


**Pin Definition:**

1. Base
2. Collector
3. Emitter

**PRODUCT SUMMARY**

$BV_{CBO}$	-40V
$BV_{CEO}$	-30V
$I_C$	-5A
$V_{CE(SAT)}$	-0.5V @ $I_C / I_B = -4A / -100mA$

**Features**

- Low  $V_{CE(SAT)}$  -0.36 @  $I_C / I_B = -4A / -100mA$  (Typ.)
- Complementary part with TSD2118

**Structure**

- Epitaxial Planar Type
- PNP Silicon Transistor

**Ordering Information**

Part No.	Package	Packing
TSB1412CP RO	TO-252	2.5Kpcs / 13" Reel
TSB1412CP ROG	TO-252	2.5Kpcs / 13" Reel

**Note:** "G" is denote Halogen Free Product.

**Absolute Maximum Rating** ( $T_A=25^\circ C$  unless otherwise noted)

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	$V_{CBO}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-30	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Collector Current	$I_C$	DC	-5
		Pulse	-10 (note)
Collector Power Dissipation	$P_D$	$T_A=25^\circ C$	1
		$T_C=25^\circ C$	10
Operating Junction Temperature	$T_J$	+150	$^\circ C$
Operating Junction and Storage Temperature Range	$T_{STG}$	- 55 to +150	$^\circ C$

**Note:** Single pulse,  $P_w=10ms$

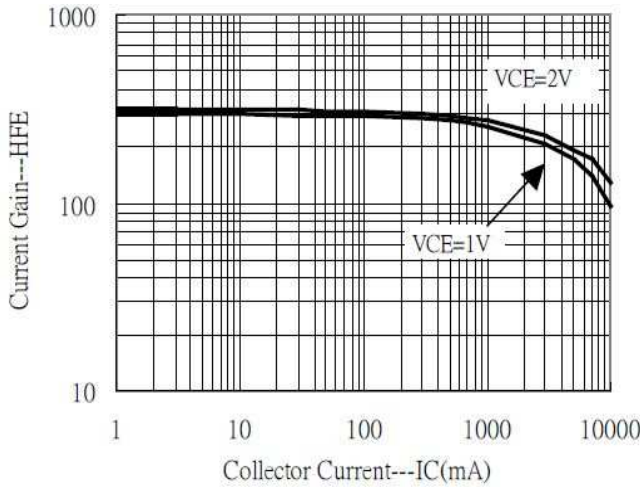
**Electrical Specifications** ( $T_A=25^\circ C$  unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$I_C = -50\mu A, I_E = 0$	$BV_{CBO}$	-40	--	--	V
Collector-Emitter Breakdown Voltage	$I_C = -1mA, I_B = 0$	$BV_{CEO}$	-30	--	--	V
Emitter-Base Breakdown Voltage	$I_E = -50\mu A, I_C = 0$	$BV_{EBO}$	-6	--	--	V
Collector Cutoff Current	$V_{CB} = -25V, I_E = 0$	$I_{CBO}$	--	--	-0.5	$\mu A$
Emitter Cutoff Current	$V_{EB} = -5V, I_C = 0$	$I_{EBO}$	--	--	-0.5	$\mu A$
Collector-Emitter Saturation Voltage	$I_C / I_B = -4A / -100mA$	$*V_{CE(SAT)}$	--	-0.36	-0.5	V
DC Current Transfer Ratio	$V_{CE} = -2V, I_C = -500mA$	$*h_{FE}$	180	--	390	
Transition Frequency	$V_{CE} = -6V, I_C = -50mA,$ $f=30MHz$	$f_T$	--	120	--	MHz
Output Capacitance	$V_{CB} = -20V, f=1MHz$	$C_{ob}$	--	60	--	pF

