

**NPN EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

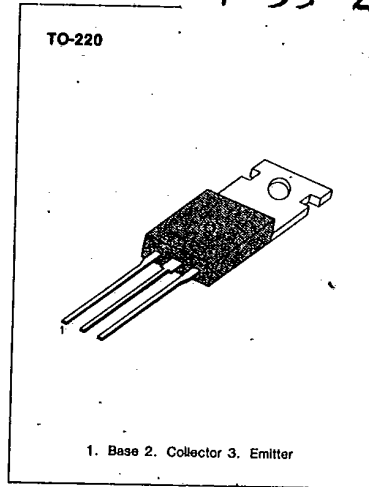
TIP120

**MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

• Complement to TIP125

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	60	V
Collector-Emitter Voltage	V _{CEO}	60	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current (DC)	I _C	5	A
Collector Current (Pulse)	I _c	8	A
Base Current	I _B	120	mA
Collector Dissipation (T _c = 25°C)	P _C	65	W
Collector Dissipation (T _a = 25°C)	P _c	2	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-65~150	°C

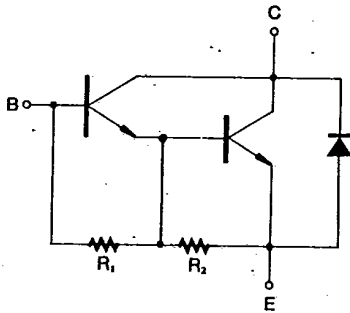


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ELECTRICAL CHARACTERISTICS (T_c = 25°C)

Characteristic	Symbol	Test Condition	Min	Max	Unit
*Collector Emitter Sustaining Voltage	BV _{CEO} (sus)	I _C = 100mA, I _B = 0	60		V
Collector Cutoff Current	I _{CEO}	V _{CE} = 30V, I _B = 0		0.5	mA
Collector Cutoff Current	I _{CB0}	V _{CB} = 60V, I _E = 0		0.2	mA
Emitter Cutoff Current	I _{EBO}	V _{EB} = 5V, I _C = 0		2.0	mA
*DC Current Gain	h _{FE}	V _{CE} = 3V, I _C = 0.5A V _{CE} = 3V, I _C = 3A	1000 1000		
*Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _C = 3A, I _B = 12mA I _C = 5A, I _B = 20mA		2.0 4.0	V
*Base-Emitter On Voltage	V _{BE} (on)	V _{CE} = 3V, I _C = 3A		2.5	V
Output Capacitance	C _{ob}	V _{CB} = 10V, I _E = 0, f = 0.1MHz		200	pF

*Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%

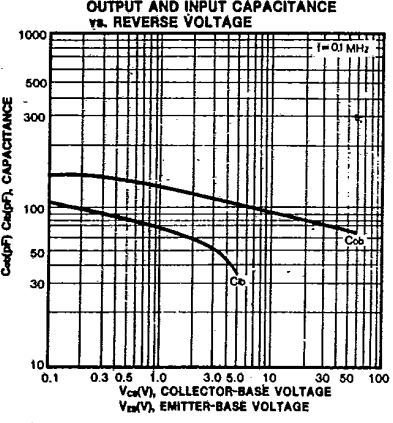
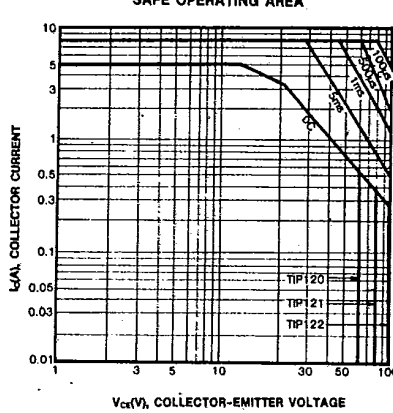
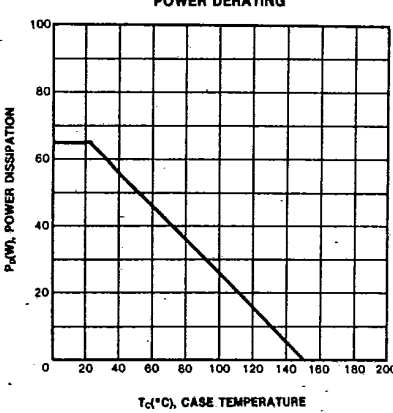
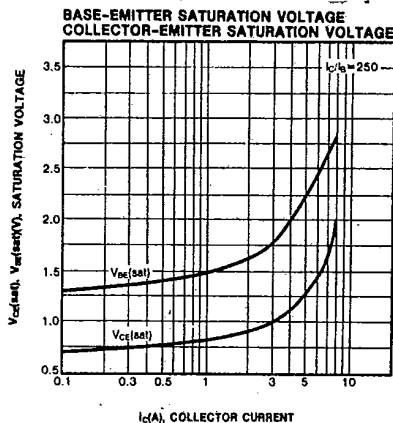
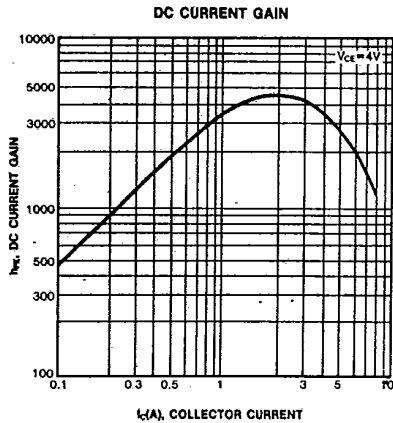


