



## BULD1101ET4

### HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

#### PRELIMINARY DATA

Ordering Code	Marking	Shipment
BULD1101ET4	BULD1101E	Tape & Reel

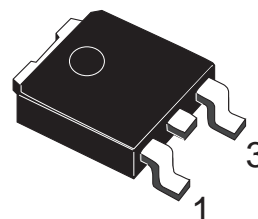
- HIGH VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- LARGE RBSOA
- SURFACE-MOUNTING DPAK (TO-252)  
POWER PACKAGE IN TAPE & REEL  
(SUFFIX "T4")

#### APPLICATIONS

- ELECTRONIC BALLASTS FOR  
FLUORESCENT LIGHTING

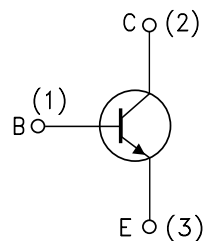
#### DESCRIPTION

The device is manufactured using High Voltage Multi Epitaxial Planar technology for high switching speeds and high voltage capability. It uses a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining a wide RBSOA.



**DPAK  
TO-252**  
(Suffix "T4")

#### INTERNAL SCHEMATIC DIAGRAM



SC06960

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	1100	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	450	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	12	V
$I_C$	Collector Current	3	A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	6	A
$I_B$	Base Current	1.5	A
$I_{BM}$	Base Peak Current ( $t_p < 5$ ms)	3	A
$P_{tot}$	Total Dissipation at $T_c = 25^\circ\text{C}$	35	W
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

## BULD1101ET4

### THERMAL DATA

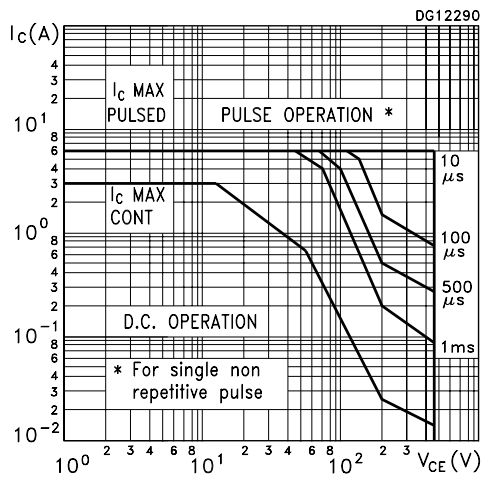
R <sub>thj-case</sub>	Thermal Resistance Junction-Case	Max	3.57	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	100	°C/W

### ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

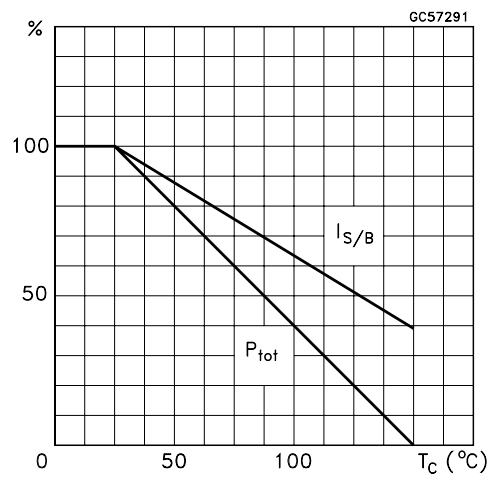
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 1100 V			100	μA
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>C</sub> = 0)	I <sub>E</sub> = 1 mA	12		24	V
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA	450			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1 A I <sub>B</sub> = 200 mA I <sub>C</sub> = 1 A I <sub>B</sub> = 200 mA T <sub>j</sub> = 125°C		0.25 0.6	1 1.5	V V
V <sub>BE(sat)*</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 1 A I <sub>B</sub> = 200 mA			1.5	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 250 mA V <sub>CE</sub> = 5 V I <sub>C</sub> = 250 mA V <sub>CE</sub> = 5 V T <sub>j</sub> = 125°C I <sub>C</sub> = 2 A V <sub>CE</sub> = 5 V I <sub>C</sub> = 2 A V <sub>CE</sub> = 5 V T <sub>j</sub> = 125°C	20 23 6 4	38 44 10 7	80 85 18 16	
t <sub>s</sub> t <sub>f</sub>	RESISTIVE LOAD Storage Time Fall Time	I <sub>C</sub> = 2.5 A V <sub>CC</sub> = 125 V V <sub>BB(off)</sub> = -5 V t <sub>P</sub> = 300 μs I <sub>B1</sub> = -I <sub>B2</sub> = 0.5 A (see figure 1)		400	2 700	μs ns
E <sub>ar</sub>	Repetitive Avalanche Energy	L = 2 mH C = 1.8 nF I <sub>BR</sub> ≤ 2.5 A (see figure 2)	6			mJ

\* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

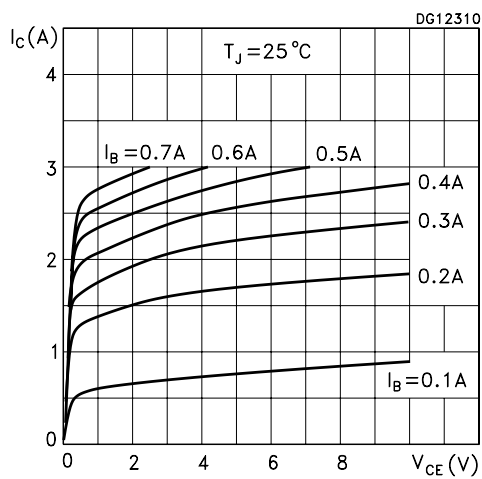
### Safe Operating Area



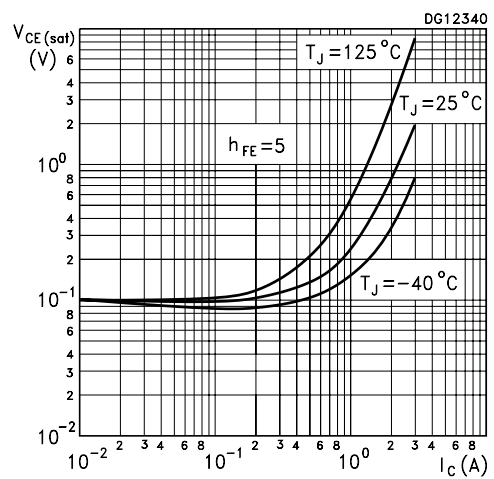
### Derating Curve



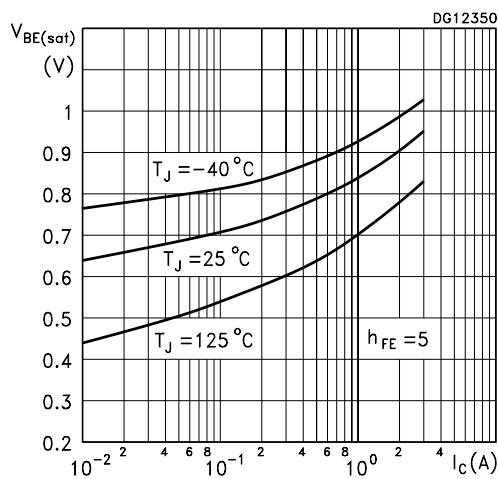
### Output Characteristics



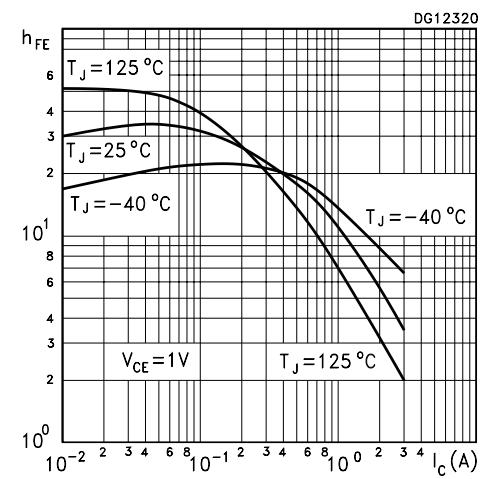
### Collector-Emitter Saturation Voltage



