

**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

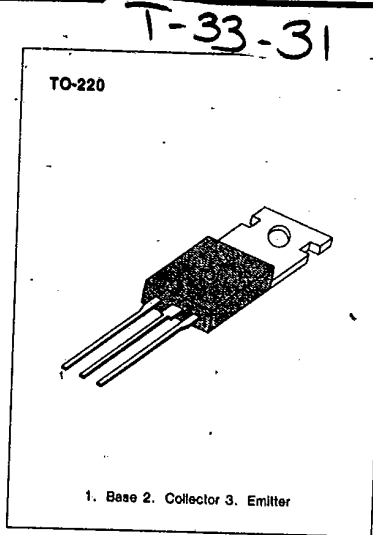
TIP126

**MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

• Complement to TIP121

ABSOLUTE MAXIMUM RATINGS (T_a = 25°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°C)	P _C	2	W
Collector Dissipation (T _C = 25°C)	P _C	65	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-65~150	°C



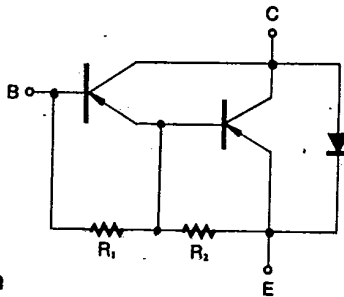
3

* Refer to TIP125 for graphs

ELECTRICAL CHARACTERISTICS (T_C = 25°C)

Characteristic	Symbol	Test Condition	Min	Max	Unit
*Collector-Emitter Sustaining Voltage	BV _{CEO} (SUS)	I _C = -100mA, I _B = 0	-80		V
Collector Cutoff Current	I _{CB0}	V _{CB} = -80V, I _E = 0		-0.2	mA
Collector Cutoff Current	I _{CE0}	V _{CE} = -40V, I _B = 0		-0.5	mA
Emitter Cutoff Current	I _{EB0}	V _{EB} = -5V, I _C = 0		-2	mA
*DC Current Gain	h _{FE}	V _{CE} = -3V, I _C = -0.5A	1000		
		V _{CE} = -3V, I _C = -3A	1000		
*Collector Emitter Saturation Voltage	V _{CE} (sat)	I _C = -3A, I _B = -12mA		-2	V
		I _C = -5A, I _B = -20mA		-4	V
*Base-Emitter On Voltage	V _{BE} (on)	V _{CE} = -3V, I _C = -3A		-2.5	V
Collector Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = 0, f = 0.1MHz		300	pF

* Pulse test : PW ≤ 300μs, duty cycle ≤ 2%



R₁ = 8KΩ
R₂ = 120Ω

**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

TIP127

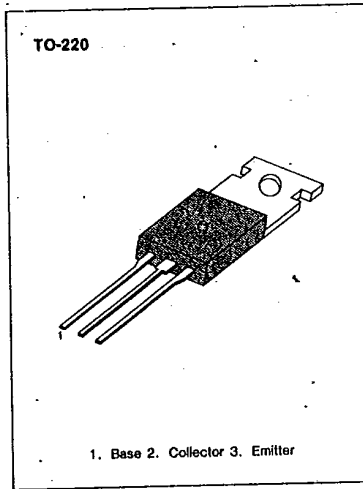
T-33-31

**MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

• Complement to TIP122

ABSOLUTE MAXIMUM RATINGS (T_a = 25°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°C)	P _C	2	W
Collector Dissipation (T _C = 25°C)	P _C	65	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-65~150	°C

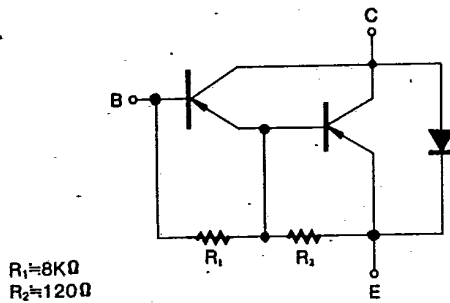


• Refer to TIP125 for graphs

ELECTRICAL CHARACTERISTICS (T_C = 25°C)

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector-Emitter Sustaining Voltage	BV _{CEO} (sus)	I _C = -100mA, I _B = 0	-100		V
Collector Cutoff Current	I _{CB0}	V _{CB} = -100V, I _E = 0		-0.2	mA
Collector Cutoff Current	I _{CE0}	V _{CE} = -50V, I _B = 0		-0.5	mA
Emitter Cutoff Current	I _{EB0}	V _{EB} = -5V, I _C = 0		-2	mA
DC Current Gain	h _{FE}	V _{CE} = -3V, I _C = -0.5A	1000		
		V _{CE} = -3V, I _C = -3A	1000		
Collector Emitter Saturation Voltage	V _{CE(sat)}	I _C = -3A, I _B = -12mA		-2	V
		I _C = -5A, I _B = -20mA		-4	V
Base-Emitter On Voltage	V _{BE(on)}	V _{CE} = -3V, I _C = -3A		-2.5	V
Collector Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = 0, f = 0.1MHz		300	pF

• Pulse test : PW ≤ 300μs, duty cycle ≤ 2%



**PN EPITAXIAL
SILICON DARLINGTON TRANSISTOR**

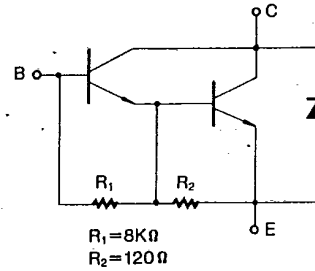
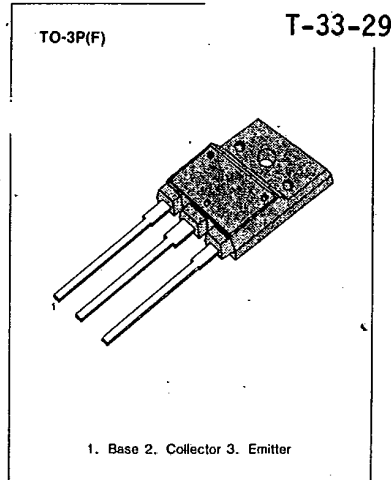
SAMSUNG SEMICONDUCTOR INC

