

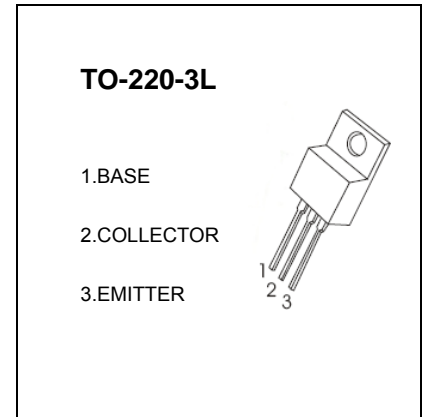
## TO-220-3L Plastic-Encapsulate Transistors

**TIP120,121,122** Darlington TRANSISTOR (NPN)

**TIP125,126,127** Darlington TRANSISTOR (PNP)

### FEATURES

- Medium Power Complementary Silicon Transistors



### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

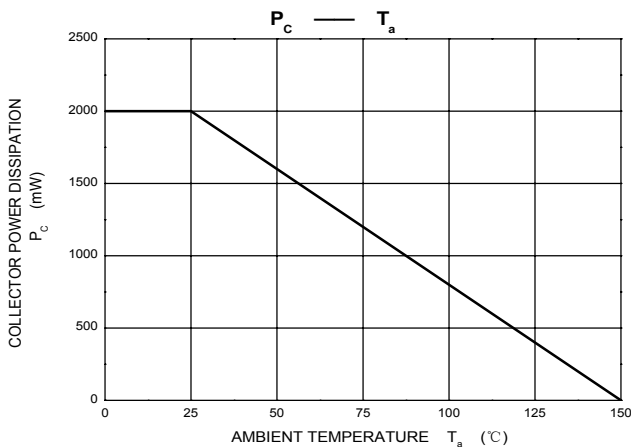
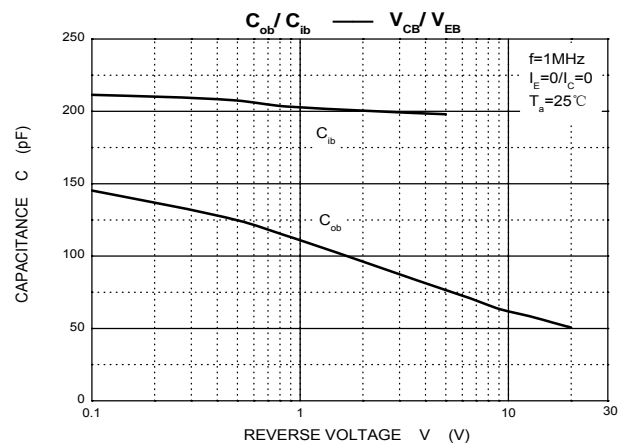
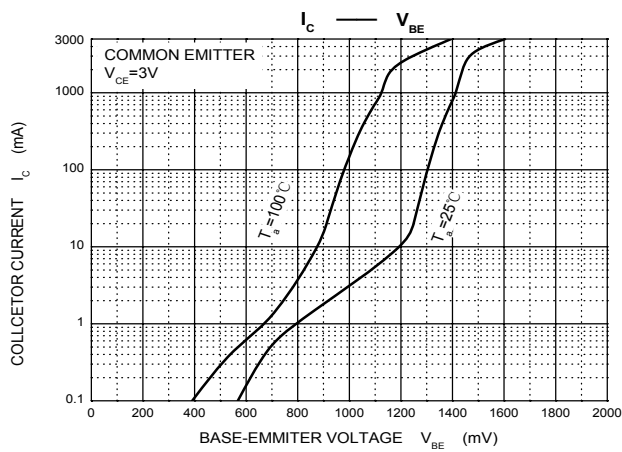
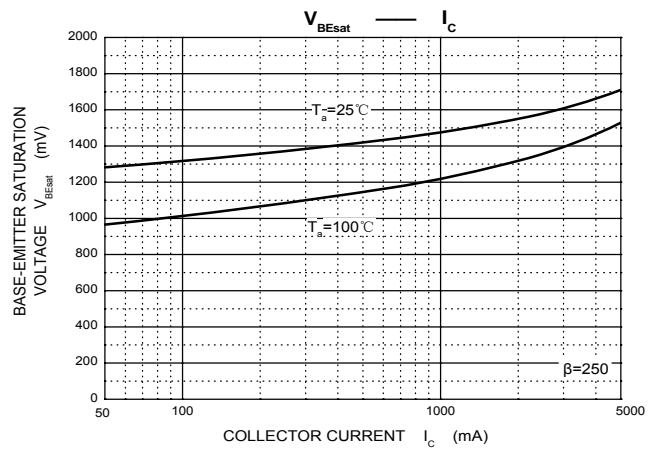
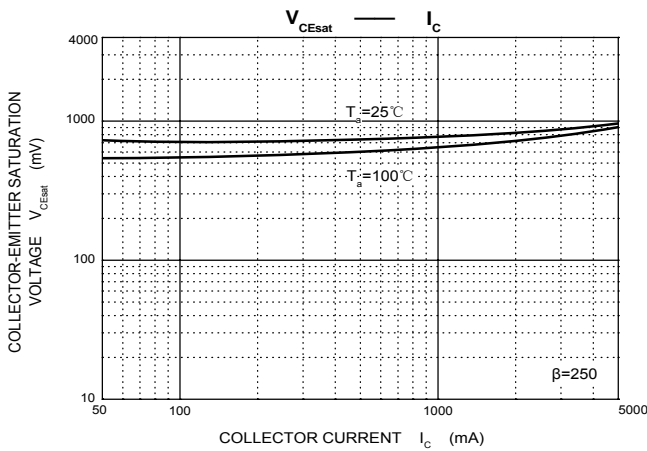
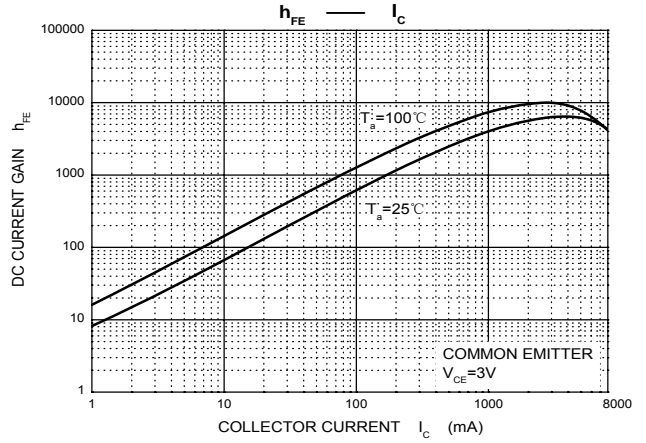
