

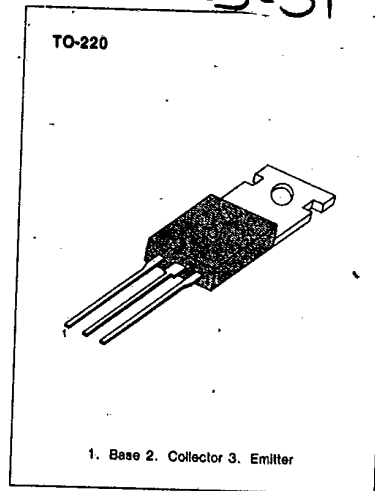
TIP126**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR****MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

- Complement to TIP121

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	-80	V
Collector-Emitter Voltage	V_{CE0}	-80	V
Emitter-Base Voltage	V_{EB0}	-5	V
Base Current	I_B	-120	mA
Collector Current (DC)	I_C	-5	A
Collector Current (Pulse)	I_C	-8	A
Collector Dissipation ($T_a = 25^\circ\text{C}$)	P_C	2	W
Collector Dissipation ($T_C = 25^\circ\text{C}$)	P_C	65	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65~150	$^\circ\text{C}$

* Refer to TIP125 for graphs

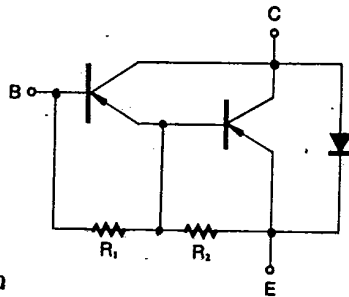


3

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Max	Unit
*Collector-Emitter Sustaining Voltage	$BV_{CE0}(\text{sus})$	$I_C = -100\text{mA}, I_B = 0$	-80		V
Collector Cutoff Current	I_{C80}	$V_{CB} = -80\text{V}, I_E = 0$		-0.2	mA
Collector Cutoff Current	I_{CE0}	$V_{CE} = -40\text{V}, I_B = 0$		-0.5	mA
Emitter Cutoff Current	I_{E80}	$V_{EB} = -5\text{V}, I_C = 0$		-2	mA
*DC Current Gain	h_{FE}	$V_{CE} = -3\text{V}, I_C = -0.5\text{A}$ $V_{CE} = -3\text{V}, I_C = -3\text{A}$	1000 1000		
*Collector Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C = -3\text{A}, I_B = -12\text{mA}$ $I_C = -5\text{A}, I_B = -20\text{mA}$		-2 -4	V
*Base-Emitter On Voltage	$V_{BE}(\text{on})$	$V_{CE} = -3\text{V}, I_C = -3\text{A}$		-2.5	V
Collector Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0, f = 0.1\text{MHz}$		300	pF

* Pulse test : $PW \leq 300\mu\text{s}$, duty cycle $\leq 2\%$



$R_1 = 8\text{K}\Omega$
 $R_2 = 120\Omega$

PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR

TIP127

T-33-31

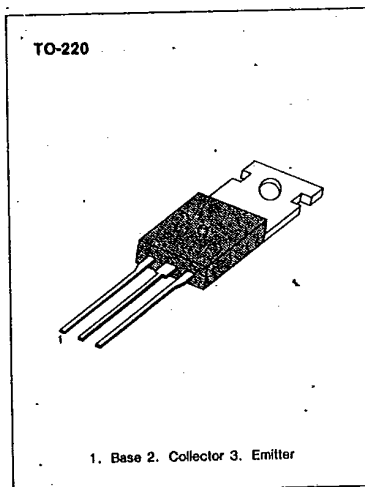
MEDIUM POWER LINEAR
SWITCHING APPLICATIONS

- Complement to TIP122

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

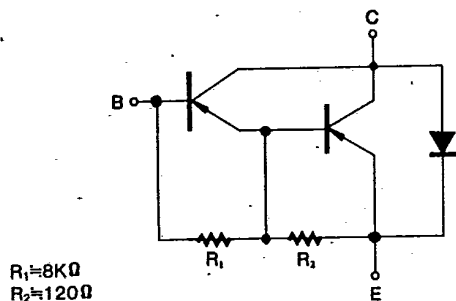
Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	-100	V
Collector-Emitter Voltage	V_{CE0}	-100	V
Emitter-Base Voltage	V_{EB0}	-5	V
Base Current	I_B	-120	mA
Collector Current (DC)	I_C	-8	A
Collector Current (Pulse)	I_C	-8	A
Collector Dissipation ($T_a = 25^\circ\text{C}$)	P_C	2	W
Collector Dissipation ($T_C = 25^\circ\text{C}$)	P_C	65	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65~150	$^\circ\text{C}$

