

NPN Plastic-Encapsulate Transistors

Description

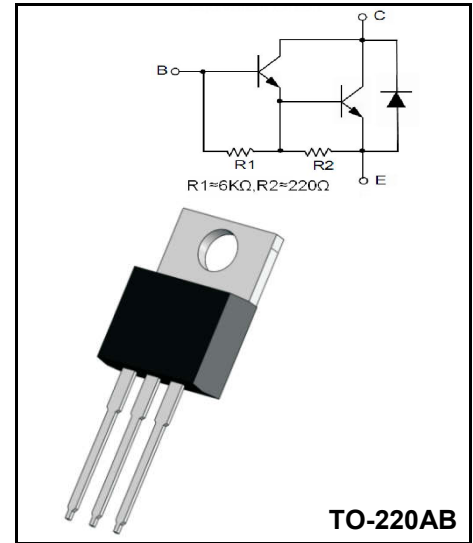
The devices are manufactured in planar technology with “base island” layout and monolithic Darlington configuration. The resulting transistors show exceptional high gain performance coupled with very low saturation voltage.

Applications

➤ General purpose linear and switching

Features

➤ Low collector-emitter saturation voltage
➤ Complementary to TIP125/126/127



TO-220AB

Absolute Maximum Rating (Ta=25°C)

Parameter	Symbol	Value			Unit
		TIP120	TIP121	TIP122	
Collector-Base Voltage	BV_{CBO}	60	80	100	V
Collector-Emitter Voltage	BV_{CEO}	60	80	100	V
Emitter-Base Voltage	BV_{EBO}	5			V
Collector Current(DC)	I_C	5			A
Collector Dissipation	P_C	Ta =25 °C			W
		Tc =25 °C			
Junction Temperature	T_j	150			°C
Storage Temperature	T_{stg}	-65~150			°C

Electrical Characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 30mA, I_B = 0$	60 80 100			V
Collector cut-off current	I_{CBO}	$V_{CB} = 60V, I_E = 0$ $V_{CB} = 80V, I_E = 0$ $V_{CB} = 100V, I_E = 0$			0.2	mA
Collector cut-off current	I_{CEO}	$V_{CE} = 30V, I_E = 0$ $V_{CE} = 40V, I_E = 0$ $V_{CE} = 50V, I_E = 0$			0.5	mA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5V, I_C = 0$			2	mA
* DC current gain	h_{FE}	$V_{CE} = 3V, I_C = 0.5A$ $V_{CE} = 3V, I_C = 3A$	1000 1000			
*Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 3A, I_B = 12mA$ $I_C = 5A, I_B = 20mA$			2.0 4.0	V
* Base-Emitter ON Voltage	$V_{BE(on)}$	$V_{CE} = 3V, I_C = 3A$			2.5	V
Output Capacitance	C_{ob}	$V_{CB} = 10V, I_E = 0, f = 0.1MHz$			200	pF

