

TIP41C TIP42C

Complementary power transistors

Features

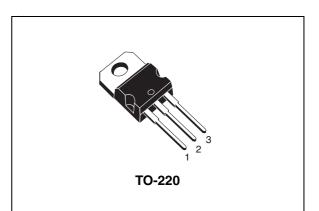
- Complementary PNP-NPN devices
- New enhanced series
- High switching speed
- h_{FE} grouping
- h_{FE} improved linearity

Applications

- General purpose circuits
- Audio amplifier
- Power linear and switching

Description

The TIP41C is a base island technology NPN power transistor in TO-220 plastic package that make this device suitable for audio, power linear and switching applications. The complementary PNP type is TIP42C





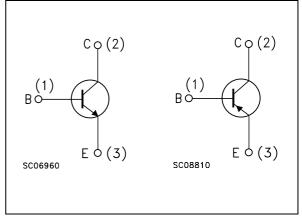


Table 1.Device summary

Order code	Marking	Package	Packaging
TIP41C (Note 1 on page 4)	TIP41C R TIP41C O TIP41C Y	TO-220	Tube
TIP42C (Note 1 on page 4)	TIP42C R TIP42C O TIP42C Y	TO-220	Tube

November	2007
10000111001	2001

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1 Absolute maximum ratings

Table 2.	Absolute	maximum	ratings
	Absolute	maximum	raungs

Symbol	Parameter	Value	Unit	
V _{CBO}	Collector-base voltage (I _E = 0)	100	V	
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	100	V	
V_{EBO}	Emitte-base voltage (I _C = 0)	5	V	
Ι _C	Collector current	6	Α	
I _{CM}	Collector peak current (t _P < 5ms)	10	Α	
Ι _Β	Base current	3	Α	
P _{TOT}	Total dissipation at T _{case} = 25°C	65	W	
T _{stg}	Storage temperature	-65 to 150	°C	
TJ	Max. operating junction temperature	150	°C	

Note:

For PNP types voltage and current values are negative



2 Electrical characteristics

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

		•					
Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
I _{CEO}	Collector cut-off current $(I_B = 0)$	V _{CE} = 60 V				0.7	mA
I _{EBO}	Emitter cut-off current $(I_{\rm C} = 0)$	V _{EB} = 5 V				1	mA
I _{CES}	Collector cut-off current $(V_{BE} = 0)$	V _{CE} = 100 V				0.4	mA
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage (I _B = 0)	I _C = 30 mA		100			V
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	I _C = 6 A	I _B = 0.6 A			1.5	V
V _{BE(on)} ⁽¹⁾	Base-emitter voltage	I _C = 6 A	$V_{CE} = 4 V$			2	V
h _{FE} ⁽¹⁾	DC current gain	$I_{C} = 0.3 A$ $I_{C} = 3 A$ Group R Group O Group Y	V _{CE} = 4 V V _{CE} = 4 V	30 15 15 24 42		75 28 44 75	

 Table 3.
 Electrical characteristics

1. Pulsed duration = 300 ms, duty cycle \ge 1.5%.

Note: 1 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 details.

Note: For PNP types voltage e current values are negative.



DG14600

T_C = 150 °C

 $\overline{-3}$ |_C (A)

-0.3

11

-1

Ħ $V_{CE} = -1V$

Typical characteristic (curves) 2.1

DC current gain (NPN) Figure 2.

Figure 3. DC current gain (PNP)

 $T_c = -40 °C$

-0.1

¥

T_C =25 °C

h _{FE}

500

300

200

100

50

30 20

10 L -0.01

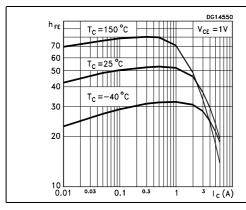


Figure 4. DC current gain (NPN)

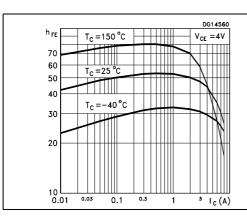


Figure 5. DC current gain (PNP)

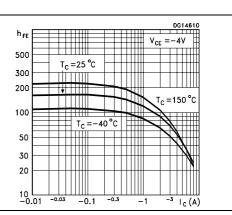
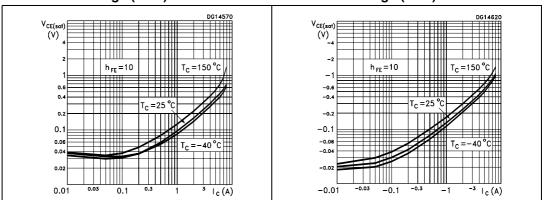


Figure 6. **Collector-emitter saturation**

voltage (NPN)

Figure 7.

