

# **TIP105**

# PNP SILICON POWER DARLINGTON TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE
- hFE CLASSIFICATION

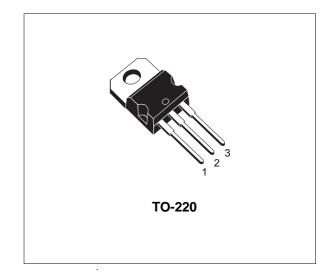
# **APPLICATIONS**

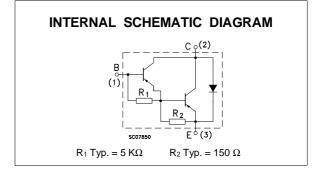
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT
- AUDIO POWER AMPLIFIER
- GENERAL POWER SWITCHING
- DC-AC CONVERTER
- EASY DRIVER FOR LOW VOLTAGE DC MOTOR

### DESCRIPTION

The TIP105 is a silicon Epitaxial-Base PNP transistor in monolithic Darlington configuration mounted in TO-220 plastic package intented for use in power linear and switching applications.

The preferred complementary NPN type is the TIP102.





### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit	
Vсво	Collector-Base Voltage (I <sub>E</sub> = 0)	-60	V	
$V_{CEO}$	Collector-Emitter Voltage $(I_B = 0)$	-60	V	
Vebo	Emitter-Base Voltage $(I_C = 0)$	-5	V	
lc	Collector Current	-8	А	
I <sub>CM</sub>	Collector Peak Current	-15	А	
IB	Base Current	-1	А	
P <sub>tot</sub>	Total Dissipation at $T_{case} \le 25$ °C $T_{amb} \le 25$ °C	80 2	W W	
T <sub>stg</sub>	Storage Temperature	-65 to 150	°C	
Tj	Max. Operating Junction Temperature	150	°C	

# 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

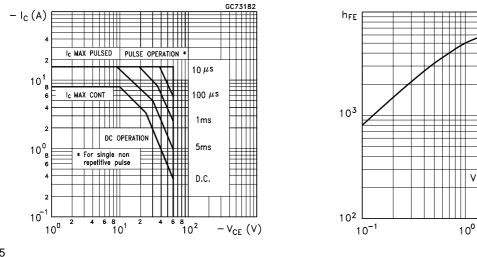
# **ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25 \ ^{\circ}C$ unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Тур.	Max.	Unit
ICEO	Collector Cut-off Current ( $I_B = 0$ )	V <sub>CE</sub> = -30 V				-50	μA
I <sub>CBO</sub>	Collector Cut-off Current (I <sub>E</sub> = 0)	V <sub>CE</sub> = -60 V				-50	μA
I <sub>EBO</sub>	Emitter Cut-off Current $(I_C = 0)$	V <sub>EB</sub> = -5 V				-8	mA
$V_{CEO(sus)}^{\star}$	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = -30 mA		-60			V
$V_{CE(sat)}^{\star}$	Collector-Emitter Saturation Voltage	I <sub>C</sub> = -3 A I <sub>C</sub> = -8 A	I <sub>B</sub> = -6 mA I <sub>B</sub> = -80 mA			-2 -2.5	V V
V <sub>BE</sub> *	Base-Emitter Voltage	I <sub>C</sub> = -8 A	$V_{CE} = -4 V$			-2.8	V
h <sub>FE</sub> *	DC Current Gain	$l_{C} = -3 A$ $l_{C} = -8 A$ $l_{C} = -3 A$ Group R Group O	V <sub>CE</sub> = -4 V V <sub>CE</sub> = -4 V V <sub>CE</sub> = -4 V	2000 200 2000 4000		18000 5000 9000	
		Group Y		8000		18000	
V <sub>F</sub> *	Forward Voltage of Commutation Diode $(I_B = 0)$	$I_{\rm F} = -I_{\rm C} = 10$ A				-2.8	V

The product is pre-selected in DC current gain (Group R, Group O and Group Y). STMicroelectronics reserves the right to ship either groups according to production availability. Please contact your nearest STMicroelectronics sales office for delivery datails.

## Safe Operating Area

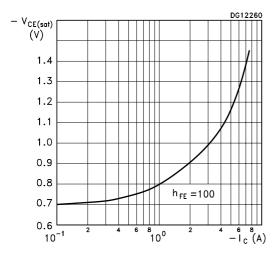
DC Current Gain



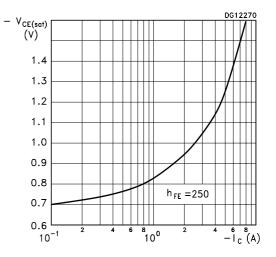


 $V_{CE} = 4V$ 

# Collector-Emitter Saturation Voltage



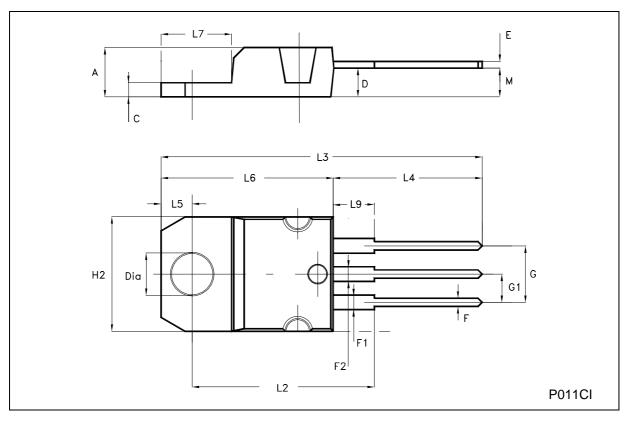
# Collector-Emitter Saturation Voltage



**47/** 

# **TO-220 MECHANICAL DATA**

DIM.	mm		inch			
DIM.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
А	4.40		4.60	0.173		0.181
С	1.23		1.32	0.048		0.052
D	2.40		2.72	0.094		0.107
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		0.202
G1	2.40		2.70	0.094		0.106
H2	10.00		10.40	0.394		0.409
L2		16.40			0.645	
L4	13.00		14.00	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.20		6.60	0.244		0.260
L9	3.50		3.93	0.137		0.154
М		2.60			0.102	
DIA.	3.75		3.85	0.147		0.151



**\$7** 

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

© 2003 STMicroelectronics - Printed in Italy - All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco -Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

http://www.st.com

57