

Silicon NPN Darlington Power Transistors

TIP120/121/122

DESCRIPTION

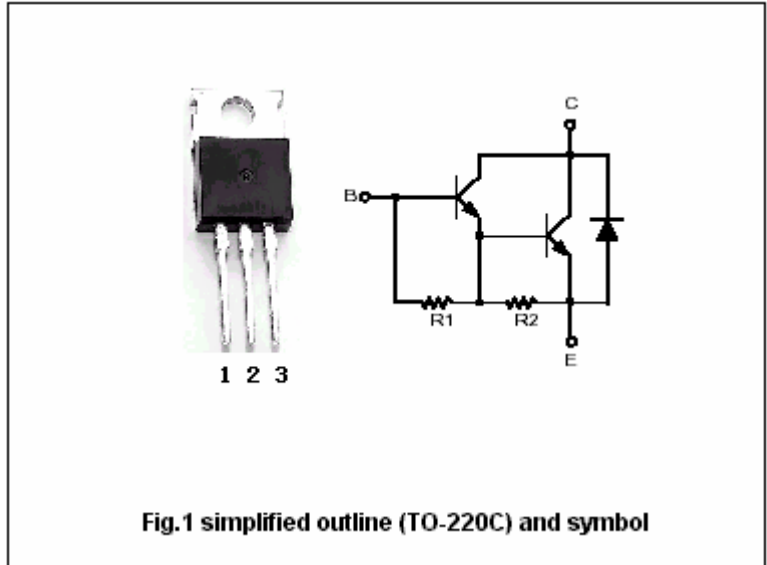
- With TO-220C package
- DARLINGTON
- High DC current gain
- Low collector saturation voltage
- Complement to type TIP125/126/127

APPLICATIONS

- Designed for general-purpose amplifier and low-speed switching applications.

PINNING

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	TIP120	60	V
		TIP121	80	
		TIP122	100	
V_{CEO}	Collector-emitter voltage	TIP120	60	V
		TIP121	80	
		TIP122	100	
V_{EBO}	Emitter-base voltage	Open collector	5	V
I_C	Collector current-DC		5	A
I_{CM}	Collector current-Pulse		8	A
I_B	Base current-DC		120	mA
P_C	Collector power dissipation	$T_c=25^\circ\text{C}$	65	W
		$T_a=25^\circ\text{C}$	2	
T_j	Junction temperature		150	$^\circ\text{C}$
T_{stg}	Storage temperature		-65~150	$^\circ\text{C}$

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CHARACTERISTICS

T_j=25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT	
V _{CE(SUS)}	Collector-emitter sustaining voltage	TIP120	I _C =0.1A, I _B =0	60			V
		TIP121		80			
		TIP122		100			
V _{CE(sat)-1}	Collector-emitter saturation voltage	I _C =3A, I _B =12mA			2.0	V	
V _{CE(sat)-2}	Collector-emitter saturation voltage	I _C =5A, I _B =20mA			4.0	V	
V _{BE}	Base-emitter on voltage	I _C =3.0A ; V _{CE} =3V			2.5	V	
I _{CBO}	Collector cut-off current	TIP120	V _{CB} =60V, I _E =0			0.2	mA
		TIP121		V _{CB} =80V, I _E =0			
		TIP122		V _{CB} =100V, I _E =0			
I _{CEO}	Collector cut-off current	TIP120	V _{CE} =30V, I _B =0			0.5	mA
		TIP121		V _{CE} =40V, I _B =0			
		TIP122		V _{CE} =50V, I _B =0			
I _{EBO}	Emitter cut-off current	V _{EB} =5V; I _C =0			2	mA	
h _{FE-1}	DC current gain	I _C =0.5A ; V _{CE} =3V	1000				
h _{FE-2}	DC current gain	I _C =3.0A ; V _{CE} =3V	1000				
C _{ob}	Output capacitance	I _E =0 ; V _{CB} =10V, f=0.1MHz			200	pF	

