57

# 1 Electrical ratings

Table 2. Absolut	e maximum rating
------------------	------------------

-	Parameter	Value		Unit
		2N5191	2N5192	
V <sub>CBO</sub>	V <sub>CBO</sub> Collector-base voltage (I <sub>E</sub> = 0)		80	V
V <sub>CEO</sub>	Collector-base voltage $(I_B = 0)$	60	80	V
V <sub>EBO</sub>	Emitter-base voltage (I <sub>C</sub> = 0)	Emitter-base voltage ( $I_C = 0$ ) 5		v
۱ <sub>C</sub>	Collector current	4		СА
I <sub>CM</sub>	Collector peak current	7	Ċ	Α
Ι <sub>Β</sub>	Base current	1	200	Α
P <sub>TOT</sub>	Total dissipation at $T_{case} = 25^{\circ}C$	4	0	W
T <sub>stg</sub>	Storage temperature	-65 to	o 150	°C
TJ	Max. operating junction temperature     150			°C

### **Electrical characteristics** 2

 $(T_{case} = 25^{\circ}C \text{ unless otherwise specified})$ 

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
I <sub>CBO</sub>	Collector cut-off current (I <sub>E</sub> = 0)	V <sub>CB</sub> = rated V <sub>CBO</sub>			0.1	mA
I <sub>CEX</sub>	Collector cut-off current (V <sub>BE</sub> = -1.5V)	$V_{CE}$ = rated $V_{CEO}$ $V_{CE}$ = rated $V_{CEO}$ $T_c$ =125°C			0.1 2	mA mA
I <sub>CEO</sub>	Collector cut-off current $(I_B = 0)$	V <sub>CE</sub> = rated V <sub>CEO</sub>		, C		mA
I <sub>EBO</sub>	Emitter cut-off current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5V	00		1	mA
V <sub>CEO(sus)</sub> <sup>(1)</sup>	Collector-emitter sustaining voltage (I <sub>B</sub> = 0)	I <sub>C</sub> =100mA for 2N5191 for 2N5192	60 80			v v
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-emitter saturation voltage	$I_{C} = 1.5A$ $I_{B} = 0.15A$ $I_{C} = 4A$ $I_{B} = 1A$			0.6 1.4	V V
V <sub>BE</sub> <sup>(1)</sup> Base	Base-emitter voltage	I <sub>C</sub> = 1.5A V <sub>CE</sub> = 2V			1.2	V
h <sub>FE</sub>	DC current gain	$I_{C} = 1.5A \qquad V_{CE} = 2V$ for 2N5191 for 2N5192 $I_{C} = 4A \qquad V_{CE} = 2V$ for 2N5191 for 2N5191 for 2N5192	25 20 10		100 80	

#### Table 3. **Electrical characteristics**

57

57

#### **Electrical characteristic (curves)** 2.1

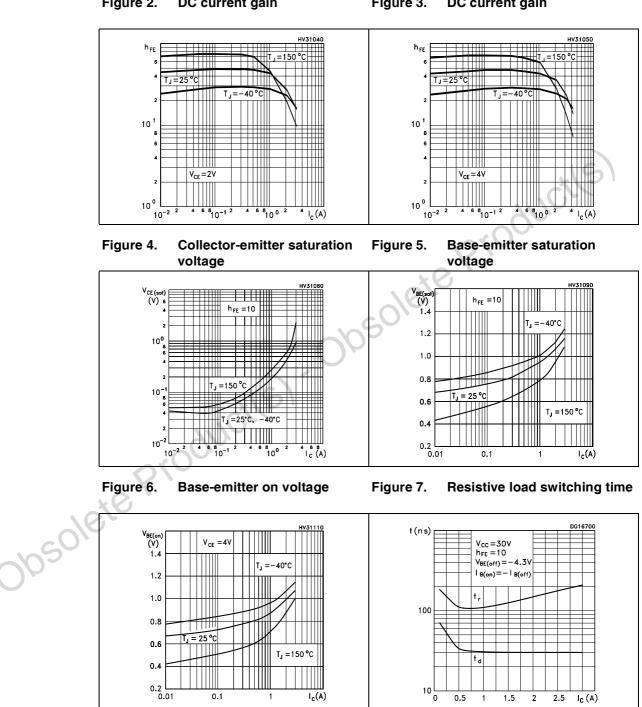
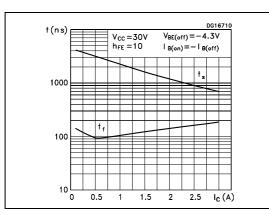


Figure 2. DC current gain

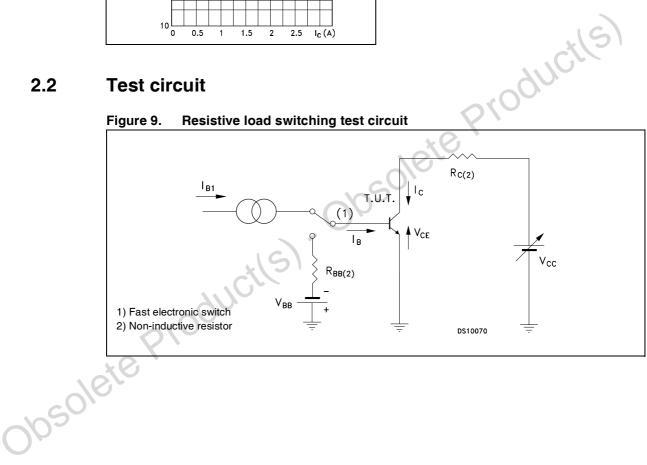
#### Figure 3. DC current gain



#### Figure 8. **Resistive load switching time**

#### 2.2 **Test circuit**







57

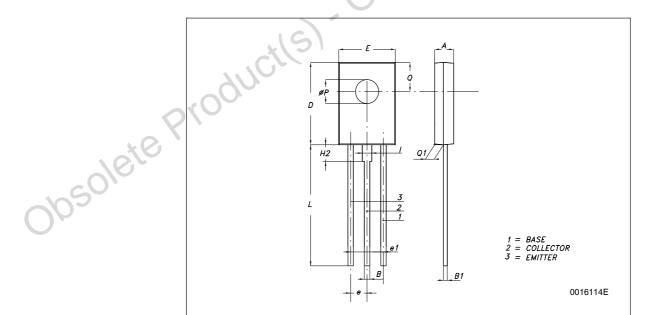
## 3 Package mechanical data

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

Obsolete Product(s) - Obsolete Product(s)

6/9

DIM.	mm.			
	MIN.	ТҮР	MAX.	
A	2.4		2.9	
В	0.64		0.88	
B1	0.39		0.63	
D	10.5		11.05	
E	7.4		7.8	
е	2.04	2.29	2.54	
e1	4.07	4.58	5.08	
L	15.3		16	
Р	2.9		3.2	
Q		3.8		
Q1	1	101	1.52	
H2		2.15		





## 4 Revision history

## Table 4. Revision history

	Date	Revision	Changes
	01-Dec-2000	1	Initial release.
	14-Jan-2004	2	Technical migration from ST-Press to EDOCS
	28-Jun-2007	3	Figures 2,3,4,5,6,7, 8 and figure 9 have been added.
obsole	tepro	Jucil	obsolete Producils)



### Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZE REPRESENTATIVE OF ST, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS, WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2007 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

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

www.st.com

