TIP145F/146F/147F

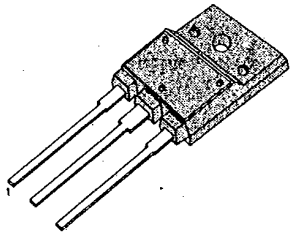
PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-31

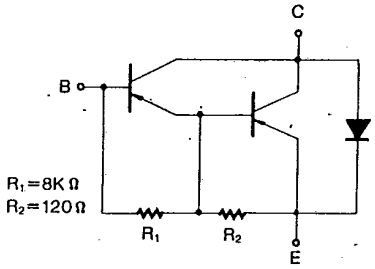
HIGH DC CURRENT GAIN
MIN h_{FE}=1000 @ V_{CE}=−4V, I_C=−5A
MONOLITHIC CONSTRUCTION WITH BUILT IN BASE-EMITTER SHUNT RESISTORS
INDUSTRIAL USE

Complementary to TIP140F/141F/142F

TO-3P(F)



1. Base 2. Collector 3. Emitter



ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}		
: TIP145F		−60	V
: TIP146F		−80	V
: TIP147F		−100	V
Collector Emitter Voltage	V_{CEO}		
: TIP145F		−60	V
: TIP146F		−80	V
: TIP147F		−100	V
Emitter-Base Voltage	V_{EBO}	−5	V
Collector Current (DC)	I_C	−10	A
Collector Current (Pulse)	I_C	−15	A
Base Current (DC)	I_B	−0.5	A
Collector Dissipation	P_C	60	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−65~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

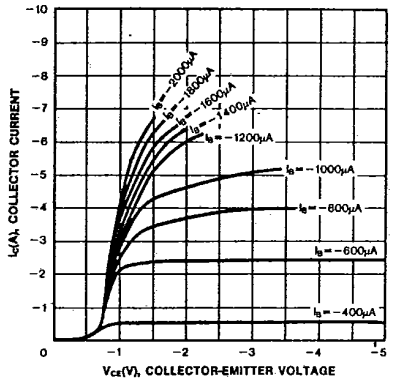
Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(SUS)}$					
: TIP145F		I_C=−30mA, I_B=0	−60			V
: TIP146F			−80			V
: TIP147F			−100			V
Collector Cutoff Current : TIP145F	I_{CEO}	V_{CE}=−30V, I_B=0			−2	mA
: TIP146F		V_{CE}=−40V, I_B=0			−2	mA
: TIP147F		V_{CE}=−50V, I_B=0			−2	mA
Collector Cutoff Current : TIP145F	I_{CBO}	V_{CB}=−60V, I_E=0			−1	mA
: TIP146F		V_{CB}=−80V, I_E=0			−1	mA
: TIP147F		V_{CB}=−100V, I_E=0			−1	mA
Emitter Cutoff Current	I_{EBO}	V_{BE}=−5V, I_C=0			−2	mA
DC Current Gain	h_{FE}	V_{CE}=−4V, I_C=−5A	1000			
		V_{CE}=−4V, I_C=−10A	500			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=−5A, I_B=−10mA			−2	V
		I_C=−10A, I_B=−40mA			−3	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=−10A, I_B=−40mA			−3.5	V
Base Emitter On Voltage	V_{BE}(on)	V_{CE}=−4V, I_C=−10A			−3	V
Delay Time	t_d	V_{CC}=−30V, I_C=−5A		0.15		μS
Rise Time	t_r	I_B=−20mA, I_{B1}=I_{B2}		0.55		μS
Storage Time	t_s			2.5		μS
Fall Time	t_f			2.5		μS

TIP145F/146F/147F

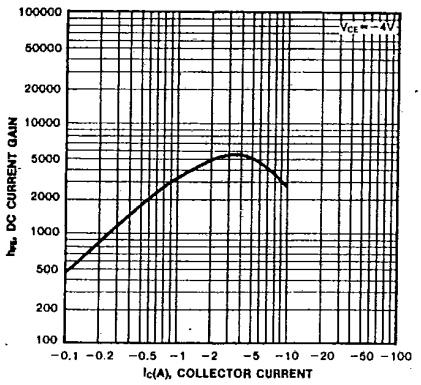
PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-31

