

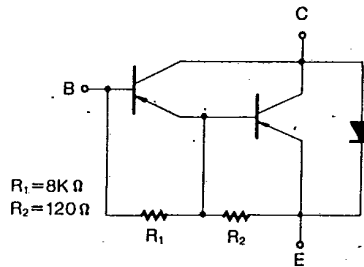
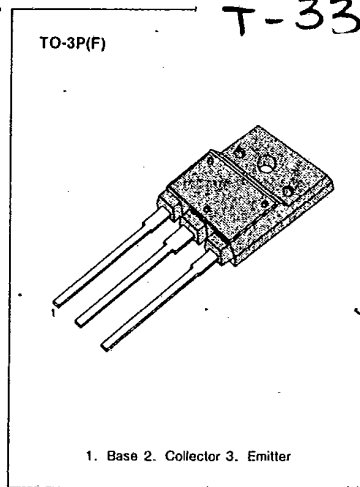
TIP145F/146F/147F PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR

HIGH DC CURRENT GAIN¹
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

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ C$)

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	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-65~150	$^\circ C$



3

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

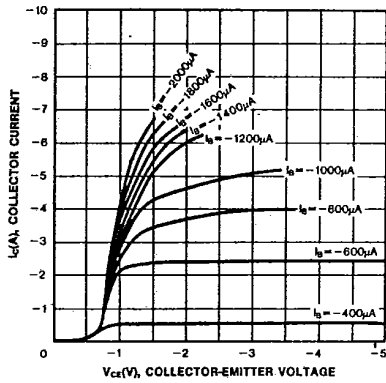
Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$					
: TIP145F		$I_C = -30mA, I_B = 0$	-60			V
: TIP146F			-80			V
: TIP147F			-100			V
Collector Cutoff Current	I_{CEO}					
: TIP145F		$V_{CE} = -30V, I_B = 0$			-2	mA
: TIP146F		$V_{CE} = -40V, I_B = 0$			-2	mA
: TIP147F		$V_{CE} = -50V, I_B = 0$			-2	mA
Collector Cutoff Current	I_{CBO}					
: TIP145F		$V_{CB} = -60V, I_E = 0$			-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}		1000			
		$V_{CE} = -4V, I_C = -5A$	500			
		$V_{CE} = -4V, I_C = -10A$				
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

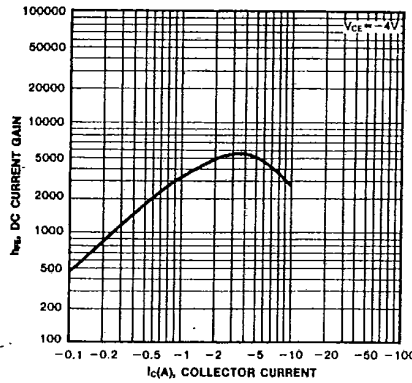
PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-31

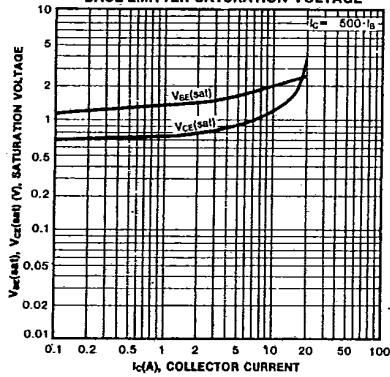
STATIC CHARACTERISTIC



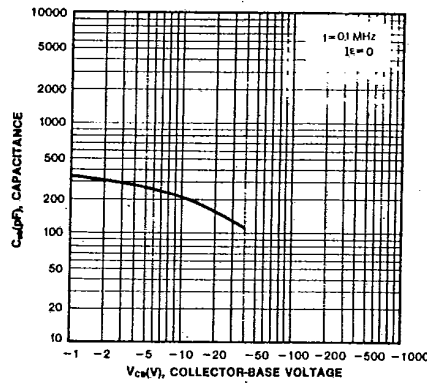
DC CURRENT GAIN



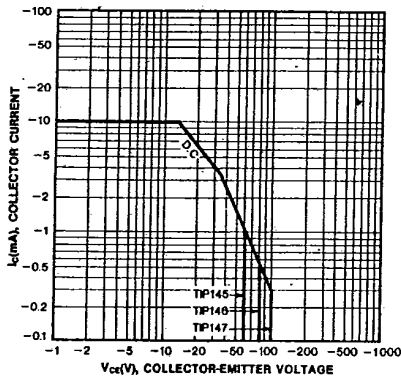
COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE



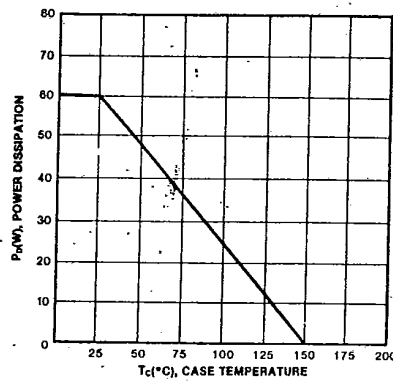
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