* Pulse Test : $PW \leq 300\mu s$, Duty cycle $\leq 2\%$

Typical Characteristics

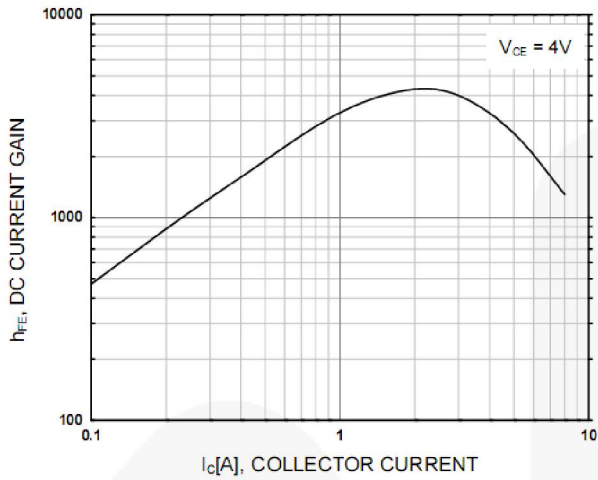


Figure 1. DC current Gain

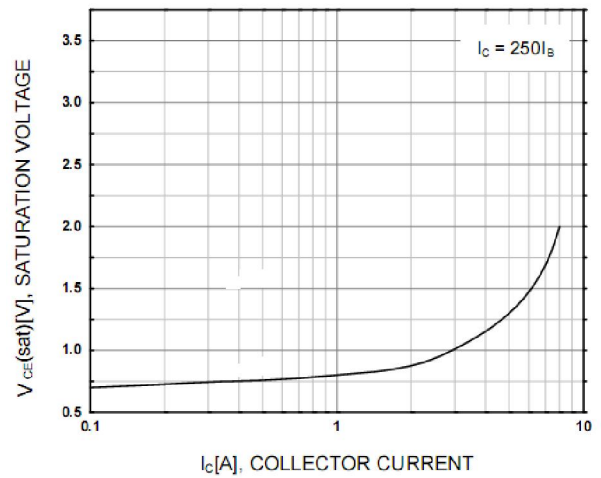


Figure 2. Collector-Emitter Saturation Voltage

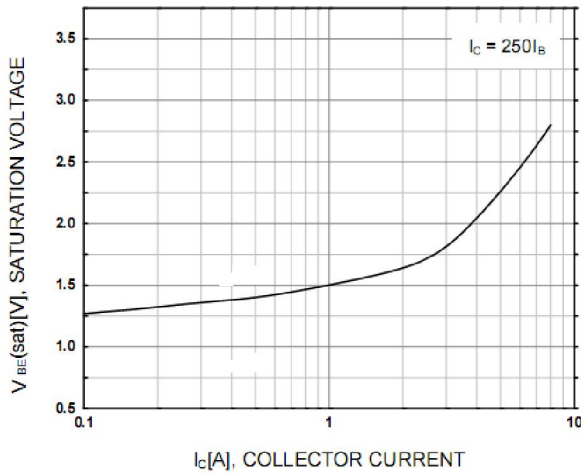


Figure 3. Base-Emitter Saturation Voltage

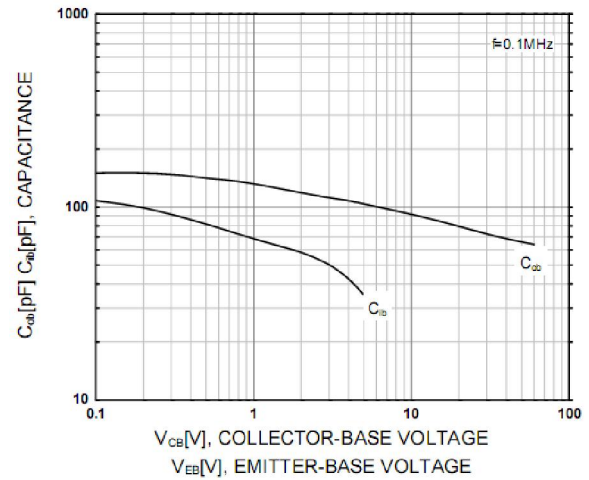


Figure 4. Output and Input Capacitance

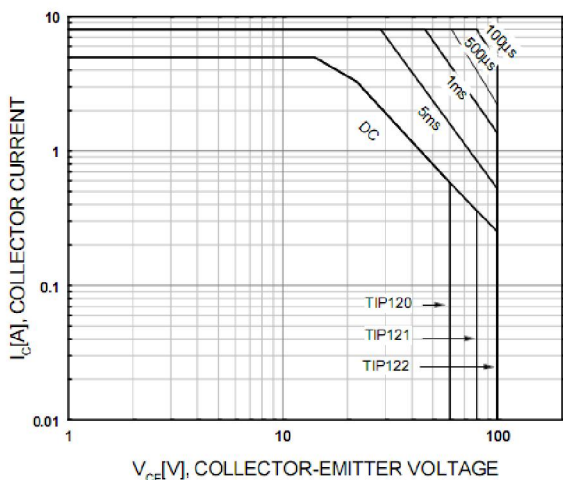


Figure 5. Safe Operating Area

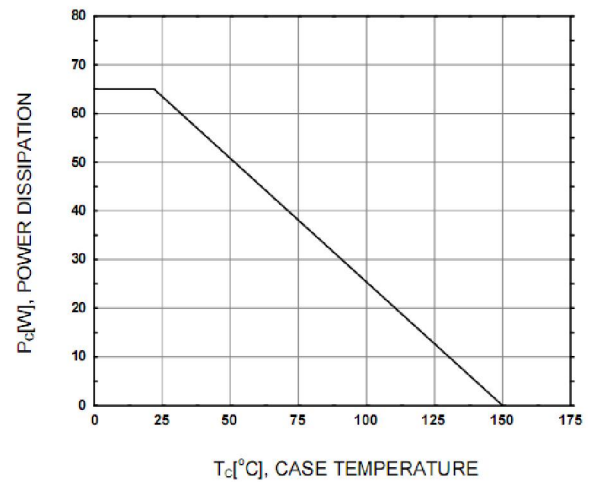


Figure 6. Power Derating

Package Dimensions

Symbol	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.34	4.67	0.171	0.184
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156

Product Specification Classification

Part Number	Package	Marking	Pack
TIP120	TO-220AB	YFW TIP120 XXXXX	1000PCS/box
TIP121	TO-220AB	YFW TIP121 XXXXX	1000PCS/box
TIP122	TO-220AB	YFW TIP122 XXXXX	1000PCS/box