

**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.

The TIP120_121_122 is available in TO-220-3 Package.

FEATURE

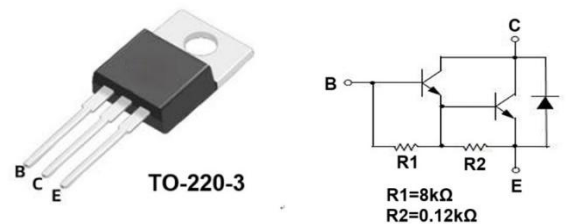
- Low collector-emitter saturation voltage
- Complementary to TIP125/126/127
- Available in TO-220-3 Package

APPLICATIONS

- General purpose linear and switching

ORDERING INFORMATION

Package Type	Part Number
TO-220-3	TIP120
	TIP121
	TIP122
Note	SPQ: 50pcs/Tube 1,000pcs/Box
AiT provides all RoHS Compliant Products	

PIN DESCRIPTION

PIN#	DESCRIPTION
1	BASE
2	COLLECTOR
3	EMITTER

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified

BV _{CBO} , Collector-Base Voltage	TIP120	60V
	TIP121	80V
	TIP122	100V
BV _{CEO} , Collector-Emitter Voltage	TIP120	60V
	TIP121	80V
	TIP122	100V
BV _{EBO} , Emitter-Base Voltage		5V
I _C , Collector Current (DC)		5A
P _C , Collector Dissipation	T _A = 25°C	2W
	T _C = 25°C	65W
T _{STG} , Storage Temperature		-65°C ~ + 150°C
T _J , Junction Temperature		+150°C

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**ELECTRICAL CHARACTERISTICS** $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Sustaining Voltage	TIP120	$V_{CEO(SUS)}$	$I_C=30\text{mA}$, $I_B=0$	60	-	-	V
	TIP121			80	-	-	
	TIP122			100	-	-	
Collector Cut-Off Current	TIP120	I_{CBO}	$I_E=0$, $V_{CB}=60\text{V}$	-	-	0.2	mA
	TIP121		$I_E=0$, $V_{CB}=80\text{V}$	-	-	0.2	
	TIP122		$I_E=0$, $V_{CB}=100\text{V}$	-	-	0.2	
Collector Cut-Off Current	TIP120	I_{CEO}	$I_E=0$, $V_{CE}=30\text{V}$	-	-	0.5	mA
	TIP121		$I_E=0$, $V_{CE}=40\text{V}$	-	-	0.5	
	TIP122		$I_E=0$, $V_{CE}=50\text{V}$	-	-	0.5	
Emitter Cut-Off Current		I_{EBO}	$I_C=0$, $V_{EB}=5\text{V}$	-	-	2.0	mA
DC Current Gain*		h_{FE}	$I_C=0.5\text{A}$, $V_{CE}=3\text{V}$	1000	-	-	-
			$I_C=3\text{A}$, $V_{CE}=3\text{V}$	1000	-	-	
Collector-Emitter Saturation Voltage*		$V_{CE(sat)}$	$I_B=12\text{mA}$, $I_C=3\text{A}$	-	-	2.0	V
			$I_B=20\text{mA}$, $I_C=5\text{A}$	-	-	4.0	
Base-Emitter on Voltage*		$V_{BE(ON)}$	$I_C=3\text{A}$, $V_{CE}=3\text{V}$	-	-	2.5	V
Output Capacitance		C_{ob}	$I_E=0$, $V_{CB}=10\text{V}$, $f=0.1\text{MHz}$	-	-	200	pF

*Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.