R₁ ≈ 8kΩ
R₂ ≈ 120Ω

**NPN EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

TIP120

T-33-29



**NPN EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

TIP121

T-33-29

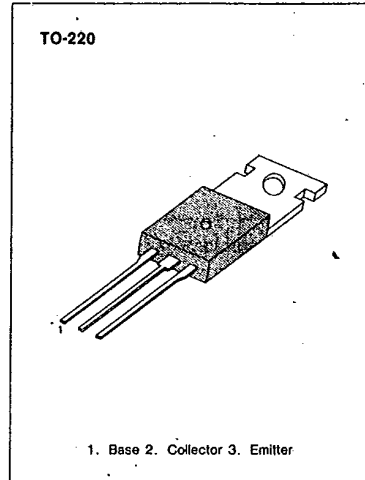
**MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

- Complement to TIP126

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	80	V
Collector-Emitter Voltage	V _{CEO}	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

* Refer to TIP120 for graphs

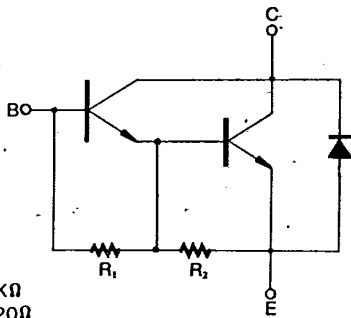


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ELECTRICAL CHARACTERISTICS (T_C = 25°C)

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 _{CEO}	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 _C = 0, f = 0.1MHz		200	pF

* Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%



R₁ = 8KΩ
R₂ = 120Ω

TIP122

**NPN EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

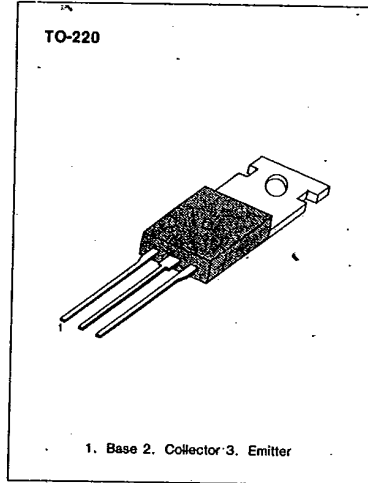
T-33-29

**MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

• Complement to TIP127

ABSOLUTE MAXIMUM RATINGS (T_C=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	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

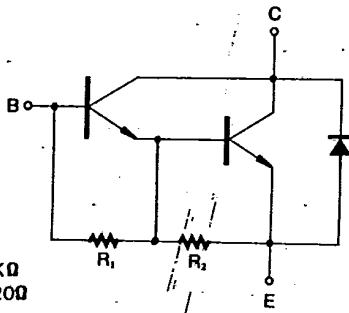


• Refer to TIP120 for graphs

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		200	pF

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



**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

TIP125

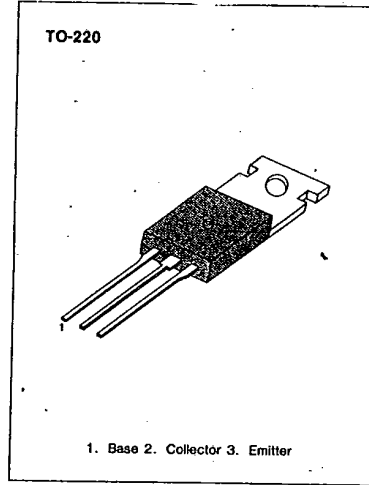
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**MEDIUM POWER LINEAR
SWITCHING APPLICATIONS**

- Complement to TIP120

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	-60	V
Collector-Emitter Voltage	V _{CE0}	-60	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

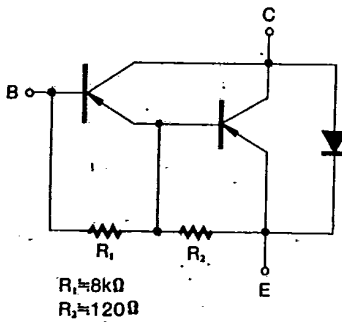


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ELECTRICAL CHARACTERISTICS (T_C=25°C)

Characteristic	Symbol	Test Condition	Min	Max	Unit
* Collector-Emitter Sustaining Voltage	BV _{CEO} (sus)	I _C = -100mA, I _B = 0	-60		V
Collector Cutoff Current	I _{CB0}	V _{CB} = -60V, I _E = 0		-0.2	mA
Collector Cutoff Current	I _{CE0}	V _{CE} = -30V, I _B = 0		-0.5	mA
Emitter Cutoff Current	I _{EB0}	V _{BE} = -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
Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = 0, f = 0.1MHz		300	pF

* Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%



**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

TIP125

T-33-31