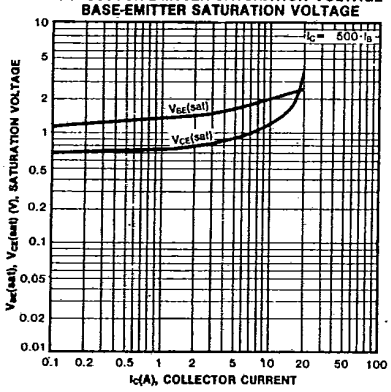
STATIC CHARACTERISTIC



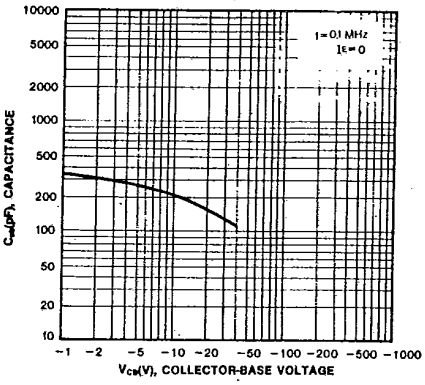
DC CURRENT GAIN



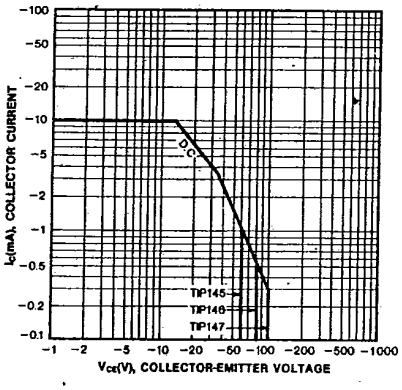
COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE



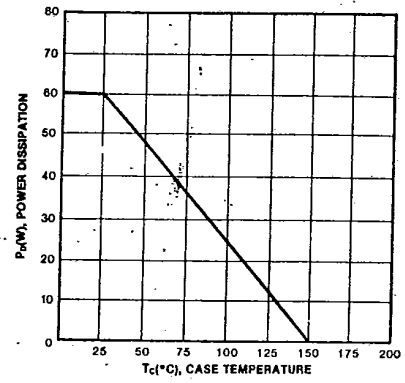
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



TIP145T/146T/147T

PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR

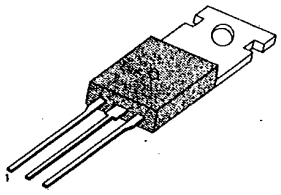
T-33-31

HIGH DC CURRENT GAIN-MIN hFE=1000 @ Vce=−4V, Ic=−5A

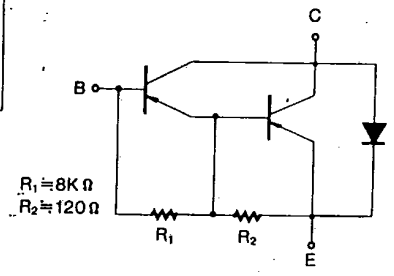
MONOLITHIC CONSTRUCTION WITH BUILT IN BASE-EMITTER SHUNT RESISTORS DINDUSTRIAL USE