- Refer to TIP125 for graphs

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector-Emitter Sustaining Voltage	$BV_{CE0} \text{ (SUS)}$	$I_C = -100\text{mA}, I_B = 0$	-100		V
Collector Cutoff Current	I_{C0}	$V_{CB} = -100\text{V}, I_E = 0$		-0.2	mA
Collector Cutoff Current	I_{CE0}	$V_{CE} = -50\text{V}, I_B = 0$		-0.5	mA
Emitter Cutoff Current	I_{E0}	$V_{EB} = -5\text{V}, I_C = 0$		-2	mA
DC Current Gain	h_{FE}	$V_{CE} = -3\text{V}, I_C = -0.5\text{A}$	1000		
		$V_{CE} = -3\text{V}, I_C = -3\text{A}$	1000		
Collector Emitter Saturation Voltage	$V_{CE} \text{ (sat)}$	$I_C = -3\text{A}, I_B = -12\text{mA}$		-2	V
		$I_C = -5\text{A}, I_B = -20\text{mA}$		-4	V
Base-Emitter On Voltage	$V_{BE} \text{ (on)}$	$V_{CE} = -3\text{V}, I_C = -3\text{A}$		-2.5	V
Collector Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0, f = 0.1\text{MHz}$		300	pF

- Pulse test : $PW \leq 300\mu\text{s}$, duty cycle $\leq 2\%$



TIP140F/141F/142F

SILICON DARLINGTON TRANSISTOR

SAMSUNG SEMICONDUCTOR INC

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

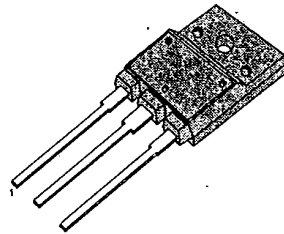
Complementary to TIP145F/146F/147F

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

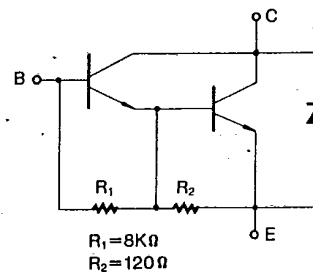
Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}		
: TIP140F		60	V
: TIP141F		80	V
: TIP142F		100	V
Collector Emitter Voltage	V_{CEO}		
: TIP140F		60	V
: TIP141F		80	V
: TIP142F		100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current (DC)	I_C	10	A
Collector Current (Pulse)	I_C	15	A
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	$^\circ C$

TO-3P(F)

T-33-29



1. Base 2. Collector 3. Emitter

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

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C=30mA$, $I_B=0$	60 80 100			V
: TIP140F						V
: TIP141F						V
: TIP142F						V
Collector Cutoff Current	I_{CEO}	$V_{CE}=30V$, $I_B=0$ $V_{CE}=40V$, $I_B=0$ $V_{CE}=50V$, $I_B=0$			2 2 2	mA
: TIP140F						mA
: TIP141F						mA
: TIP142F						mA
Collector Cutoff Current	I_{CBO}	$V_{CB}=60V$, $I_E=0$ $V_{CB}=80V$, $I_E=0$ $V_{CB}=100V$, $I_E=0$			1 1 1	mA
: TIP140F						mA
: TIP141F						mA
: TIP142F						mA
Emitter Cutoff Current	I_{EBO}	$V_{BE}=5V$, $I_C=0$			2	mA
DC Current Gain	h_{FE}	$V_{CE}=4V$, $I_C=5A$ $V_{CE}=4V$, $I_C=10A$	1000 500			
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=5A$, $I_B=10mA$ $I_C=10A$, $I_B=40mA$			2 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



