



TIP102 TIP105 TIP107

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

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

APPLICATIONS

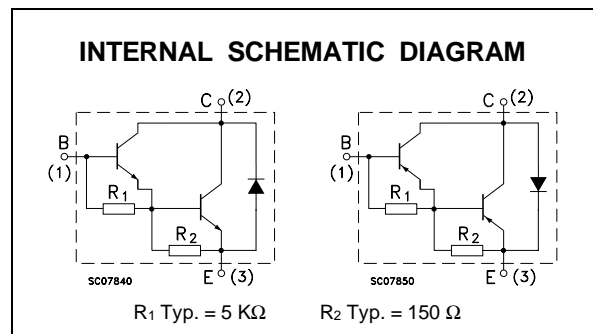
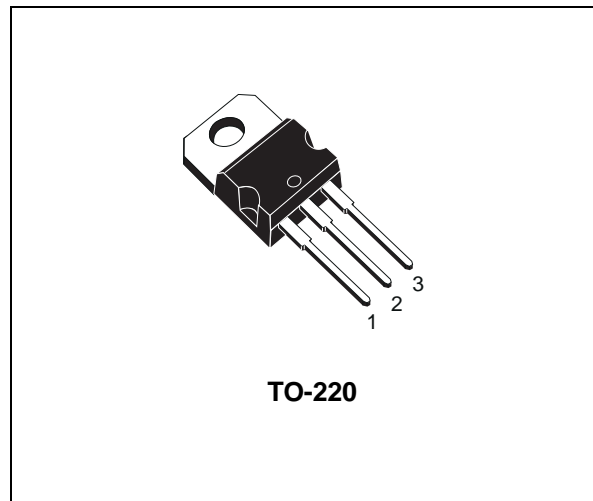
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION

The TIP102 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 TIP107.

Also TIP105 is a PNP type.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		NPN	TIP102	
		PNP	TIP107	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	60	100	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	60	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.

TIP102 / TIP105 / TIP107

THERMAL DATA

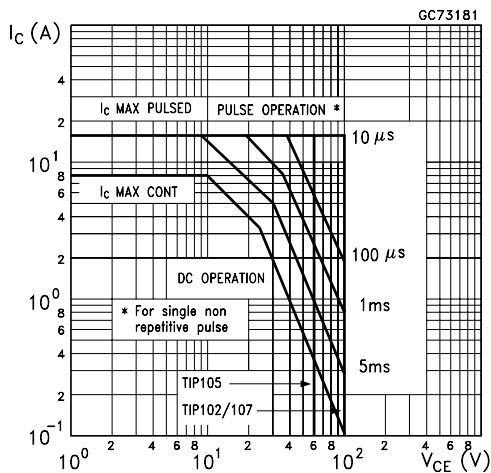
R _{thj-case}	Thermal Resistance Junction-case	Max	1.56	°C/W
R _{thj-amb}	Thermal Resistance Junction-ambient	Max	62.5	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CEO}	Collector Cut-off Current (I _B = 0)	for TIP105 V _{CE} = 30 V for TIP102/TIP107 V _{CE} = 50 V			50 50	μA μA
I _{CBO}	Collector Cut-off Current (I _E = 0)	for TIP105 V _{CB} = 60 V for TIP102/TIP107 V _{CB} = 100 V			50 50	μA μA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = 5 V			8	mA
V _{CEO(sus)} *	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 30 mA for TIP105 for TIP102/TIP107	60 100			V V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	I _C = 3 A I _B = 6 mA I _C = 8 A I _B = 80 mA			2 2.5	V V
V _{BE} *	Base-Emitter Voltage	I _C = 8 A V _{CE} = 4 V			2.8	V
h _{FE} *	DC Current Gain	I _C = 3 A V _{CE} = 4 V I _C = 8 A V _{CE} = 4 V	1000 200		20000	
V _F *	Forward Voltage of Commutation Diode (I _B = 0)	I _F = - I _C = 10 A			2.8	V

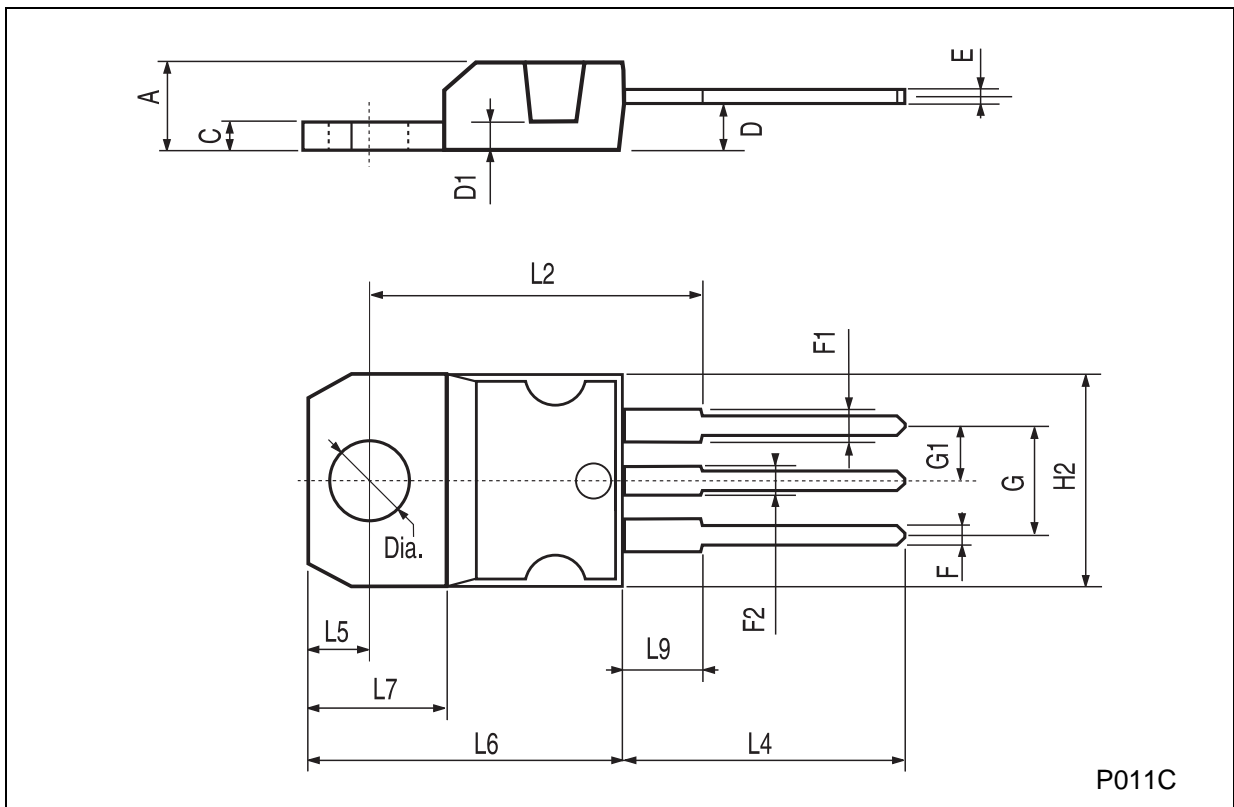
* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %
For PNP types voltage and current values are negative.

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, STMicroelectronics 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 STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 1999 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco -
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.