



# TIP142T TIP147T

## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

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

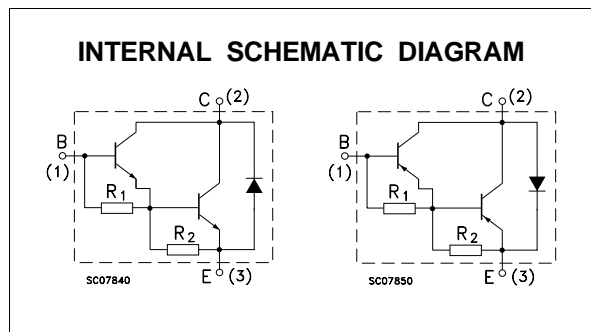
### APPLICATIONS

- 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 intended for use in power linear and switching applications.

The complementary PNP type is TIP147T.



### 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 $T_{case} \leq 25^\circ C$		90	W
$T_{stg}$	Storage Temperature		- 65 to 150	$^\circ C$
$T_j$	Max. Operating Junction Temperature		150	$^\circ C$

For PNP types voltage and current values are negative.

## TIP142T / TIP147T

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	1.38	$^{\circ}C/W$
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### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ 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	$I_C = 5 A$	$I_B = 10 mA$		2	V
		$I_C = 10 A$	$I_B = 40 mA$		3	V
$V_{BE(on)}^*$	Base-Emitter Voltage	$I_C = 10 A$	$V_{CE} = 4 V$		3	V
$h_{FE}^*$	DC Current Gain	$I_C = 5 A$	$V_{CE} = 4 V$	1000		
		$I_C = 10 A$	$V_{CE} = 4 V$	500		
$t_{on}$ $t_{off}$	RESISTIVE LOAD					
	Turn-on Time	$I_C = 10 A$	$I_{B1} = 10 mA$		0.9	$\mu s$
	Turn-off Time	$I_{B2} = -40 mA$	$R_L = 3 \Omega$		4	$\mu s$

For PNP types voltage and current values are negative.

\* Pulsed: Pulse duration = 300  $\mu s$ , duty cycle 1.5 %.

**TO-220 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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