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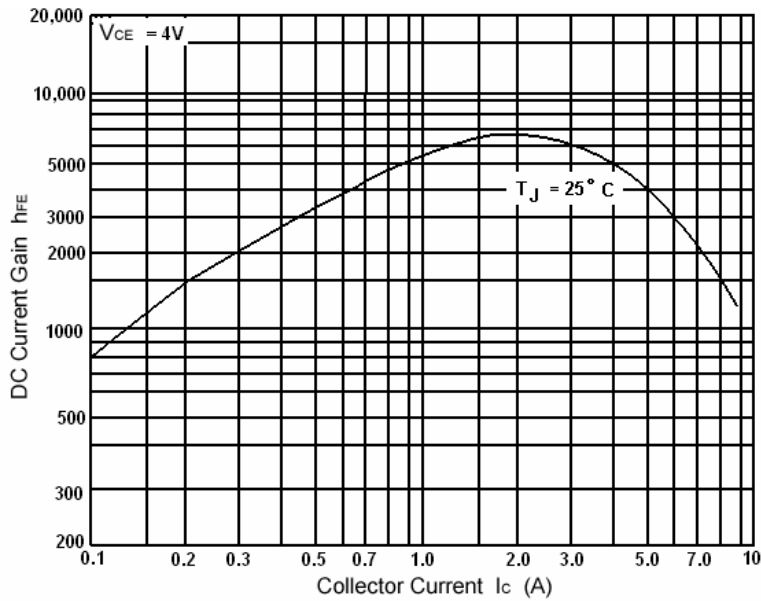


Fig.3 DC current Gain

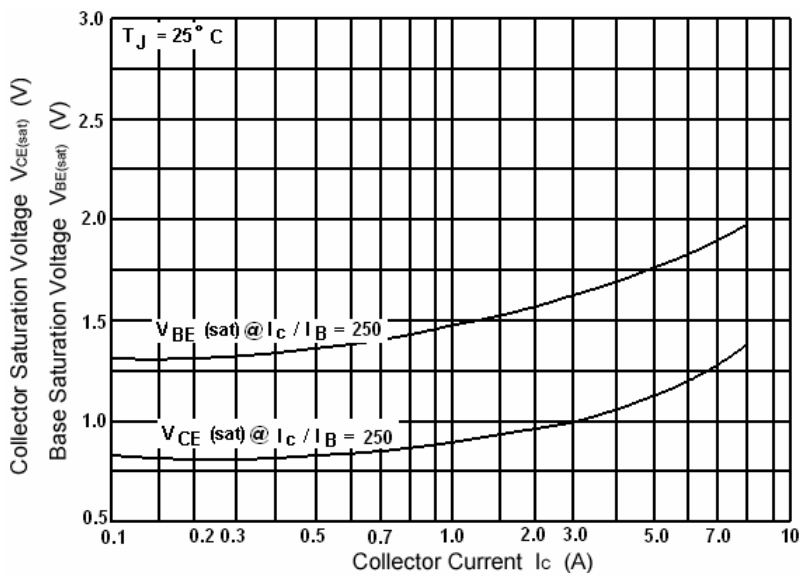


Fig.4 Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

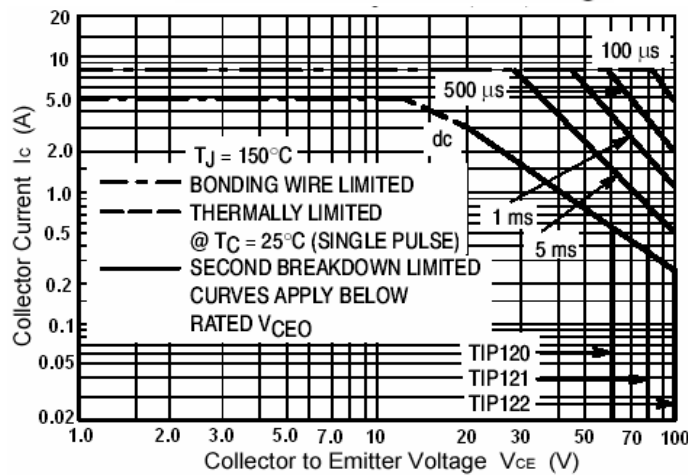


Fig.5 Safe Operating Area