Toohong

TIP142T
TIP147T

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES
- MONOLITHIC DARLINGTON CONFIGURATION
- LOW VOLTAGE
- HIGH CURRENT
- HIGH GAIN

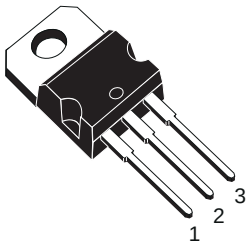
APPLICATIONS

- GENERAL PURPOSE SWITCHING

DESCRIPTION

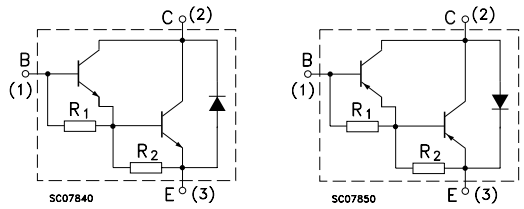
The TIP142T is a silicon Epitaxial-Base NPN power transistor in monolithic Darlington configuration, mounted in TO-220 plastic package. It is intented for use in power linear and switching applications.

The complementary PNP type is TIP147T.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
		NPN	TIP142T	
		PNP	TIP147T	
V_{CBO}	Collector-Base Voltage (I_E = 0)		100	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)		100	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)		5	V
I_C	Collector Current		15	A
I_{CM}	Collector Peak Current (t_p < 5ms)		20	A
I_B	Base Current		0.5	A
P_{tot}	Total Dissipation at $T_{case} \leq 25\ ^oC$		90	W
T_{stg}	Storage Temperature		- 65 to 150	^oC
T_j	Max. Operating Junction Temperature		150	^oC

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.38	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = 100 V				1	mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 50 V				2	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V				2	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 30 mA		100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 5 A I_C = 10 A	I_B = 10 mA I_B = 40 mA			2 3	V V
$V_{BE(on)}$*	Base-Emitter Voltage	I_C =10 A	V_{CE} = 4 V			3	V
h_{FE}*	DC Current Gain	I_C = 5 A I_C = 10 A	V_{CE} = 4 V V_{CE} = 4 V	1000 500			
	RESISTIVE LOAD						
t_{on}	Turn-on Time	I_C = 10 A	I_{B1} = 10 mA		0.9		µs
t_{off}	Turn-off Time	I_{B2} = -40 mA	R_L = 3 Ω		4		µs

For PNP types voltage and current values are negative.

∗ Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %.