TIP29A
TIP29C

NPN power transistors

Features

- NPN transistors

Applications

- Audio, linear and switching applications

Description

The devices are manufactured in Planar technology with “Base Island” layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage. The PNP types are TIP30A and TIP30C.

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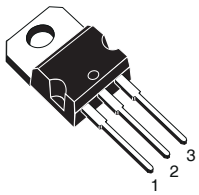


TO-220

Figure 1. Internal schematic diagram

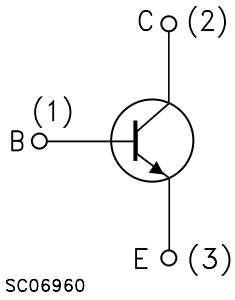


Table 1. Device summary

Order codes	Marking	Package	Packaging
TIP29A	TIP29A	TO-220	Tube
TIP29C	TIP29C	TO-220	Tube

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value		Unit
		TIP29A	TIP29C	
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	1		A
I_{CM}	Collector peak current (t_p < ms)	3		A
I_B	Base current	0.4		A
P_{TOT}	Total dissipation at $T_c \leq 25°C$ Total dissipation at $T_{amb} \leq 25°C$	30 2		W W
T_{stg}	Storage temperature	-65 to 150		°C
T_J	Max. operating junction temperature	150		°C

2 Electrical characteristics

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

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector cut-off current (I_B = 0)	for TIP29A V_{CE} =30V for TIP29C V_{CE} =60V			0.3 0.3	mA mA
I_{CES}	Collector cut-off current (V_{BE} = 0)	for TIP29A V_{CE} =60V for TIP29C V_{CE} =100V			0.2 0.2	mA mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} =5V			1	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C =30mA for TIP29A for TIP29C	 60 100			 V V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C =1A I_B =125mA			0.7	V
V_{BE} (1)	Base-emitter voltage	I_C =1A V_{CE} =4V			1.3	V
h_{FE} (1)	DC current gain	I_C =0.2A V_{CE} =4V I_C =1A V_{CE} =4V	40 15		 75	

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

2.1 Electrical characteristic (curves)

Figure 2. DC current gain

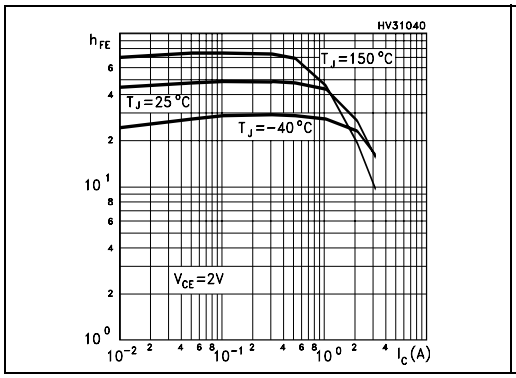


Figure 3. DC current gain

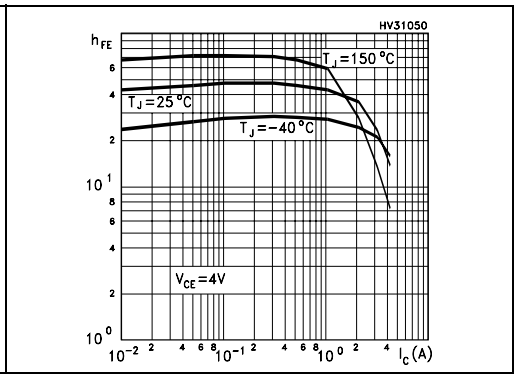


Figure 4. Collector-emitter saturation voltage

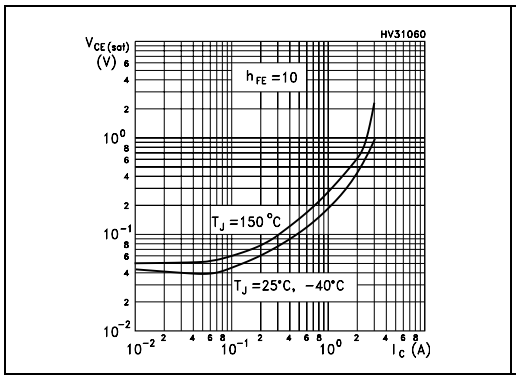


Figure 5. Base-emitter saturation voltage

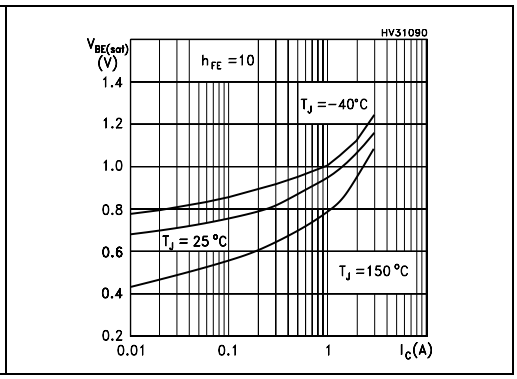


Figure 6. Base-emitter on voltage

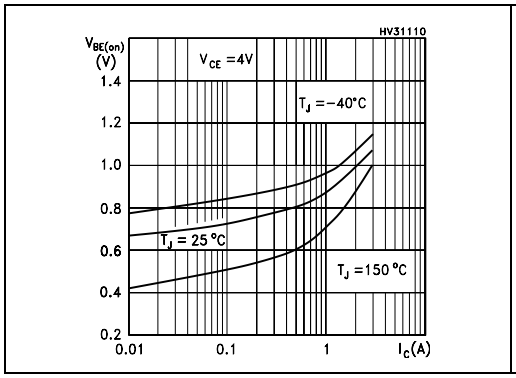


Figure 7. Resistive load switching time

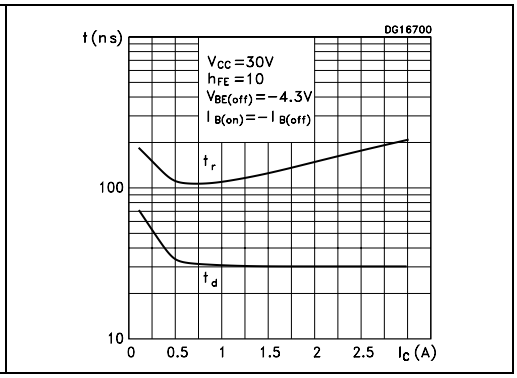
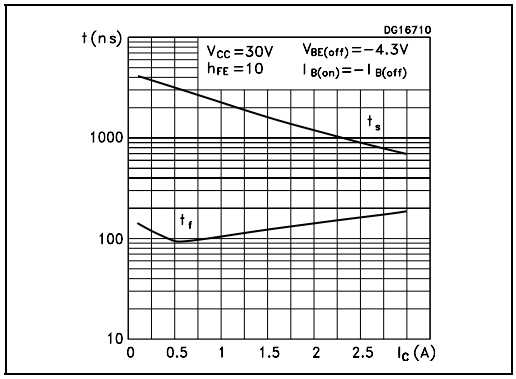
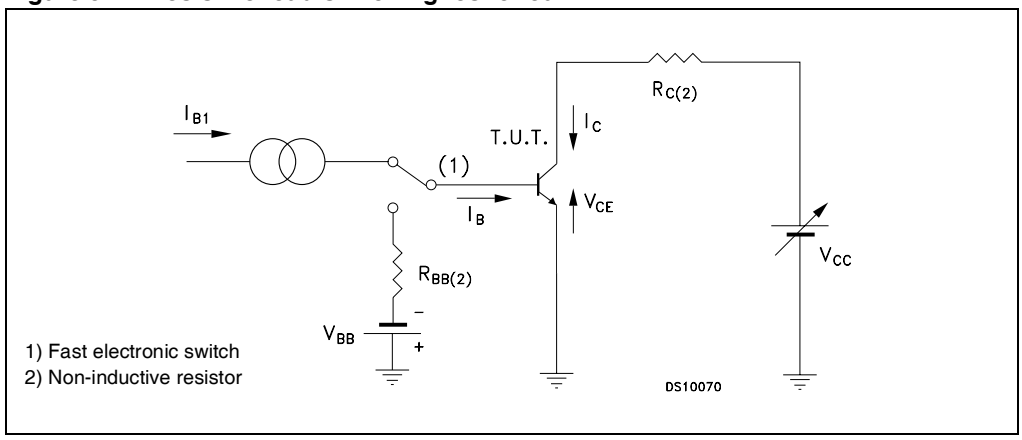


Figure 8. Resistive load switching time



2.2 Test circuit

Figure 9. Resistive load switching test circuit

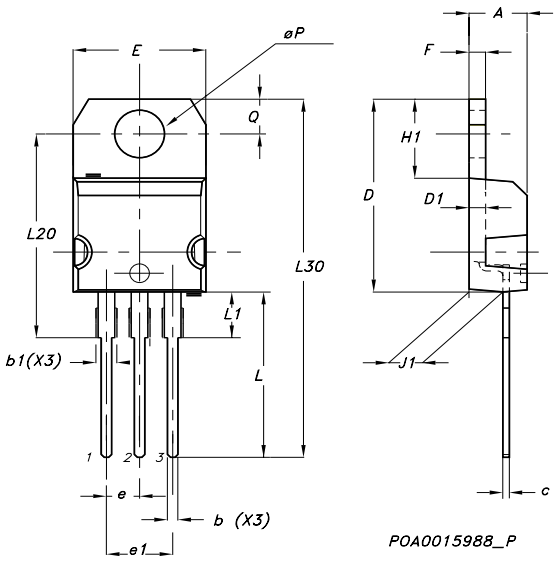


3 Package mechanical data

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

TO-220 Mechanical data

DIM.	mm.		
	MIN.	TYP	MAX.
A	4.40		4.60
b	0.61		0.88
b1	1.14		1.70
c	0.49		0.70
D	15.25		15.75
D1		1.27	
E	10		10.40
e	2.40		2.70
e1	4.95		5.15
F	1.23		1.32
H1	6.20		6.60
J1	2.40		2.72
L	13		14
L1	3.50		3.93
L20		16.40	
L30		28.90	
øP	3.75		3.85
Q	2.65		2.95



4 Revision history

Table 4. Revision history

Date	Revision	Changes
01-Jan-2000	1	Initial Release
11-Jul-2007	2	Figures 1,2,3,4,5,6,7,8 and figure 9 have been added.