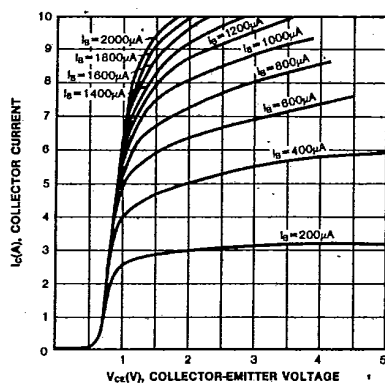
SAMSUNG SEMICONDUCTOR

NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

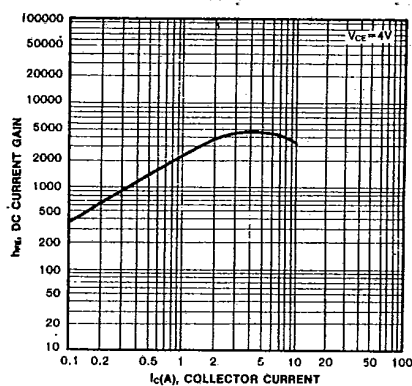
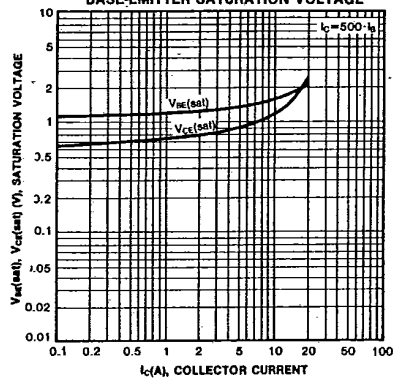
SAMSUNG SEMICONDUCTOR INC

T-33-29

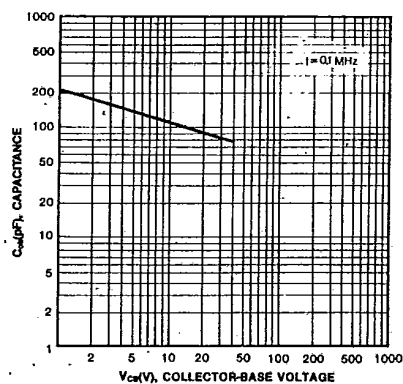
STATIC CHARACTERISTIC



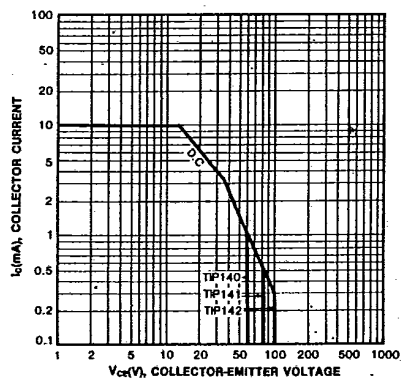
DC CURRENT GAIN

COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE

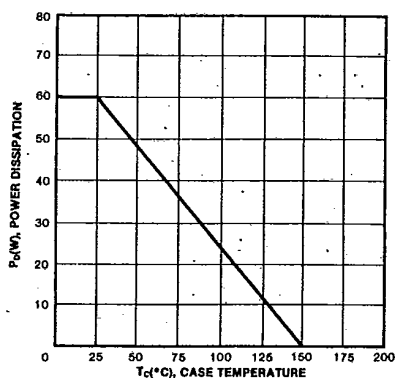
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



SAMSUNG SEMICONDUCTOR

NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

TIP140T/141T/142T

SAMSUNG SEMICONDUCTOR INC

T-33-29

HIGH DC CURRENT GAIN-MIN $h_{FE}=1000$

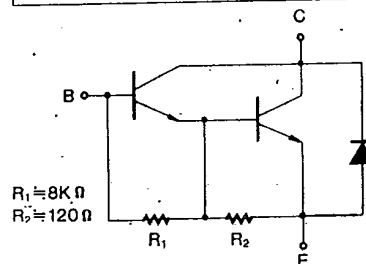
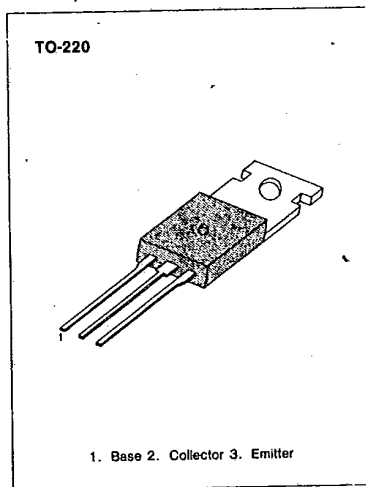
@ $V_{CE}=4V$, $I_C=5A$