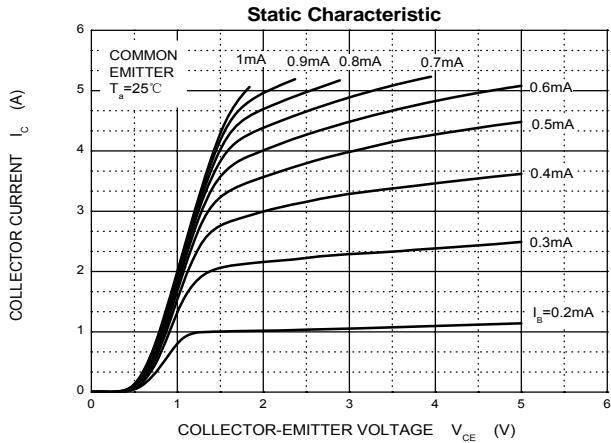
Symbol	Parameter	TIP120 TIP125	TIP121 TIP126	TIP122 TIP127	Unit
V <sub>CBO</sub>	Collector-Base Voltage	60	80	100	V
V <sub>CEO</sub>	Collector-Emitter Voltage	60	80	100	V
V <sub>EBO</sub>	Emitter-Base Voltage	5			V
I <sub>C</sub>	Collector Current -Continuous	5			A
P <sub>C</sub>	Collector Power Dissipation	2			W
R <sub>JA</sub>	Thermal Resistance Junction to Ambient	62.5			°C/W
R <sub>Jc</sub>	Thermal Resistance Junction to Case	1.92			°C/W
T <sub>J</sub>	Junction Temperature	150			°C
T <sub>stg</sub>	Storage Temperature	-55to+150			°C

### ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)

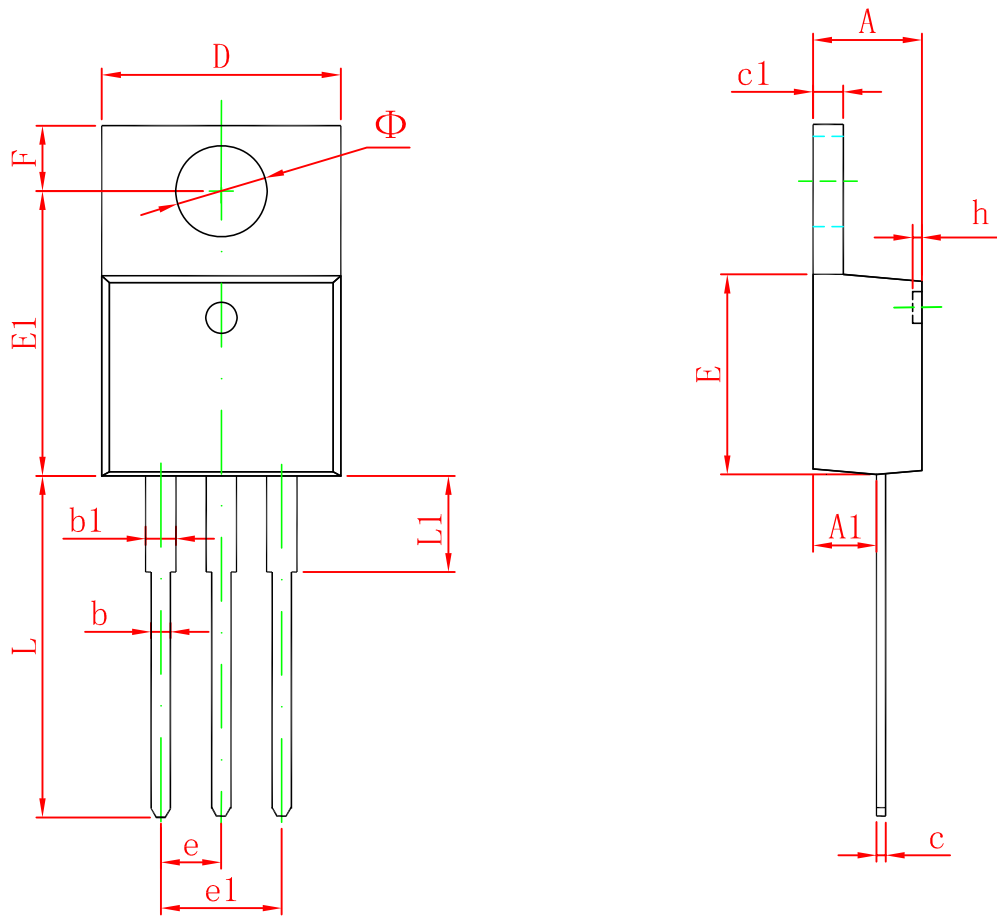
Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage TIP120,TIP125 TIP121,TIP126 TIP122,TIP127	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 1mA, I <sub>E</sub> =0	60 80 100		V
Collector-emitter breakdown voltage TIP120,TIP125 TIP121,TIP126 TIP122,TIP127	V <sub>CEO(SUS)</sub>	I <sub>C</sub> = 30mA, I <sub>B</sub> =0	60 80 100		V
Collector cut-off current TIP120,TIP125 TIP121,TIP126 TIP122,TIP127	I <sub>CBO</sub>	V <sub>CB</sub> = 60 V, I <sub>E</sub> =0 V <sub>CB</sub> = 80 V, I <sub>E</sub> =0 V <sub>CB</sub> = 100V, I <sub>E</sub> =0		0.2	mA
Collector cut-off current TIP120,TIP125 TIP121,TIP126 TIP122,TIP127	I <sub>CEO</sub>	V <sub>CE</sub> =30 V, I <sub>B</sub> =0 V <sub>CE</sub> =40 V, I <sub>B</sub> =0 V <sub>CE</sub> =50 V, I <sub>B</sub> =0		0.5	mA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =5 V, I <sub>C</sub> =0		2	mA
DC current gain	h <sub>FE(1)</sub>	V <sub>CE</sub> = 3V, I <sub>C</sub> =0.5A	1000		
	h <sub>FE(2)</sub>	V <sub>CE</sub> = 3V, I <sub>C</sub> =3 A	1000		
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =3A, I <sub>B</sub> =12mA I <sub>C</sub> =5 A, I <sub>B</sub> =20mA		2 4	V
Base-emitter voltage	V <sub>BE</sub>	V <sub>CE</sub> =3V, I <sub>C</sub> =3 A		2.5	V
Output Capacitance TIP125,TIP126,TIP127 TIP120,TIP121,TIP122	C <sub>ob</sub>	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=0.1MHz		300 200	pF

# Typical Characteristics

# TIP122



# TO-220-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
$\Phi$	3.735	3.935	0.147	0.155