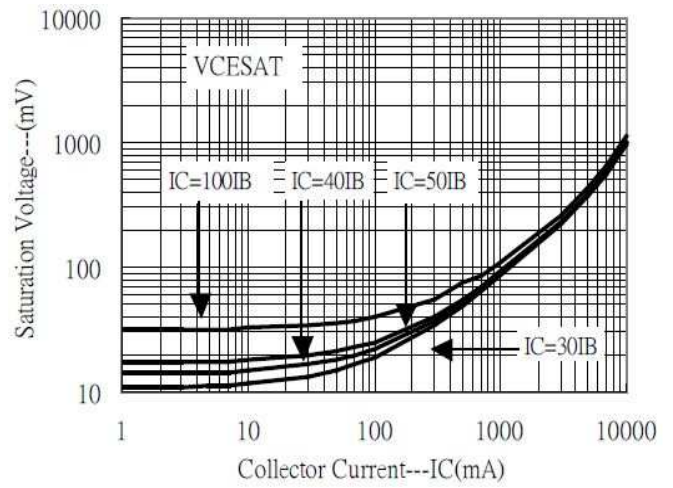
\* **Pulse Test:** Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$

**Electrical Characteristics Curve** ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

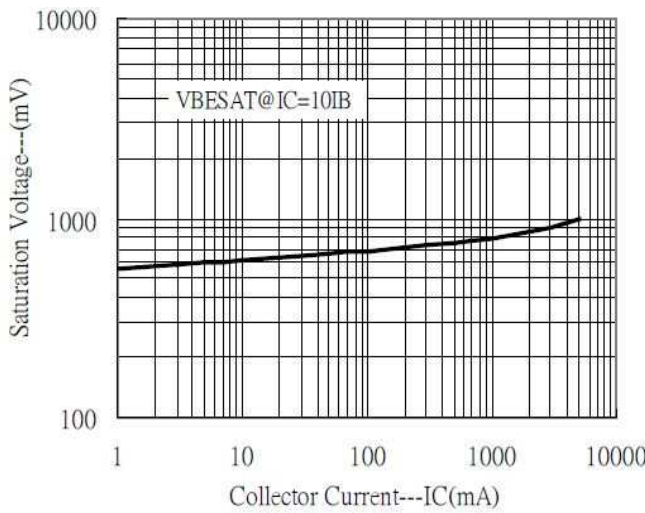
**Figure 1. DC Current Gain**



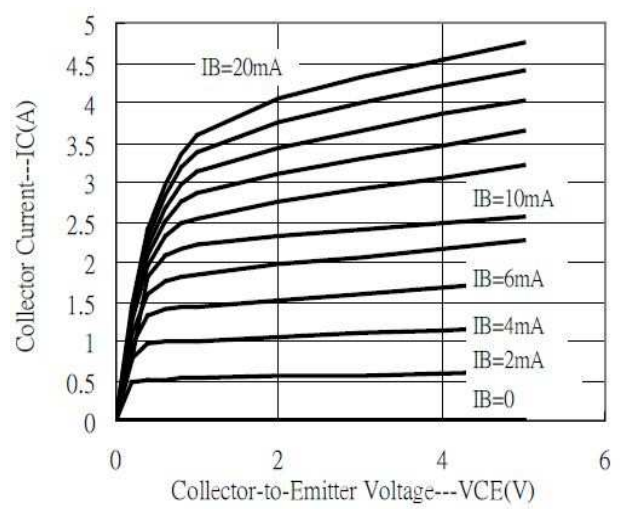
**Figure 2.  $V_{CE(SAT)}$  v.s.  $I_C$**



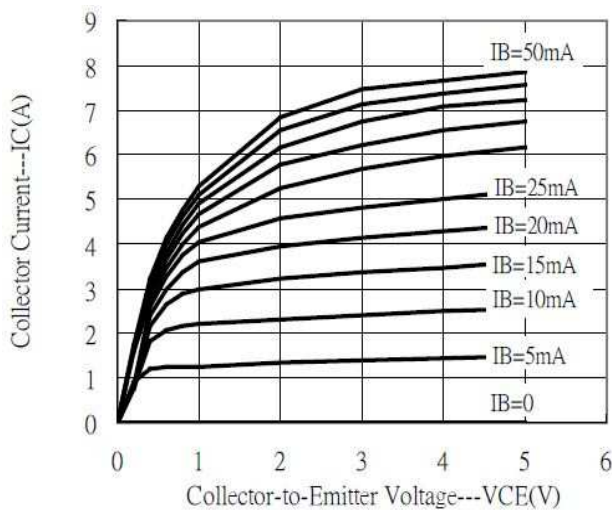
**Figure 3.  $V_{BE(SAT)}$  v.s.  $I_C$**