TYPICAL CHARACTERISTICS

Fig 1. DC Current Gain

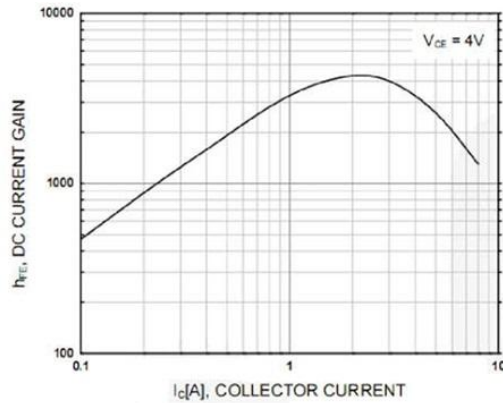


Fig 2. Collector-Emitter Saturation Voltage

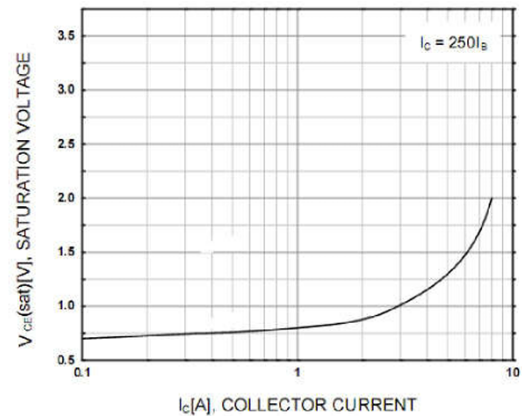


Fig 3. Base-Emitter Saturation Voltage

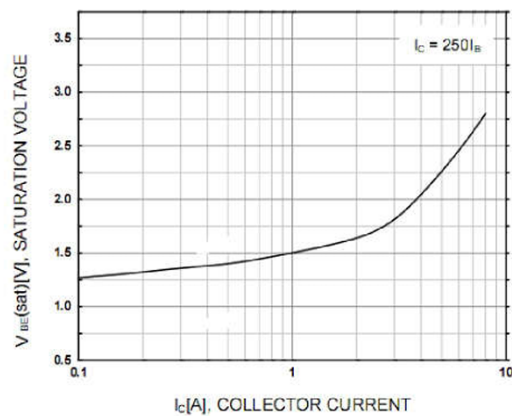


Fig 4. Output and Input Capacitance

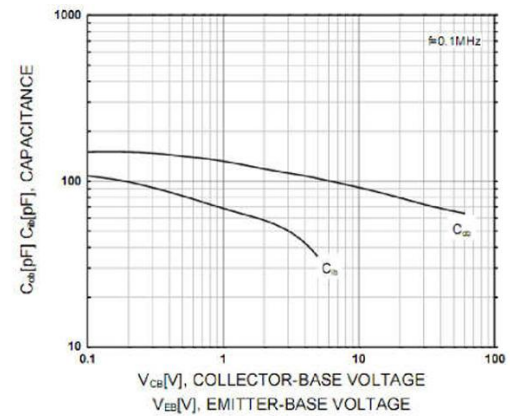


Fig 5. Safe Operating Area

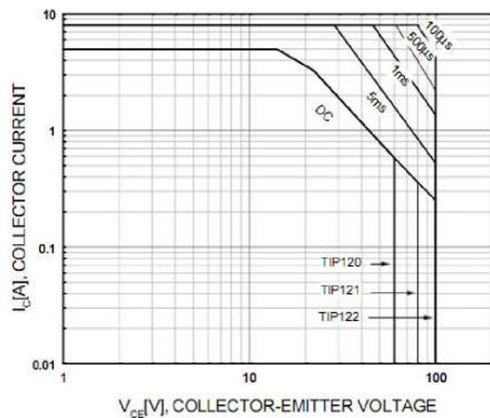
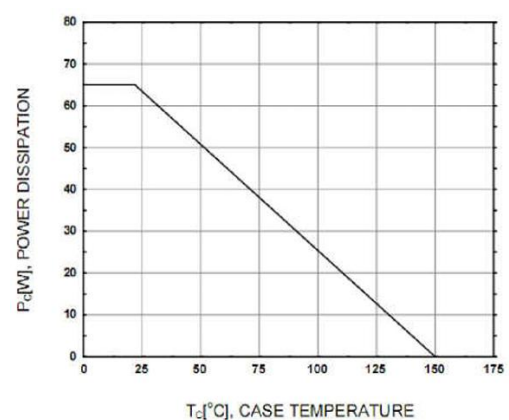


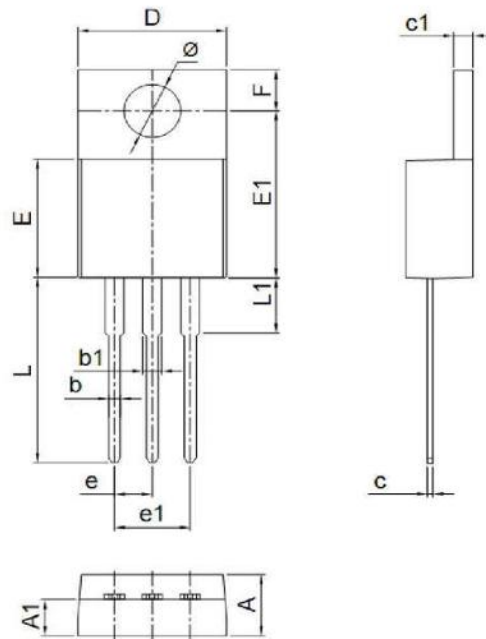
Fig 6. Power Derating





PACKAGE INFORMATION

Dimension in TO-220-3 Package (Unit: mm)



DIM	MILLIMETERS	
	MIN	MAX
A	4.300	4.700
A1	2.520	2.820
b	0.710	0.910
b1	1.170	1.370
c	0.300	0.500
c1	1.170	1.370
D	9.900	10.200
E	8.500	8.900
E1	12.000	12.500
e	2.440	2.640
e1	4.880	5.280
F	2.600	2.800
L	13.200	13.800
L1	3.800	4.200
Φ	3.600	3.960



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