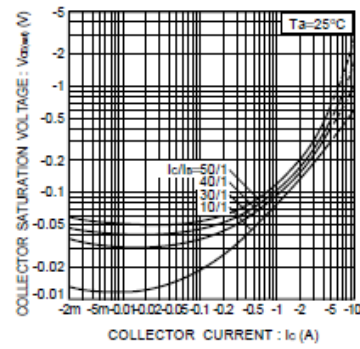


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

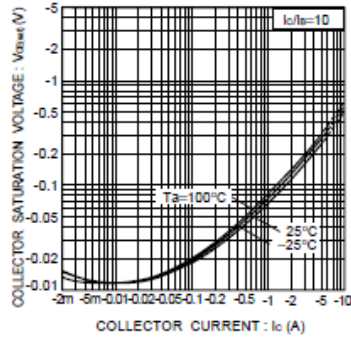


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

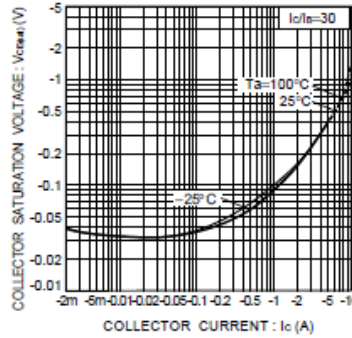


Fig.8 Collector-emitter saturation voltage vs. collector current (III)

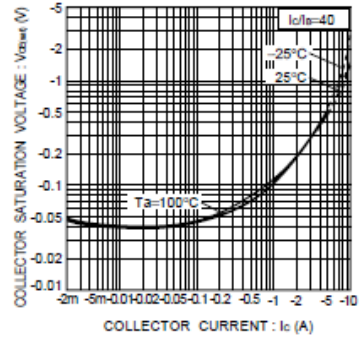


Fig.9 Collector-emitter saturation voltage vs. collector current (IV)

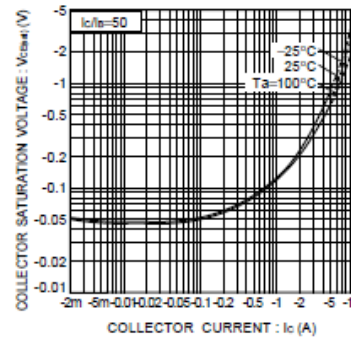


Fig.10 Collector-emitter saturation voltage vs. collector current (V)

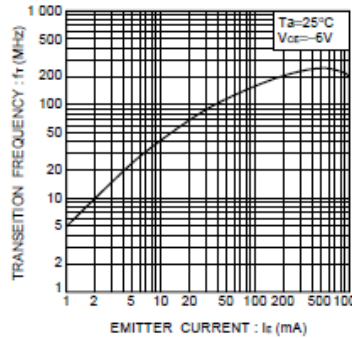


Fig.11 Gain bandwidth product vs. emitter current

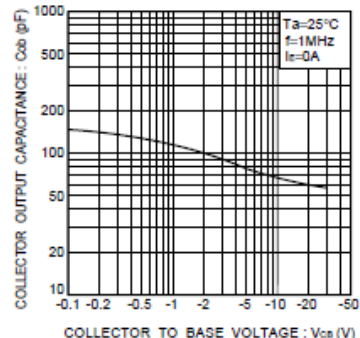


Fig.12 Collector output capacitance vs. collector-base voltage

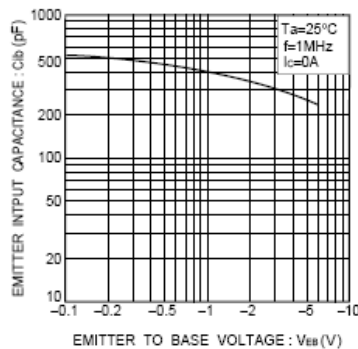


Fig.13 Emitter input capacitance vs. emitter-base voltage

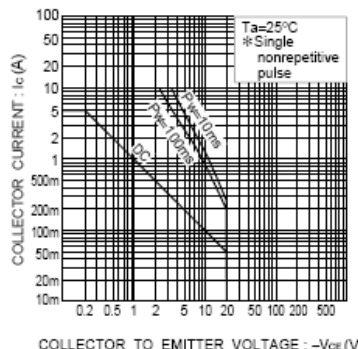


Fig.14 Safe operation area (2SB1412)