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

Complementary to TIP145T/146T/147T

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage : TIP140T	V_{CBO}	60	V
: TIP141T		80	V
: TIP142T		100	V
Collector-Emitter Voltage	V_{CEO}		
: TIP140T		60	V
: TIP141T		80	V
: TIP142T		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	$^{\circ}C$



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

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C=30mA$, $I_B=0$	60			V
: TIP140T			80			V
: TIP141T			100			V
Collector Cutoff Current	I_{CEO}	$V_{CE}=30V$, $I_B=0$			2	mA
: TIP140T		$V_{CE}=40V$, $I_B=0$			2	mA
: TIP141T		$V_{CE}=50V$, $I_B=0$			2	mA
Collector Cutoff Current	I_{CBO}	$V_{CB}=60V$, $I_E=0$			1	mA
: TIP140T		$V_{CB}=80V$, $I_E=0$			1	mA
: TIP141T		$V_{CB}=100V$, $I_E=0$			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



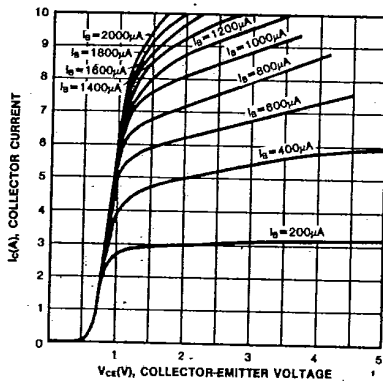
SAMSUNG SEMICONDUCTOR

TIP140T/141T/142T

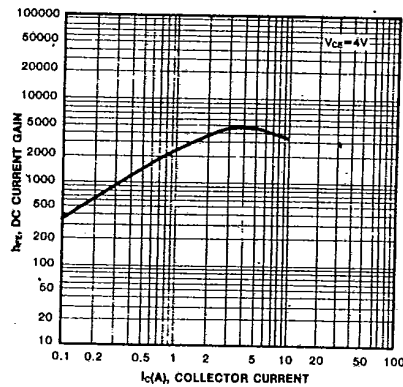
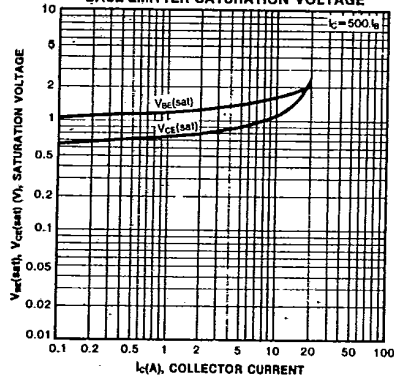
NPN EPITAXIAL SILICON
DARLINGTON TRANSISTOR

T-33-29

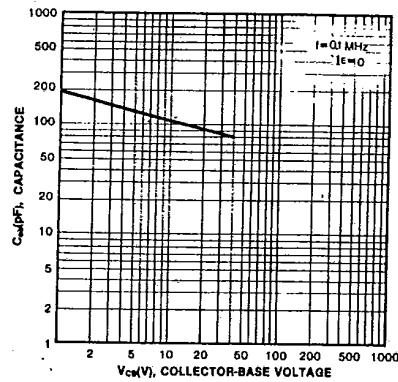
STATIC CHARACTERISTIC



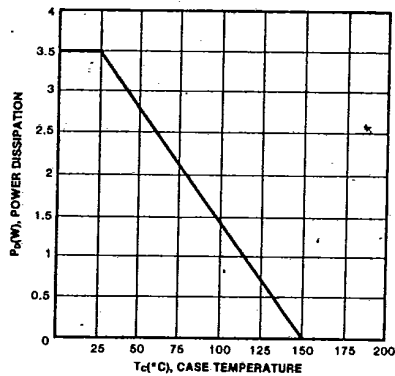
DC CURRENT GAIN

COLLECTOR-EMITTER SATURATION VOLTAGE
BASE-EMITTER SATURATION VOLTAGE

COLLECTOR OUTPUT CAPACITANCE



POWER DERATING



SAFE OPERATING AREA