**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	$^\circ C$



3

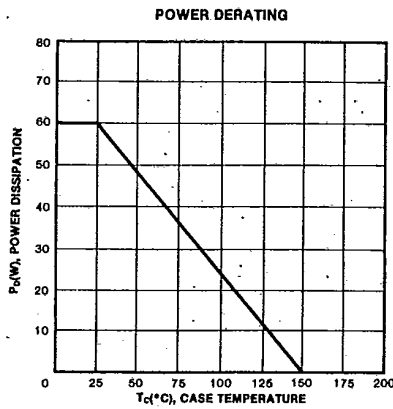
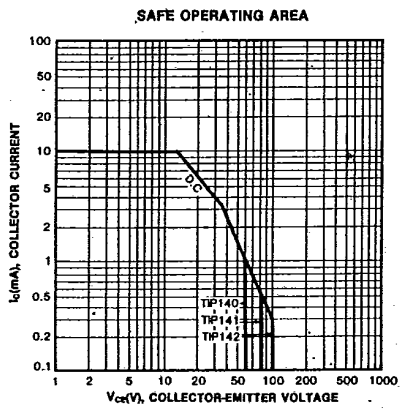
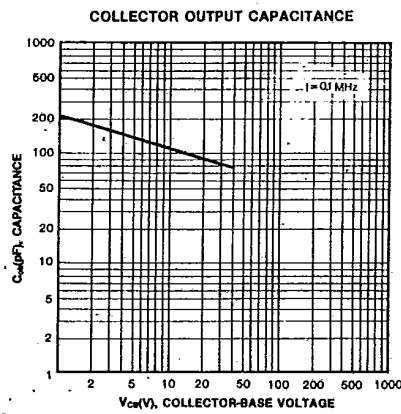
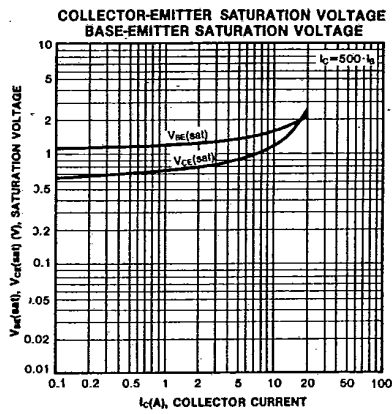
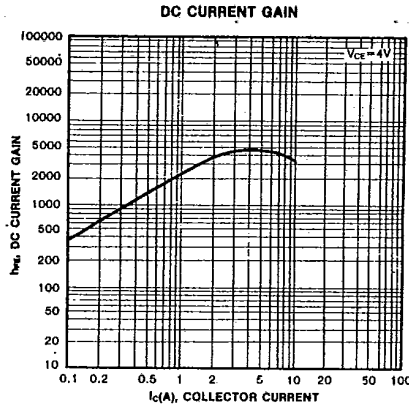
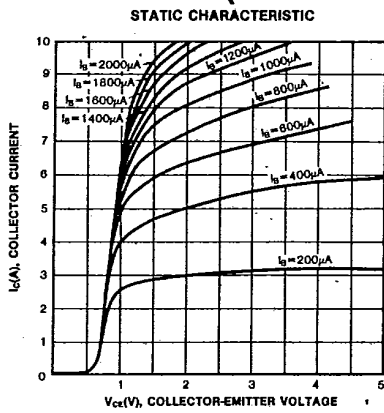
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

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

NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

SAMSUNG SEMICONDUCTOR INC

T-33-29



NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

TIP140T/141T/142T

SAMSUNG SEMICONDUCTOR INC

T-33-29

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

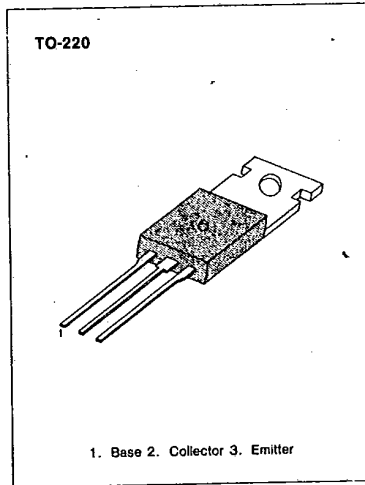
@ $V_{CE}=4V, I_C=5A$

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

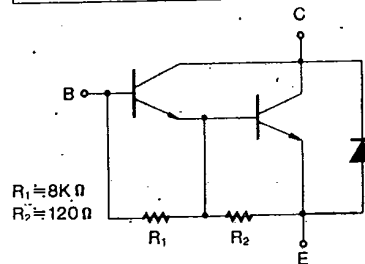
Complementary to TIP145T/146T/147T

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	$^\circ C$



3



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
: TIP142T						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
: TIP142T		$V_{CE}=60V, I_E=0$			1	mA
Collector Cutoff Current	I_{CBO}	$V_{CB}=80V, I_E=0$			1	mA
: TIP140T		$V_{CB}=100V, I_E=0$			1	mA
: TIP141T					1	mA
: TIP142T					2	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE}=5V, I_C=0$				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

TIP140T/141T/142T

NPN EPITAXIAL SILICON
DARLINGTON TRANSISTOR

T-33-29

