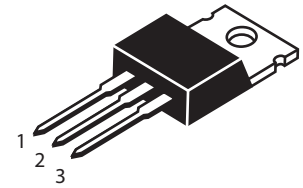


### PNP/NPN Silicon Power Transistor

**(Pb)** Lead(Pb)-Free

#### FEATURES:

- \* Medium Power Complementary silicon transistors
- \* TIP120,121,122 Darlington TRANSISTOR (NPN)
- \* TIP125,126,127 Darlington TRANSISTOR (PNP)



1. BASE
2. COLLECTOR
3. EMITTER

**TO-220**

#### MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ unless otherwise noted)

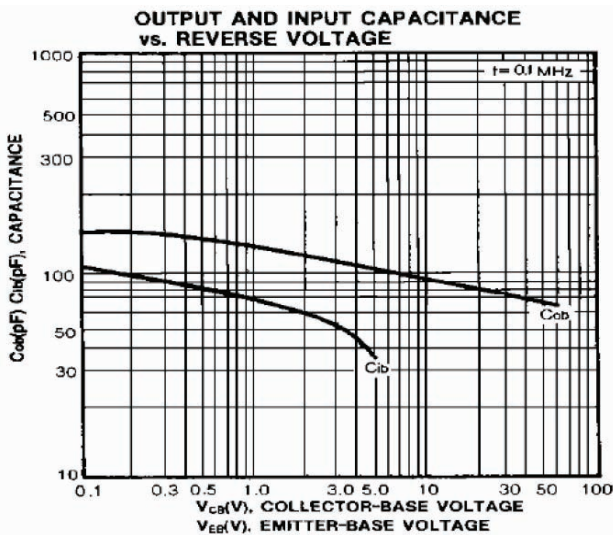
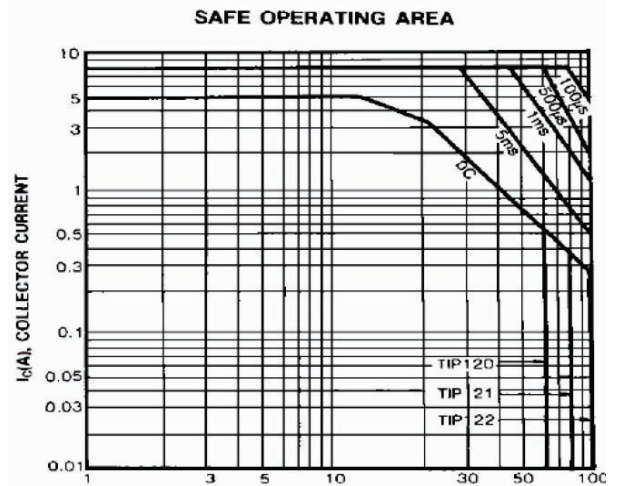
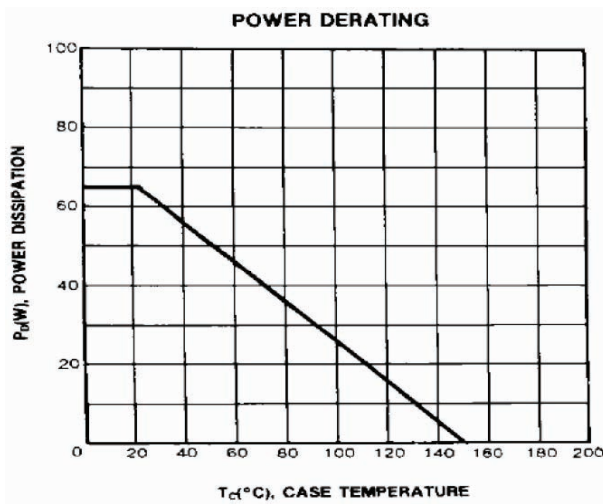
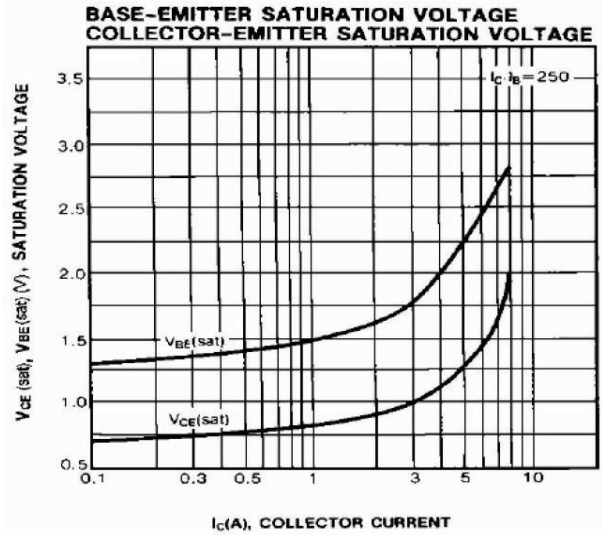
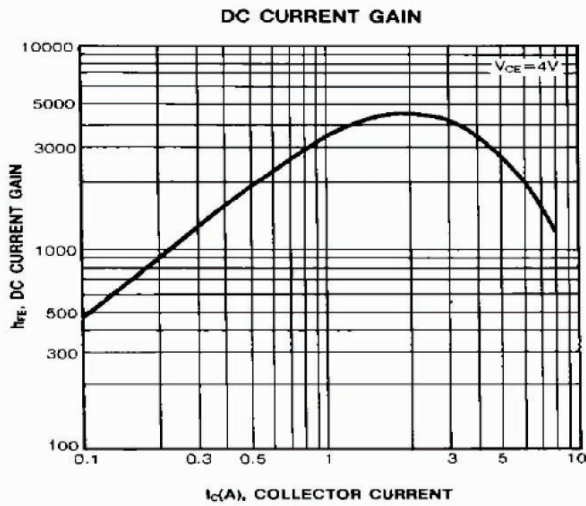
Symbol	Parameter	TIP120 TIP125	TIP121 TIP126	TIP122 TIP127	Units
$V_{CBO}$	Collector-Base Voltage	60	80	100	V
$V_{CEO}$	Collector-Emitter Voltage	60	80	100	V
$V_{EBO}$	Emitter-Base Voltage	5			V
$I_C$	Collector Current -Continuous	5			A
$P_C$	Collector Power Dissipation	2			W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5			$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.92			$^\circ\text{C}/\text{W}$
$T_J$	Junction Temperature	150			$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55-150			$^\circ\text{C}$

#### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=1\text{mA}, I_E=0$	TIP120,TIP125	60	V
			TIP121,TIP126	80	
			TIP122,TIP127	100	
Collector-emitter breakdown voltage	$V_{CEO(SUS)}$	$I_C=30\text{mA}, I_B=0$	TIP120,TIP125	60	V
			TIP121,TIP126	80	
			TIP122,TIP127	100	
Collector cut-off current	$I_{CBO}$	$V_{CB}=60\text{V}, I_E=0$ $V_{CB}=80\text{V}, I_E=0$ $V_{CB}=100\text{V}, I_E=0$		0.2	mA
			TIP120,TIP125		
			TIP121,TIP126		
Collector cut-off current	$I_{CEO}$	$V_{CE}=30\text{V}, I_B=0$ $V_{CE}=40\text{V}, I_B=0$ $V_{CE}=50\text{V}, I_B=0$		0.5	mA
			TIP120,TIP125		
			TIP121,TIP126		
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$		2	mA
DC current gain	$h_{FE(1)}$	$V_{CE}=3\text{V}, I_C=0.5\text{A}$	1000		
	$h_{FE(2)}$	$V_{CE}=3\text{V}, I_C=3\text{A}$	1000		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=3\text{A}, I_B=12\text{mA}$ $I_C=5\text{A}, I_B=20\text{mA}$		2 4	V
Base-emitter voltage	$V_{BE}$	$V_{CE}=3\text{V}, I_C=3\text{A}$		2.5	V
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0\text{A}$ $f = 0.1\text{MHz}$	TIP125,TIP126,TIP127	300	pF
			TIP120,TIP121,TIP122	200	

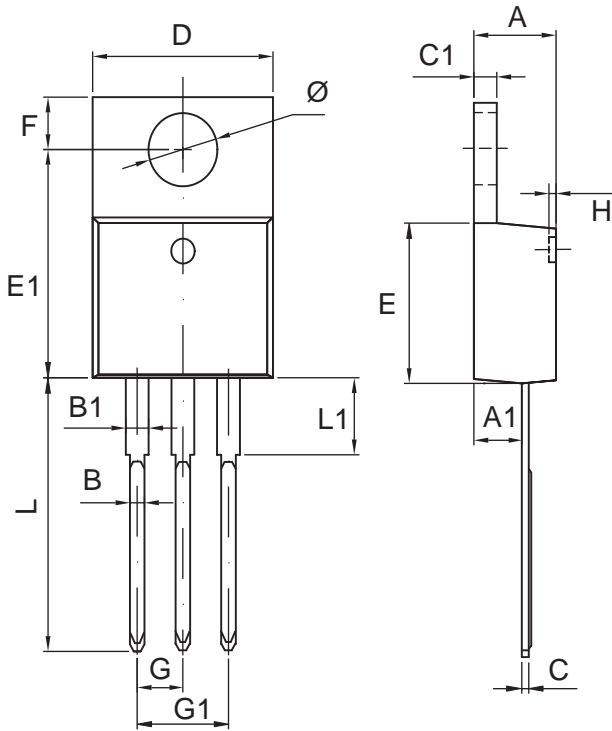
## Typical Characteristics

## TIP120,121,122,125,126,127



## TO-220 Outline Dimensions

unit:mm



TO-220		
Dim	Min	Max
A	4.47	4.67
A1	2.52	2.82
B	0.71	0.91
B1	1.17	1.37
C	0.31	0.53
C1	1.17	1.37
D	10.01	10.31
E	8.50	8.90
E1	12.06	12.446
G	2.54 TYP	
G1	4.98	5.18
F	2.59	2.89
H	0.00	0.30
L	13.4	13.8
L1	3.56	3.96
Φ	3.73	3.93