

**COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS**

- SGS-THOMSON PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE

**APPLICATIONS**

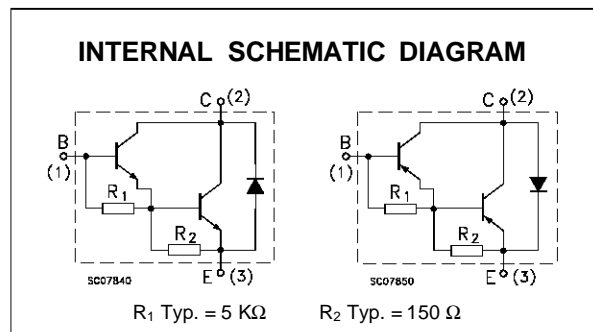
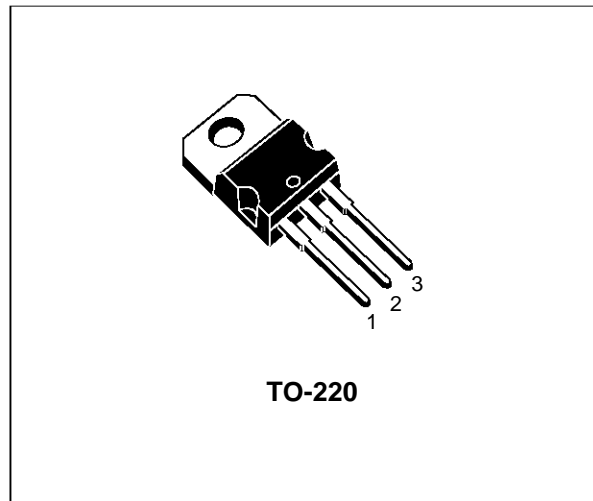
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

**DESCRIPTION**

The TIP100 and TIP102 are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration mounted in TO-220 plastic package, intended for use in power linear and switching applications.

The complementary PNP types are TIP105 and TIP107 respectively.

Also TIP106 is a PNP type.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value				Unit
		NPN PNP	TIP100 TIP105	TIP102 TIP106	TIP107	
$V_{CBO}$	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		8			A
$I_{CM}$	Collector Peak Current		15			A
$I_B$	Base Current		1			A
$P_{tot}$	Total Dissipation at $T_{case} \leq 25^\circ C$ $T_{amb} \leq 25^\circ C$		80			W
			2			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.

# TIP100/TIP102/TIP105/TIP106/TIP107

## THERMAL DATA

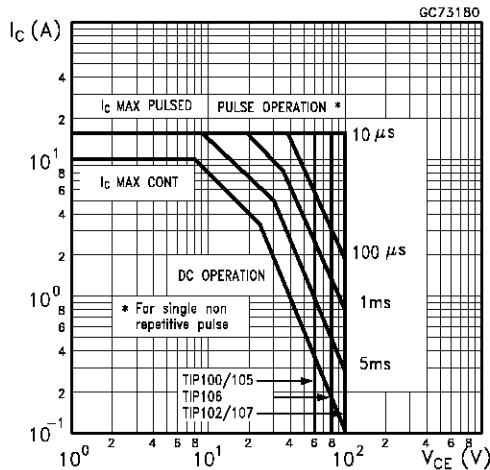
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.56	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	62.5	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	for <b>TIP100/TIP105</b> V <sub>CE</sub> = 30 V for <b>TIP106</b> V <sub>CE</sub> = 40 V for <b>TIP102/TIP107</b> V <sub>CE</sub> = 50 V			50 50 50	μA μA μA
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	for <b>TIP100/TIP105</b> V <sub>CE</sub> = 60 V for <b>TIP106</b> V <sub>CE</sub> = 80 V for <b>TIP102/TIP107</b> V <sub>CE</sub> = 100 V			50 50 50	μA μA μA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = -5 V			8	mA
V <sub>CEO(sus)</sub> *	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 30 mA for <b>TIP100/TIP105</b> for <b>TIP106</b> for <b>TIP102/TIP107</b>	60 80 100			V V V
V <sub>CE(sat)</sub> *	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3 A I <sub>B</sub> = 6 mA I <sub>C</sub> = 8 A I <sub>B</sub> = 80 mA			2 2.5	V V
V <sub>BE</sub> *	Base-Emitter Voltage	I <sub>C</sub> = 8 A V <sub>CE</sub> = 4 V			2.8	V
h <sub>FE</sub> *	DC Current Gain	I <sub>C</sub> = 3 A V <sub>CE</sub> = 4 V I <sub>C</sub> = 8 A V <sub>CE</sub> = 4 V	1000 200		20000	
V <sub>F</sub> *	Forward Voltage of Commutation Diode (I <sub>B</sub> = 0)	I <sub>F</sub> = - I <sub>C</sub> = 10 A			2.8	V

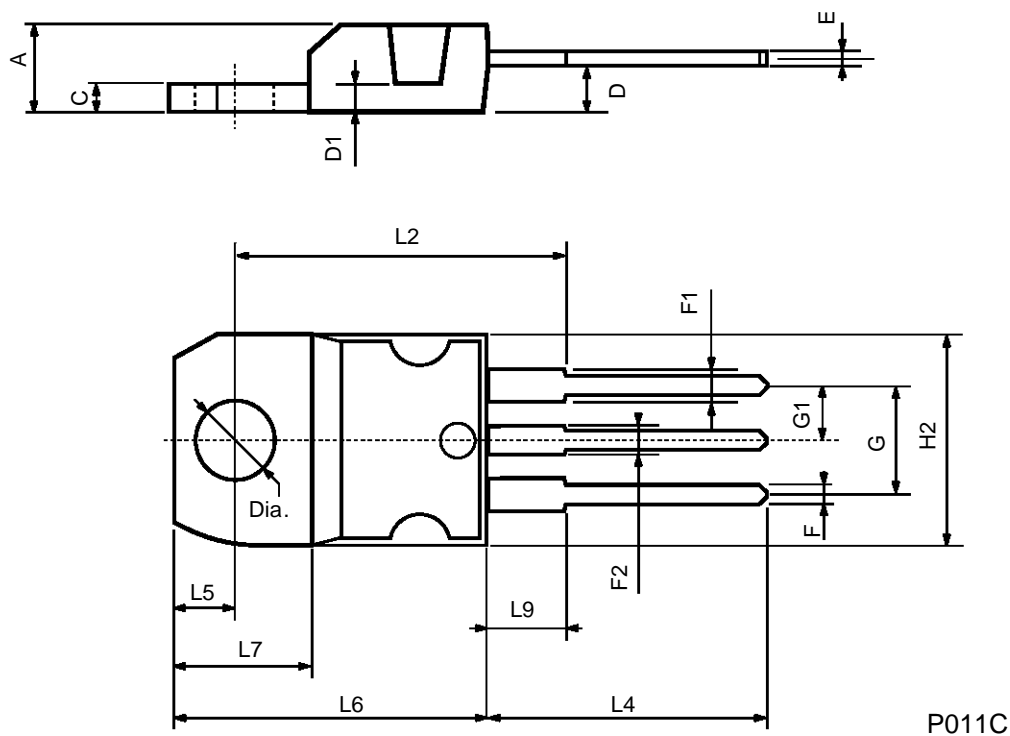
\* For PNP types voltage and current values are negative.

## Safe Operating Area



## 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



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1997 SGS-THOMSON Microelectronics - Printed in Italy - All Rights Reserved

SGS-THOMSON Microelectronics GROUP OF COMPANIES  
Australia - Brazil - Canada - China - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands -  
Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A

...