Complementary to TIP140T/141T/142T

TO-220



1. Base 2. Collector 3. Emitter



ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage : TIP145T	V_{CBO}	−60	V
: TIP146T		−80	V
: TIP147T		−100	V
Collector-Emitter Voltage	V_{CEO}		
: TIP145T		−60	V
: TIP146T		−80	V
: TIP147T		−100	V
Emitter-Base Voltage	V_{EBO}	−5	V
Collector Current (DC)	I_C	−10	A
Collector Current (Pulse)	I_C	−15	A
Base Current (DC)	I_B	−0.5	A
Collector Dissipation	P_C	80	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−65~150	°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	V_{CEO}(sus)					
: TIP145T		I_C=−30mA, I_B=0	−60			V
: TIP146T			−80			V
: TIP147T			−100			V
Collector Cutoff Current : TIP145T	I_{CEO}	V_{CE}=−30V, I_B=0			−2	mA
: TIP146T		V_{CE}=−40V, I_B=0			−2	mA
: TIP147T		V_{CE}=−50V, I_B=0			−2	mA
Collector Cutoff Current : TIP145T	I_{CBO}	V_{CB}=−60V, I_E=0			−1	mA
: TIP146T		V_{CB}=−80V, I_E=0			−1	mA
: TIP147T		V_{CB}=−100V, I_E=0			−1	mA
Emitter Cutoff Current	I_{EBO}	V_{BE}=−5V, I_C=0			−2	mA
DC Current Gain	h_{FE}	V_{CE}=−4V, I_C=−5A	1000			
		V_{CE}=−4V, I_C=−10A	500			
Collector Emitter Saturation Voltage	V_{CE}(sat)	I_C=−5A, I_B=−10mA			−2	V
		I_C=−10A, I_B=−40mA			−3	V
Base Emitter Saturation Voltage	V_{BE}(sat)	I_C=−10A, I_B=−40mA			−3.5	V
Base Emitter On Voltage	V_{BE}(on)	V_{CE}=−4V, I_C=−10A			−3	V
Delay Time	td	V_{CC}=−30V, I_C=−5A		0.15		μS
Rise Time	tr	I_B=−20mA, I_{B1}=1b2		0.55		μS
Storage Time	ts			2.5		μS
Fall Time	tf			2.5		μS

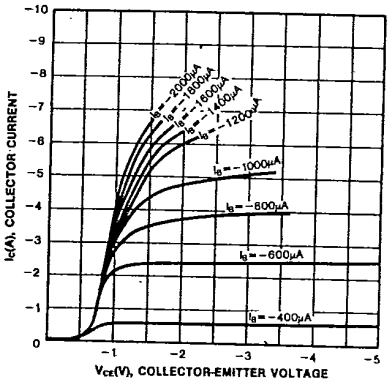
3

TIP140T/141T/142T

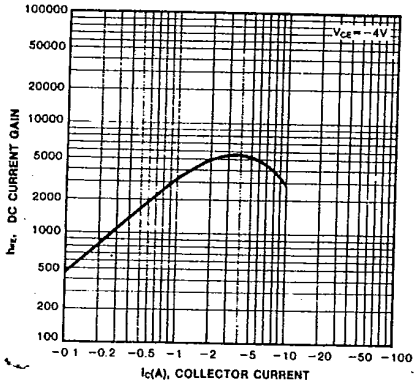
NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-31

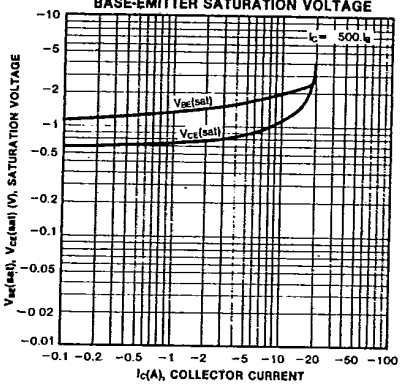
STATIC CHARACTERISTIC



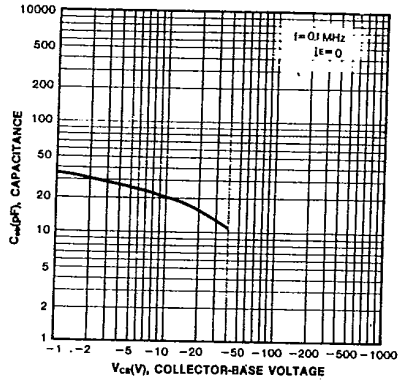
DC CURRENT GAIN



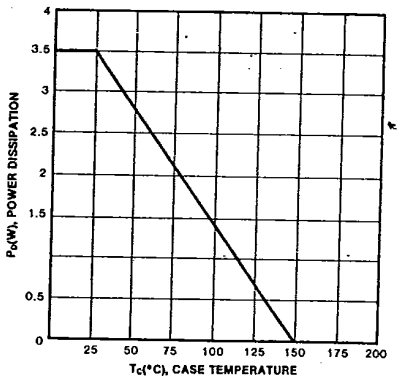
COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE



COLLECTOR OUTPUT CAPACITANCE



POWER DERATING



SAFE OPERATING AREA