TIP147 Darlington Transistor (PNP)

TO-220C

1.BASE
2.COLLECTOR
3.EMITTER

FEATURES

- Monolithic Darlington Configuration
- Integrated Antiparallel Collector-Emitter Diode

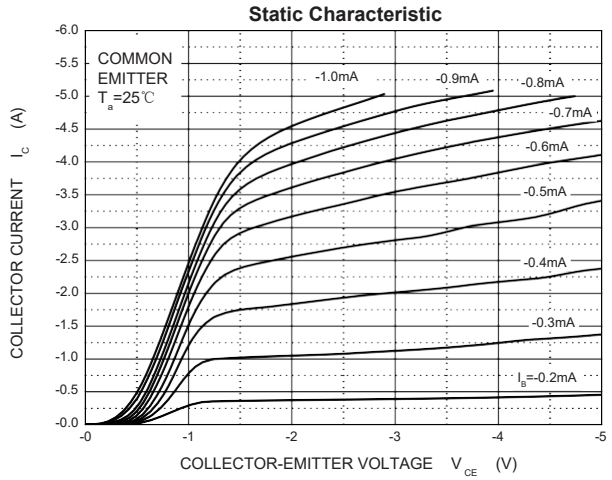
MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

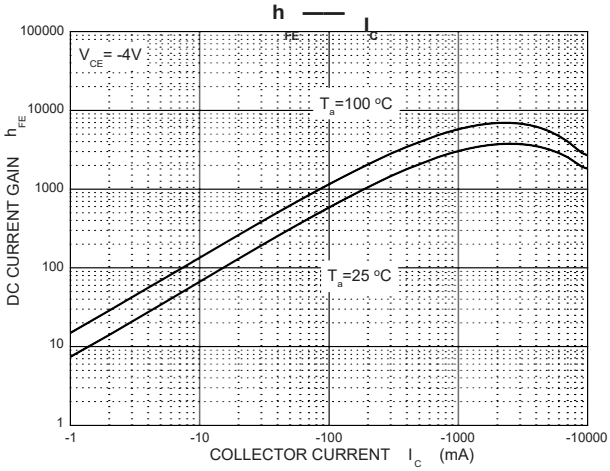
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-100	V
V_{CEO}	Collector-Emitter Voltage	-100	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-10	A
P_C	Collector Power Dissipation	2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	62.5	℃/W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	℃

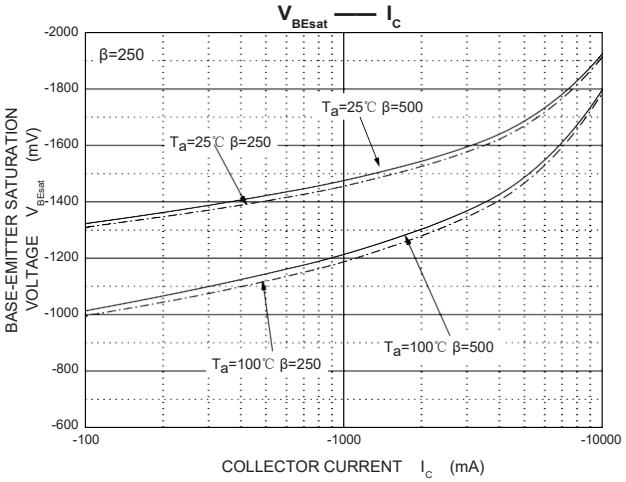
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

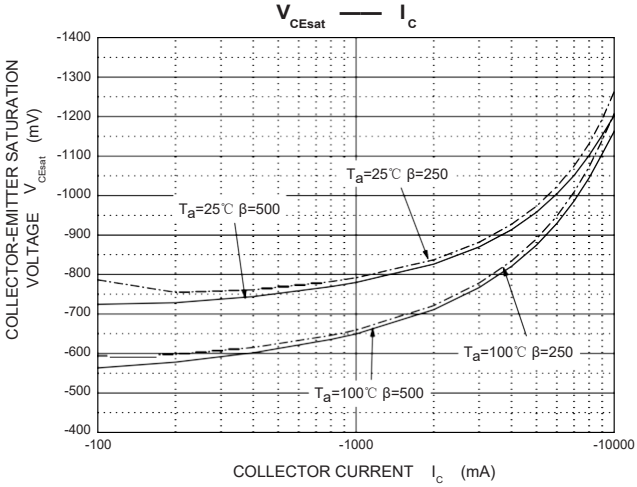
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltag	$V_{(BR)CBO}$	I_C=-1mA, I_E=0	-100			V
Collector-emitter sustaining voltage	$V_{CEO(sus)}$*	I_C=-30mA,I_B=0	-100			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-10mA,I_C=0	-5			V
Collector cut-off current	I_{CBO}	V_{CB}=-100V,I_E=0			-1	mA
Collector cut-off current	I_{CEO}	V_{CE}=-50V,I_C=0			-2	mA
Emitter cut-off current	I_{EBO}	V_{EB}=-5V,I_C=0			-2	mA
DC current gain	$h_{FE(1)}$	V_{CE}=-4V, I_C=-5A	1000		12000	
	$h_{FE(2)}$	V_{CE}=-4V, I_C=-10A	50			
Collector-emitter saturation voltage	$V_{CE(sat)(1)}$	I_C=-5A,I_B=-10mA			-2	V
	$V_{CE(sat)(2)}$	I_C=-10A,I_B=-40mA			-3	V
Base-emitter voltage	V_{BE}	V_{CE}=-4V, I_C=-10A			-3	V

