TIP120,121,122 Darlington TRANSISTOR (NPN)

TIP125,126,127 Darlington TRANSISTOR (PNP)

TO-220C

1.BASE
2.COLLECTOR
3.EMITTER

FEATURES

- Medium Power Complementary Silicon Transistors

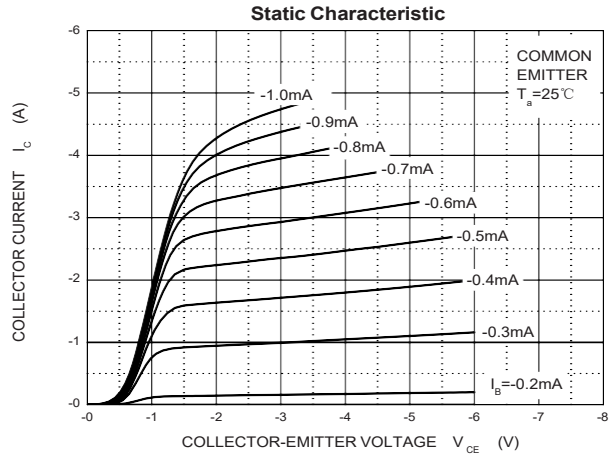
MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

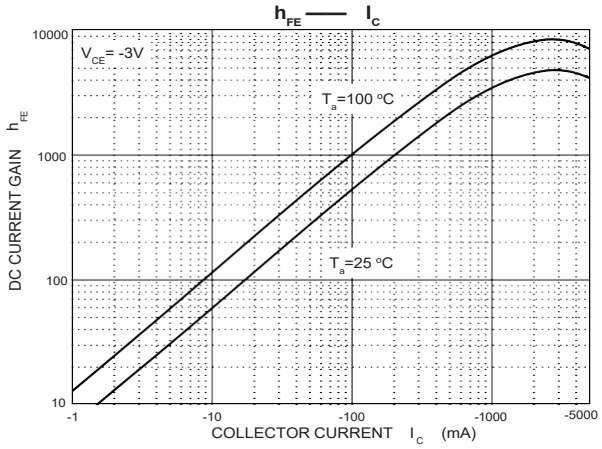
Symbol	Parameter	TIP120 TIP125	TIP121 TIP126	TIP122 TIP127	Unit
V_{CBO}	Collector-Base Voltage	60	80	100	V
V_{CEO}	Collector-Emitter Voltage	60	80	100	V
V_{EBO}	Emitter-Base Voltage	5			V
I_C	Collector Current -Continuous	5			A
P_C	Collector Power Dissipation	2			W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5			℃/W
$R_{\theta Jc}$	Thermal Resistance Junction to Case	1.92			℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55to+150			℃

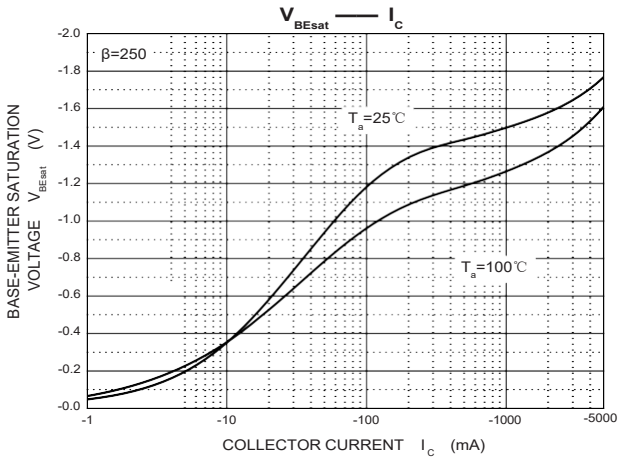
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

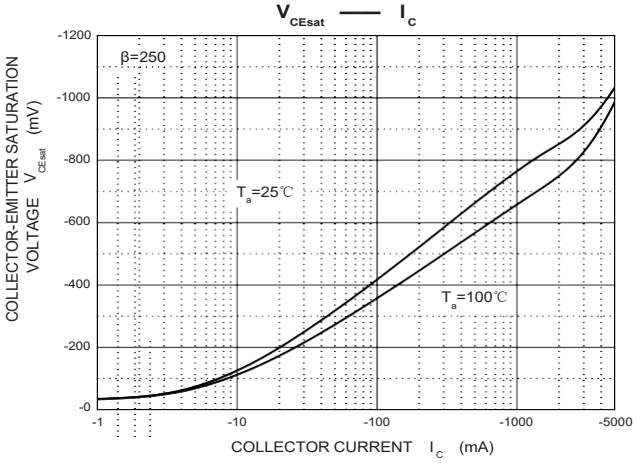
Parameter		Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	**TIP120,TIP125** **TIP121,TIP126** **TIP122,TIP127**	$V_{(BR)CBO}$	I_C= 1mA,I_E=0	60 80 100		V
Collector-emitter breakdown voltage	**TIP120,TIP125** **TIP121,TIP126** **TIP122,TIP127**	V_{CEO}(SUS)	I_C= 30mA,I_B=0	60 80 100		V
Collector cut-off current	**TIP120,TIP125** **TIP121,TIP126** **TIP122,TIP127**	I_{CBO}	V_{CB}= 60 V, I_E=0 V_{CB}= 80 V, I_E=0 V_{CB}= 100V, I_E=0		0.2	mA
Collector cut-off current	**TIP120,TIP125** **TIP121,TIP126** **TIP122,TIP127**	I_{CEO}	V_{CE}=30 V, I_B=0 V_{CE}=40 V, I_B=0 V_{CE}=50 V, I_B=0		0.5	mA
Emitter cut-off current		I_{EBO}	V_{EB}=5 V, I_C=0		2	mA
DC current gain		$h_{FE(1)}$	V_{CE}= 3V, I_C=0.5A	1000		
		$h_{FE(2)}$	V_{CE}= 3V, I_C=3 A	1000	12000	
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_C=3A,I_B=12mA I_C=5 A,I_B=20mA		2 4	V
Base-emitter voltage		V_{BE}	V_{CE}=3V, I_C=3 A		2.5	V
Output Capacitance	**TIP125,TIP126,TIP127** **TIP120,TIP121,TIP122**	C_{ob}	V_{CB}=10V, I_E=0,f=0.1MHz		300 200	pF

