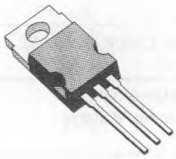
SGS-THOMSON MICROELECTRONICS

TIP140T/141T/142T
TIP145T/146T/147T

LOW VOLTAGE HIGH CURRENT POWER DARLINGTON

ADVANCE DATA

- MONOLITHIC DARLINGTON CONFIGURATION
- LOW VOLTAGE
- HIGH CURRENT
- HIGH GAIN



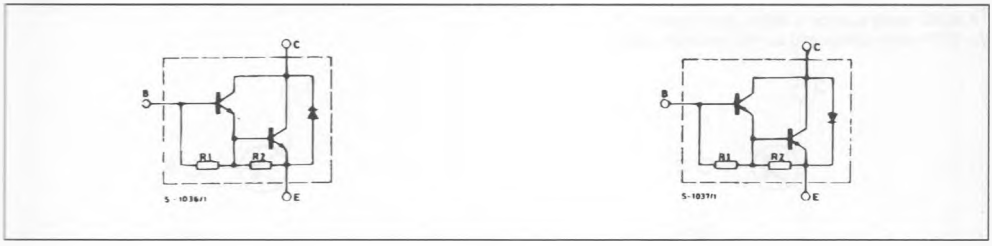
TO-220

DESCRIPTION

The TIP140T, TIP141T and TIP142T are silicon multiepitaxial base NPN transistor in monolithic Darlington configuration mounted in TO-220 package.

They are intended for use in power linear and switching applications. The complementary PNP types are the TIP145T, TIP146T and TIP147T respectively.

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP	Value			Unit
			TIP140T TIP145T	TIP141T TIP146T	TIP142T TIP147T	
V_{CBO}	Collector-base Voltage (I_E = 0)		60	80	100	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)		60	80	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_c < 25°C		125			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

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	max	1	°C/W

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

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 60V	for **TIP140T/145T**			1	mA
		V_{CB} = 80V	for **TIP141T/146T**			1	mA
		V_{CB} = 100V	for **TIP142T/147T**			1	mA
I_{CEO}	Collector Cutoff Current (I_B = 0)	V_{CE} = 30V	for **TIP140T/145T**			2	mA
		V_{CE} = 40V	for **TIP141T/146T**			2	mA
		V_{CE} = 50V	for **TIP142T/147T**			2	mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5V				2	mA
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage	I_C = 30mA	for **TIP140T/145T**	60			V
			for **TIP141T/146T**	80			V
			for **TIP142T/147T**	100			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 5A	I_B = 10mA			2	V
		I_C = 10A	I_B = 40mA			3	V
$V_{BE(on)}$*	Base-emitter Voltage	I_C = 10A	V_{CE} = 4V			3	V
h_{FE}*	DC Current Gain	I_C = 5A	V_{CE} = 4V	1000			
		I_C = 10A	V_{CE} = 4V	500			
	RESISTIVE LOAD						
t_{on}	Turn-on Time	I_C = 10A	I_{B1} = 10mA		0.9		µs
t_{off}	Turn-off Time	I_{B2} = −40mA	R_L = 3Ω		4		µs

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