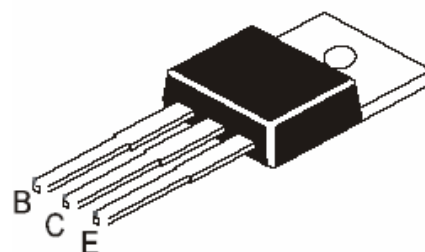


Darlington Power Transistors (NPN)

Features

- Designed for general-purpose amplifier and low speed switching applications
- RoHS Compliant



TO-220



Mechanical Data

Case:	TO-220, Plastic Package
Terminals:	Solderable per MIL-STD-202, Method 208
Weight:	0.08 ounces, 2.24 grams

Maximum Ratings ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description	TIP120	TIP121	TIP122	Unit
V_{CB0}	Collector-Base Voltage	60	80	100	V
V_{CEO}	Collector-Emitter Voltage	60	80	100	V
V_{EBO}	Emitter-Base Voltage	5.0			V
I_C	Collector Current Continuous	5.0			A
I_{CM}	Collector Current Peak	8.0			A
I_B	Base Current	120			mA
P_D	Power Dissipation upto $T_C=25^{\circ}C$	65			W
	Power Dissipation Derate above $T_C=25^{\circ}C$	0.52			W/ $^{\circ}C$
	Power Dissipation upto $T_A=25^{\circ}C$	2.0			W
	Power Dissipation Derate above $T_A=25^{\circ}C$	16			mW/ $^{\circ}C$
R_{θJA}	Thermal Resistance from Junction to Ambient in Free Air	62.5			$^{\circ}C/W$
R_{θJC}	Thermal Resistance from Junction to Case	1.92			$^{\circ}C/W$
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-65 to +150			$^{\circ}C$

Darlington Power Transistors (NPN)

TIP120/121/122

Electrical Characteristics ($T_{Ambient}=25^{\circ}C$ unless noted otherwise)

Symbol	Description		Min.	Max.	Unit	Conditions
*h_{FE}	D.C. Current Gain		1000	-		V _{CE} =3V, I _C =0.5A
			1000	-		V _{CE} =3V, I _C =3A
*V_{CE(sus)}	Collector-Emitter Sustaining Voltage	TIP120	60	-	V	I _C =100mA, I _B =0
		TIP121	80	-	V	
		TIP122	100	-	V	
*V_{CE(sat)}	Collector-Emitter Saturation Voltage		-	2.0	V	I _C =3A, I _B =12mA
			-	4.0	V	I _C =5A, I _B =20mA
*V_{BE(on)}	Base-Emitter On Voltage		-	2.5	V	I _C =3A, V _{CE} =3V
I_{CEO}	Collector-Emitter Cut-off Current	TIP120	-	0.5	mA	V _{CE} =30V, I _B =0
		TIP121	-	0.5		V _{CE} =40V, I _B =0
		TIP122	-	0.5		V _{CE} =50V, I _B =0
I_{CBO}	Collector-Base Cut-off Current	TIP120	-	0.2	mA	V _{CB} =60V, I _E =0
		TIP121	-	0.2		V _{CB} =80V, I _E =0
		TIP122	-	0.2		V _{CB} =100V, I _E =0
I_{EBO}	Emitter-Base Cut-off Current		-	2	mA	V _{EB} =5V, I _C =0
h_{fe}	Small Signal Current Gain		4.0	-		I _C =3A, V _{CE} =4V, f=1.0MHz,
C_{ob}	Output Capacitance		-	200	pF	V _{CB} =10V, I _E =0, f=0.1MHz,
t_{on}	Turn on time		Typ. 0.4		μS	I _C =3A, R _L =10Ω, I _{B1} =I _{B2} =12mA, V _{EB(off)} =5V
t_{off}	Turn off time		Typ. 1.2			

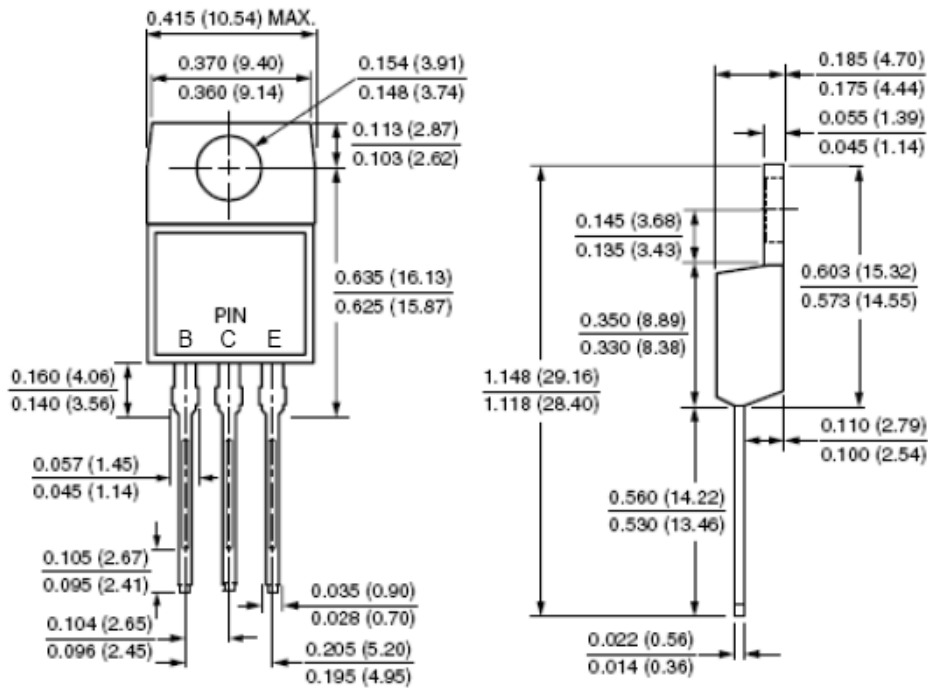
*Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

Darlington Power Transistors (NPN)

TIP120/121/122

Dimensions in inch (mm)

TO-220



Pin Configuration

- B. Base
- C. Collector
- E. Emitter

Darlington Power Transistors (NPN)

TIP120/121/122

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