TIP145T/146T/147T

PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR

HIGH DC CURRENT GAIN-MIN $h_{FE}=1000$
@ $V_{CE}=-4V, I_C=-5A$

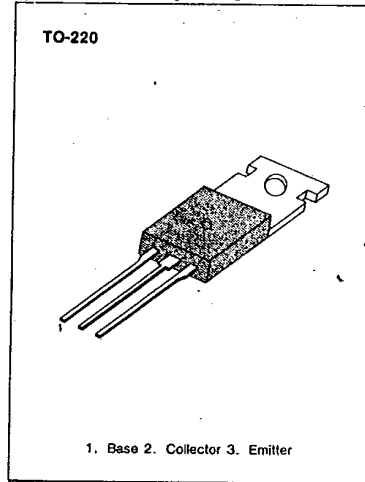
MONOLITHIC CONSTRUCTION WITH BUILT IN BASE-EMITTER
SHUNT RESISTORS INDUSTRIAL USE

Complementary to TIP140T/141T/142T

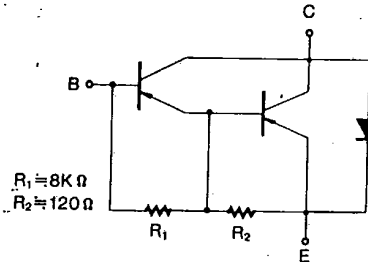
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ C$)

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	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-65~150	$^\circ C$

T-33-31



3

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ C$)

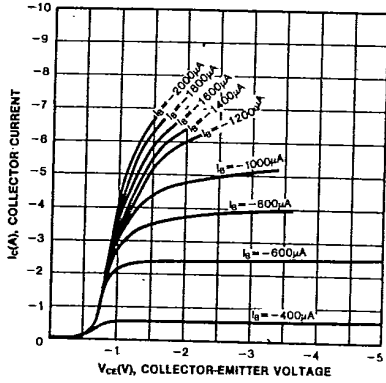
Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(SUS)}$					
: TIP145T		$I_C = -30mA, I_B = 0$	-60			V
: TIP146T			-80			V
: TIP147T			-100			V
Collector Cutoff Current	I_{CEO}	$V_{CE} = -30V, I_B = 0$			-2	mA
: TIP145T		$V_{CE} = -40V, I_B = 0$			-2	mA
: TIP146T		$V_{CE} = -50V, I_B = 0$			-2	mA
: TIP147T		$V_{CB} = -60V, I_E = 0$			-1	mA
Collector Cutoff Current	I_{CBO}	$V_{CB} = -80V, I_E = 0$			-1	mA
: TIP145T		$V_{CB} = -100V, I_E = 0$			-1	mA
: TIP146T					-2	mA
: TIP147T					-2	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	$I_B = -20mA, I_{B1} = 1b2$		0.55		μS
Storage Time	t_s			2.5		μS
Fall Time	t_f			2.5		μS



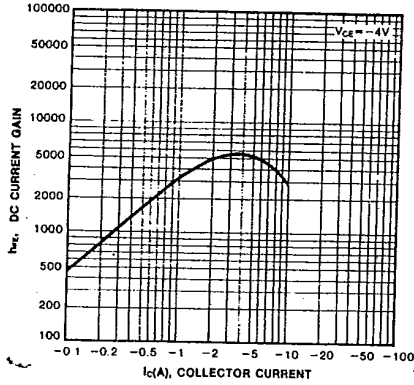
TIP140T/141T/142T

T-33-31

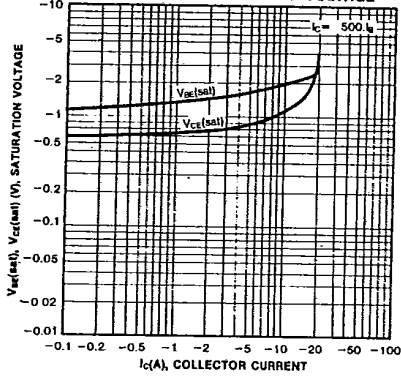
STATIC CHARACTERISTIC



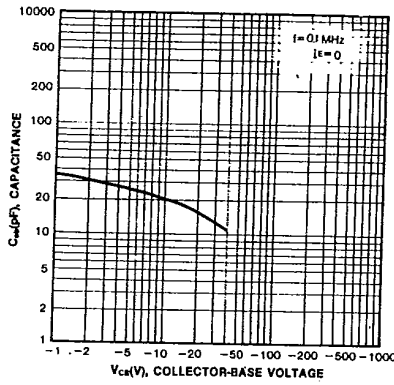
DC CURRENT GAIN



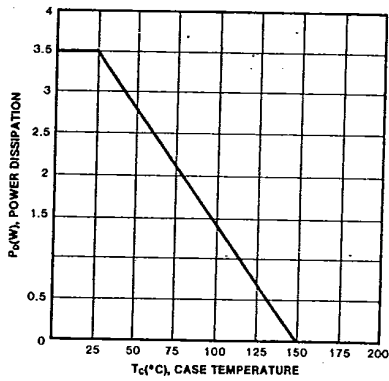
**COLLECTOR-EMITTER SATURATION VOLTAGE
 BASE-EMITTER SATURATION VOLTAGE**



COLLECTOR OUTPUT CAPACITANCE



POWER DERATING



SAFE OPERATING AREA