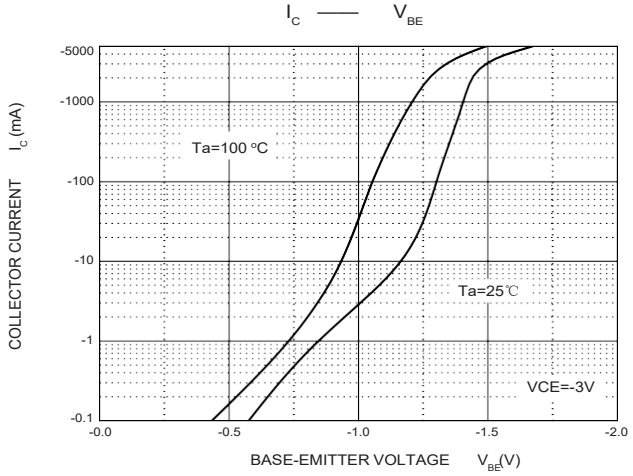
TIP127

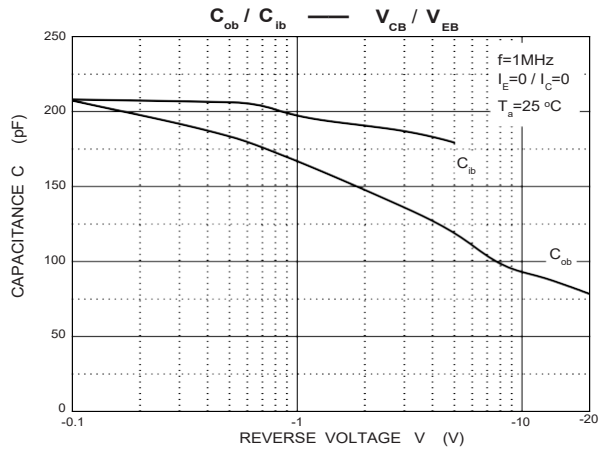

Static Characteristic
COMMON EMITTER
T_a=25℃
-1.0mA
-0.9mA
-0.8mA
-0.7mA
-0.6mA
-0.5mA
-0.4mA
-0.3mA
I_B=-0.2mA
COLLECTOR CURRENT I_C (A)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

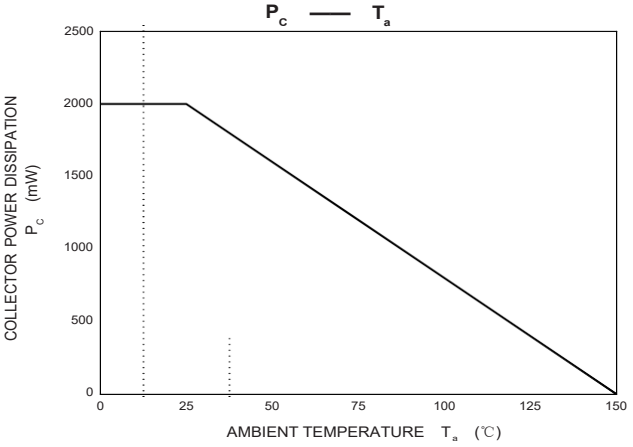

h_{FE} —— I_C
V_{CE}= -3V
T_a=100 °C
T_a=25 °C
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
β=250
T_a=25℃
T_a=100℃
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
COLLECTOR CURRENT I_C (mA)


V_{CEsat} —— I_C
β=250
T_a=25℃
T_a=100℃
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURRENT I_C (mA)


I_C —— V_{BE}
Ta=100 °C
Ta=25℃
VCE=-3V
COLLECTOR CURRENT I_C (mA)
BASE-EMITTER VOLTAGE V_{BE}(V)


C_{ob} / C_{ib} —— V_{CB} / V_{EB}
f=1MHz
I_E=0 / I_C=0
T_a=25 °C
C_{ib}
C_{ob}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE T_a (℃)