Collector-emitter saturation voltage (PNP)



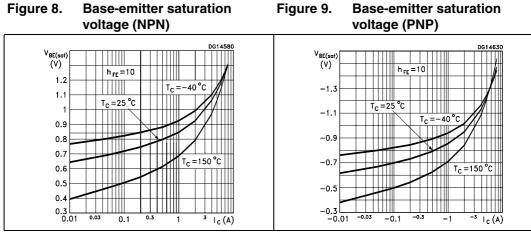
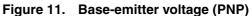
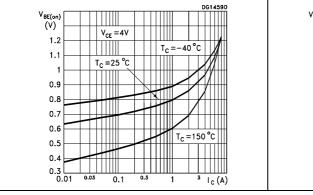


Figure 10. Base-emitter voltage (NPN)





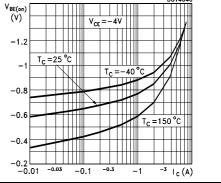
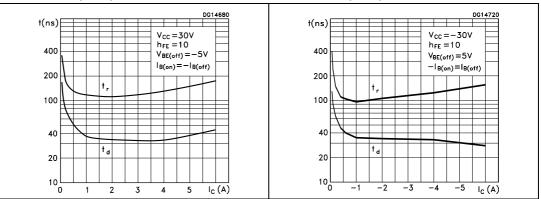


Figure 12. Resistive load switching time Figure 13. Resistive load switching time (NPN) (PNP)





CEE

CCE

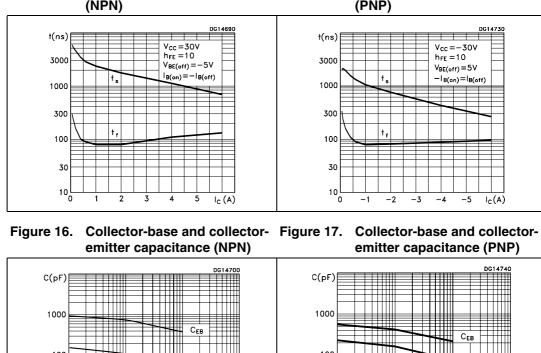
-10 V_{CB},V_{EB}(V)

ĦЩ

П

Ξ±ų

f=1MHz



-1

100

10

-0.1

СЕВ

Ссв

Ш

 $V_{CB}, V_{EB}(V)$

10

f=1MHz

100

10

0.1

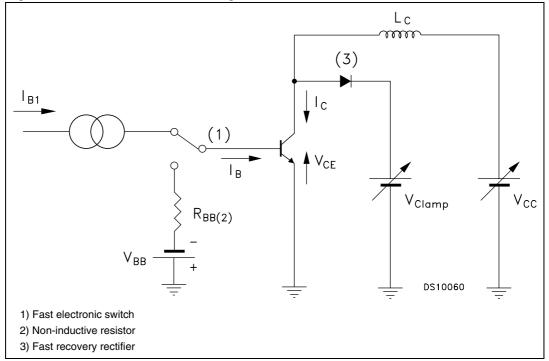
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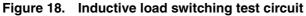
Figure 14. Resistive load switching time Figure 15. Resistive load switching time (PNP) (NPN)

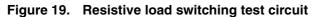


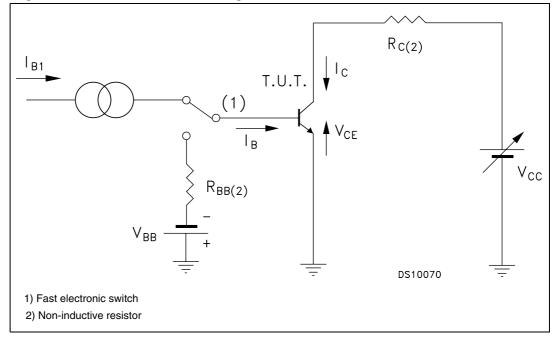
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2.2 Test circuit









Note:

For PNP types voltage e current values are negative.

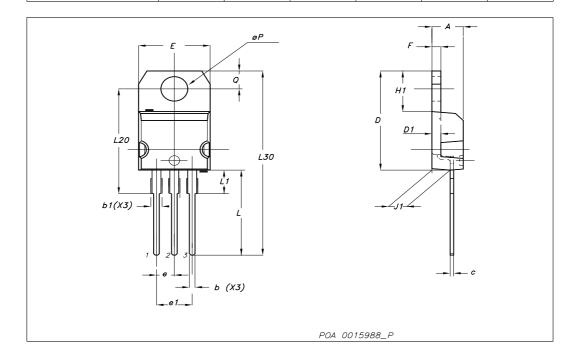
3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com



Dim		mm		inch		
Dim	Min	Тур	Мах	Min	Тур	Max
Α	4.40		4.60	0.173		0.181
b	0.61		0.88	0.024		0.034
b1	1.14		1.70	0.044		0.066
С	0.49		0.70	0.019		0.027
D	15.25		15.75	0.6		0.62
D1		1.27			0.050	
E	10		10.40	0.393		0.409
е	2.40		2.70	0.094		0.106
e1	4.95		5.15	0.194		0.202
F	1.23		1.32	0.048		0.051
H1	6.20		6.60	0.244		0.256
J1	2.40		2.72	0.094		0.107
L	13		14	0.511		0.551
L1	3.50		3.93	0.137		0.154
L20		16.40			0.645	
L30		28.90			1.137	
ØP	3.75		3.85	0.147		0.151
Q	2.65		2.95	0.104		0.116

TO-220 mechanical data





4 Revision history

Table 4.Document revision history

Date	Revision	Changes
24-Oct-2006	1	Initial release
19-Nov-2007	2	Content reworked to improve readability, no technical changes



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