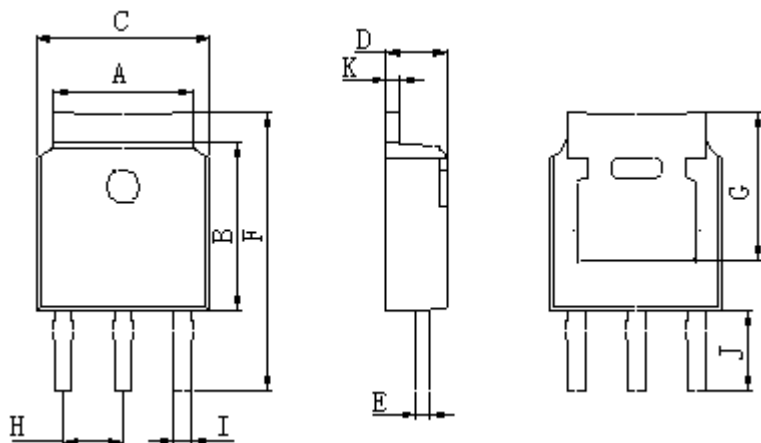
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2SB1412I 2SB1412

PACKAGE OUTLINE

Plastic surface mounted package

TO-251

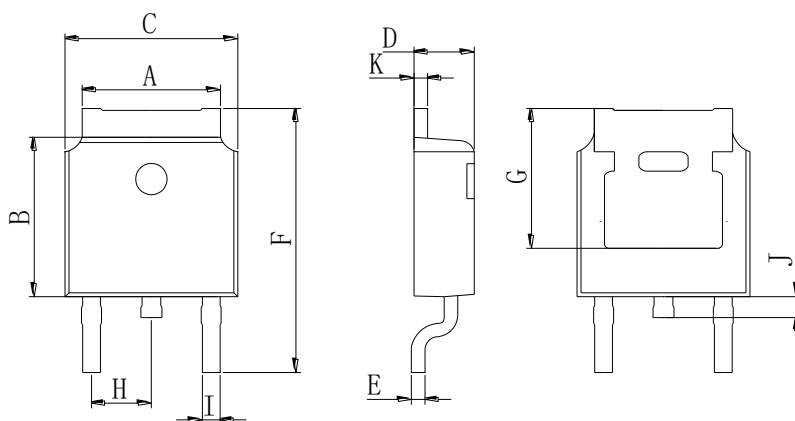


TO-251		
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	11.00	11.60
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	4.00	4.40
K	0.40	0.60
All Dimensions in mm		

PACKAGE OUTLINE

Plastic surface mounted package

TO-252

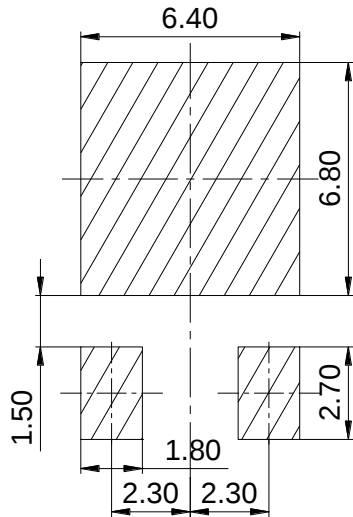


TO-252		
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	9.71	10.31
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	0.50	0.70
K	0.40	0.60
All Dimensions in mm		

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2SB1412I 2SB1412

SOLDERING FOOTPRINT



Unit: mm