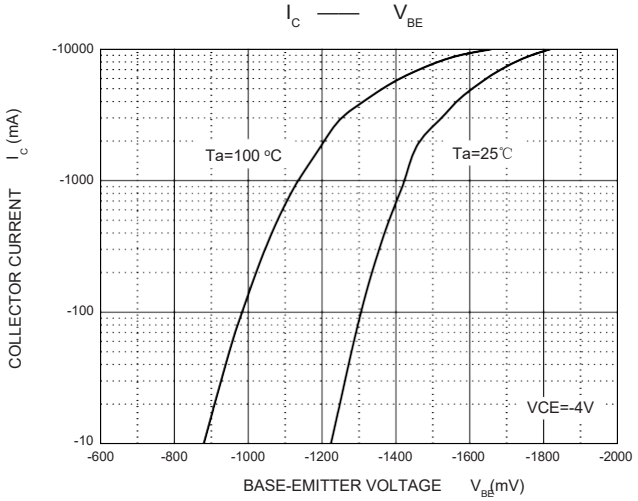
*Pulse test: pulse width ≤300μs, duty cycle≤ 2.0%.

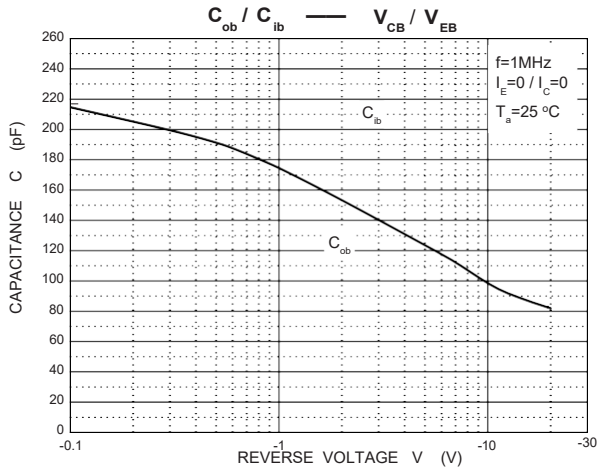

Static Characteristic
COMMON EMITTER
Ta=25℃
-1.0mA
-0.9mA
-0.8mA
-0.7mA
-0.6mA
-0.5mA
-0.4mA
-0.3mA
IB=-0.2mA
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)

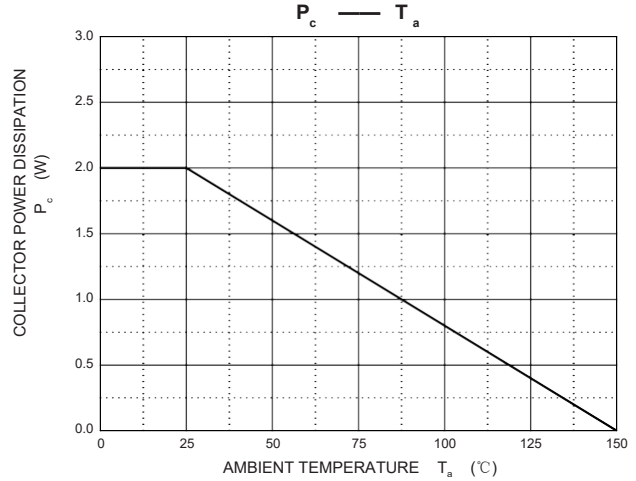

hFE —— IC
VCE= -4V
Ta=100 °C
Ta=25 °C
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (mA)


VBEsat —— IC
β=250
Ta=25℃ β=500
Ta=25℃ β=250
Ta=100℃ β=500
Ta=100℃ β=250
BASE-EMITTER SATURATION VOLTAGE VBEsat (mV)
COLLECTOR CURRENT IC (mA)


VCEsat —— IC
Ta=25℃ β=250
Ta=25℃ β=500
Ta=100℃ β=250
Ta=100℃ β=500
COLLECTOR-EMITTER SATURATION VOLTAGE VCEsat (mV)
COLLECTOR CURRENT IC (mA)


IC —— VBE
Ta=100 °C
Ta=25℃
VCE=-4V
COLLECTOR CURRENT IC (mA)
BASE-EMITTER VOLTAGE VBE(mV)


Cob / Cib —— VCB / VEB
f=1MHz
IE=0 / IC=0
Ta=25 °C
Cib
Cob
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


Pc —— Ta
COLLECTOR POWER DISSIPATION Pc (W)
AMBIENT TEMPERATURE Ta (℃)