

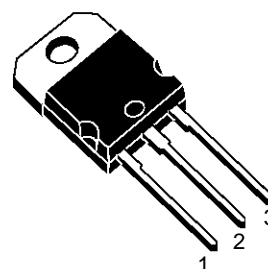
## COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

### ■ SGS-THOMSON PREFERRED SALESTYPES

#### DESCRIPTION

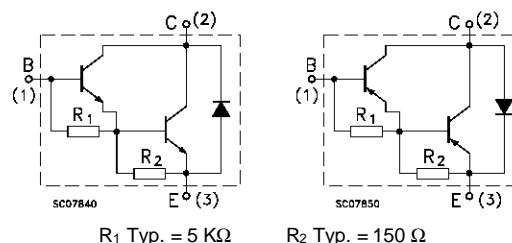
The TIP141 and TIP142 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in TO-218 plastic package. They are intended for use in power linear and switching applications.

The complementary PNP types are TIP146 and TIP147 respectively.



TO-218

#### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	TIP141 TIP146	
V <sub>CBO</sub>	Collector-Base Voltage (I <sub>E</sub> = 0)		80	V
V <sub>CEO</sub>	Collector-Emitter Voltage (I <sub>B</sub> = 0)		80	V
V <sub>EBO</sub>	Emitter-Base Voltage (I <sub>C</sub> = 0)		5	V
I <sub>C</sub>	Collector Current		10	A
I <sub>CM</sub>	Collector Peak Current		20	A
I <sub>B</sub>	Base Current		0.5	A
P <sub>tot</sub>	Total Dissipation at T <sub>case</sub> ≤ 25 °C		125	W
T <sub>stg</sub>	Storage Temperature		-65 to 150	°C
T <sub>j</sub>	Max. Operating Junction Temperature		150	°C

\* For PNP types voltage and current values are negative.

## TIP141/TIP142/TIP146/TIP147

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	1	°C/W
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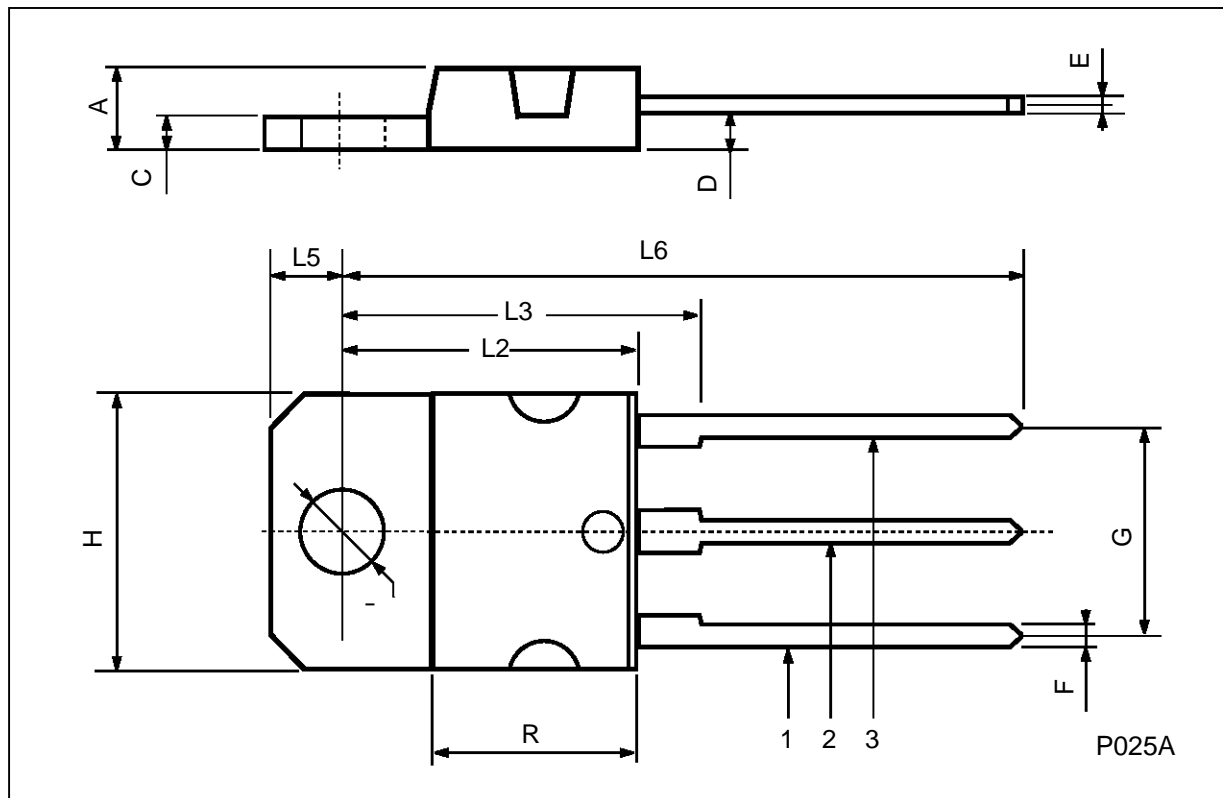
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25\text{ °C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	for <b>TIP141/146</b> $V_{CB} = 80\text{ V}$ for <b>TIP142/147</b> $V_{CB} = 100\text{ V}$			1 1	mA mA
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	for <b>TIP141/146</b> $V_{CE} = 40\text{ V}$ for <b>TIP142/147</b> $V_{CE} = 50\text{ V}$			2 2	mA mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EBO} = 5\text{ V}$			2	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 30\text{ mA}$ for <b>TIP141/146</b> for <b>TIP142/147</b>	80 100			V V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 5\text{ A}$ $I_B = 10\text{ mA}$ $I_C = 10\text{ A}$ $I_B = 40\text{ mA}$			2 3	V V
$V_{BE(on)}^*$	Base-Emitter Voltage	$I_C = 10\text{ A}$ $V_{CE} = 4\text{ V}$			3	V
$h_{FE}^*$	DC Current Gain	$I_C = 5\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 10\text{ A}$ $V_{CE} = 4\text{ V}$	1000 500			
$t_{on}$	Turn-on Time	$I_C = 10\text{ A}$ $I_{B1} = 40\text{ mA}$		0.9		$\mu\text{s}$
$t_{off}$	Turn-off Time	$I_{B2} = -40\text{ mA}$ $R_L = 3\text{ }\Omega$		4		$\mu\text{s}$

\* For PNP types voltage and current values are negative.

## TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	–		16.2	–		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	–		12.2	–		0.480
Ø	4		4.1	0.157		0.161



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