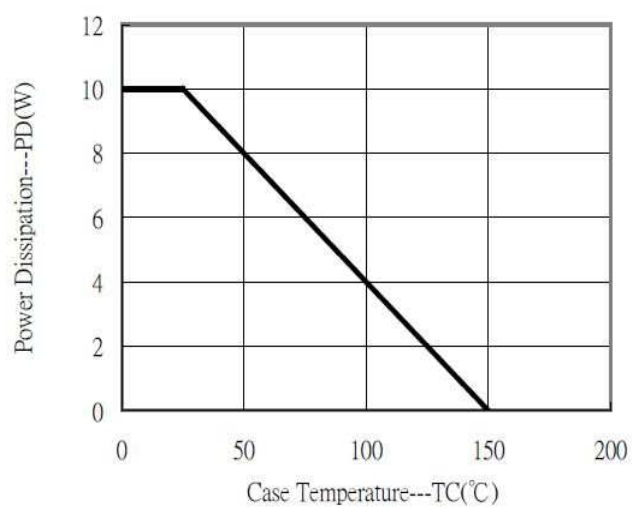
**Figure 4. Output Characteristics**



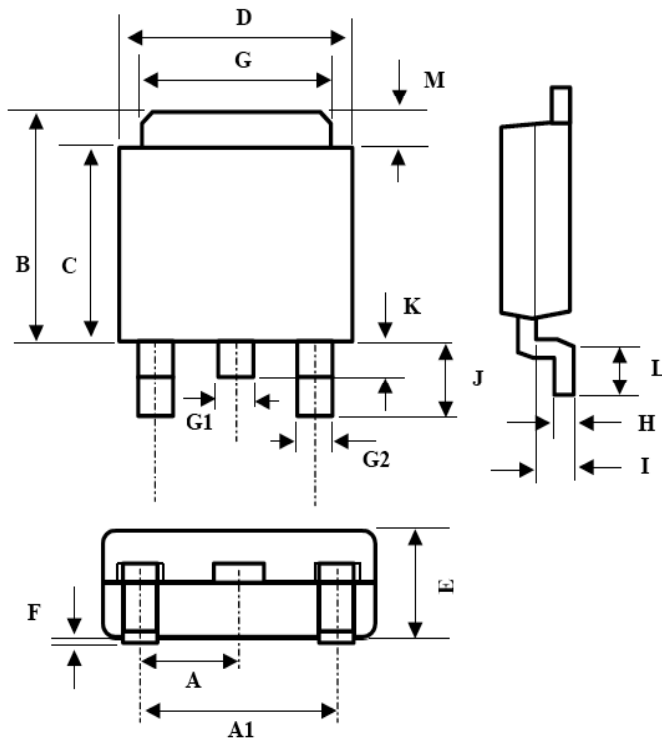
**Figure 5. Output Characteristics**



**Figure 6. Power Derating Curve**



### TO-252 Mechanical Drawing



TO-252 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.290 BSC		0.090 BSC	
A1	4.600 BSC		0.180 BSC	
B	7.000	7.200	0.275	0.283
C	6.000	6.200	0.236	0.244
D	6.400	6.604	0.252	0.260
E	2.210	2.387	0.087	0.094
F	0.010	0.127	0.000	0.005
G	5.232	5.436	0.206	0.214
G1	0.666	0.889	0.026	0.035
G2	0.633	0.889	0.025	0.035
H	0.508 REF		0.020 REF	
I	0.900	1.500	0.035	0.059
J	2.743 REF		0.108 REF	
K	0.660	0.940	0.026	0.037
L	1.397	1.651	0.055	0.065
M	1.100 REF		0.043 REF	

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