

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- COMPLEMENTARY PNP - NPN DEVICES
INTEGRATED ANTIPARALLEL
- COLLECTOR-EMITTER DIODE

APPLICATIONS

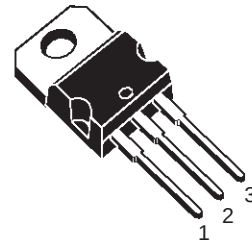
- LINEAR AND SWITCHING INDUSTRIAL
EQUIPMENT

DESCRIPTION

The TIP102 is a silicon Epitaxial-Base NPN power transistor in monolithic Darlington configuration mounted in TO-220 plastic package. It is intended for use in power linear and switching applications.

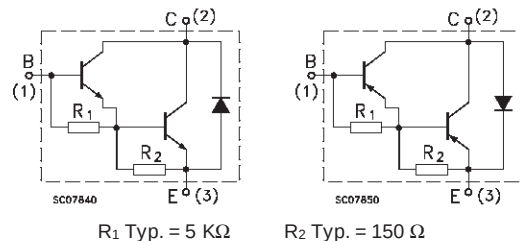
The complementary PNP type is TIP107.

Also TIP105 is a PNP type.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	TIP102	
		PNP	TIP105	
V _{CBO}	Collector-Base Voltage (I _E = 0)	60	100	V
V _{CEO}	Collector-Emitter Voltage (I _B = 0)	60	100	V
V _{EBO}	Emitter-Base Voltage (I _C = 0)	5		V
I _C	Collector Current	8		A
I _{CM}	Collector Peak Current	15		A
I _B	Base Current	1		A
P _{tot}	Total Dissipation at T _{case} ≤ 25 °C T _{amb} ≤ 25 °C	80		W
		2		W
T _{stg}	Storage Temperature	-65 to 150		°C
T _j	Max. Operating Junction Temperature	150		°C

* For PNP types voltage and current values are negative.

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	1.56	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	62.5	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CEO}	Collector Cut-off Current (I _B = 0)	for TIP105 V _{CE} = 30 V for TIP102/TIP107 V _{CE} = 50 V			50 50	μA μA
I _{CBO}	Collector Cut-off Current (I _E = 0)	for TIP105 V _{CB} = 60 V for TIP102/TIP107 V _{CB} = 100 V			50 50	μA μA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V			8	mA
V _{CEO(sus)} *	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 30 mA for TIP105 for TIP102/TIP107	60 100			V V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	I _C = 3 A I _B = 6 mA I _C = 8 A I _B = 80 mA			2 2.5	V V
V _{BE} *	Base-Emitter Voltage	I _C = 8 A V _{CE} = 4 V			2.8	V
h _{FE} *	DC Current Gain	I _C = 3 A V _{CE} = 4 V I _C = 8 A V _{CE} = 4 V	1000 200		20000	
V _F *	Forward Voltage of Commutation Diode (I _B = 0)	I _F = - I _C = 10 A			2.8	V

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

Safe Operating Area