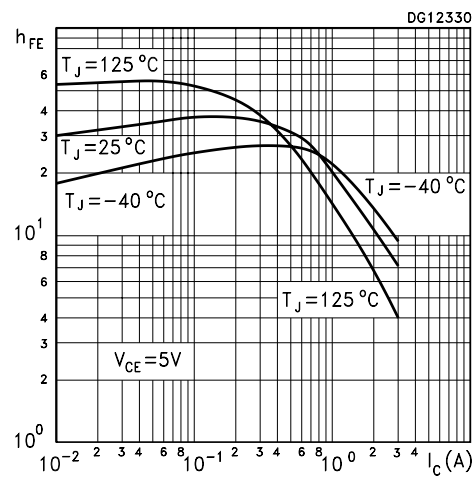
### Base-Emitter Saturation Voltage



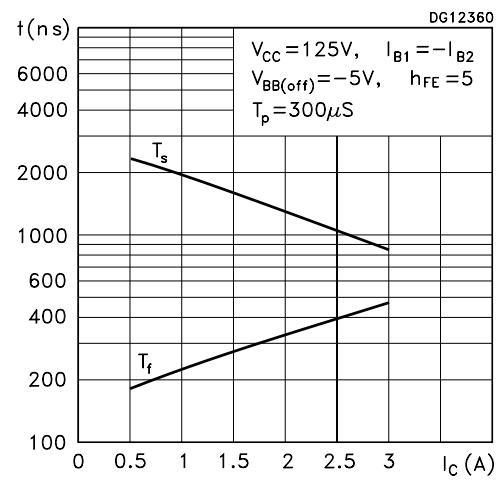
### DC Current Gain



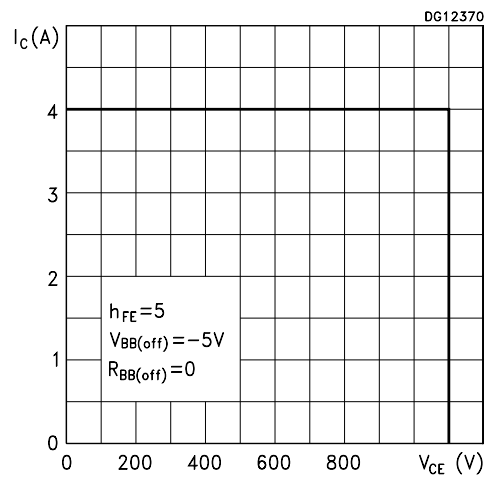
DC Current Gain

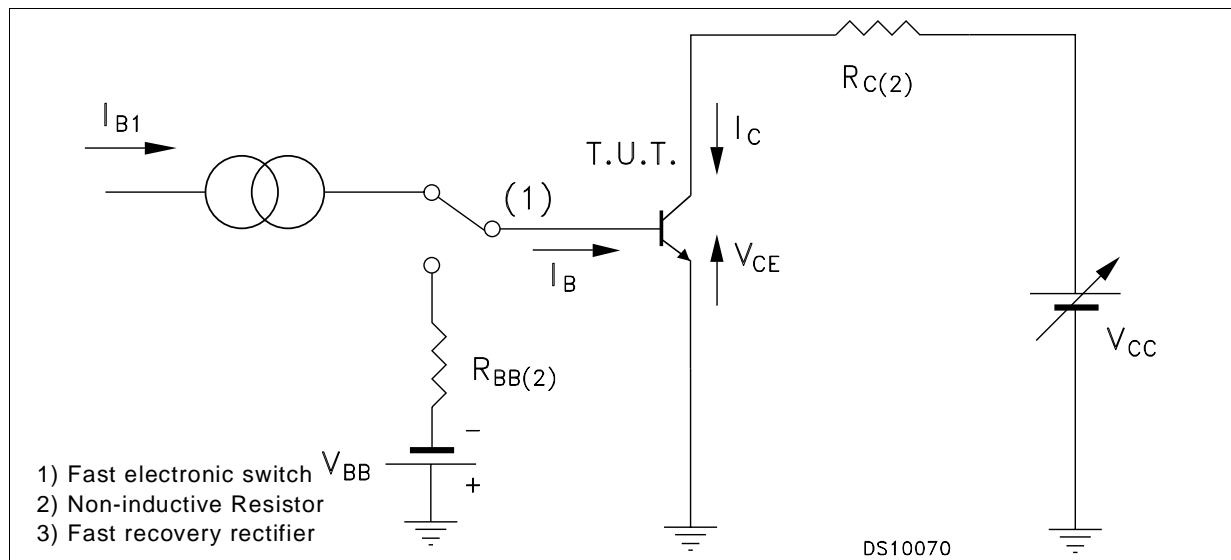
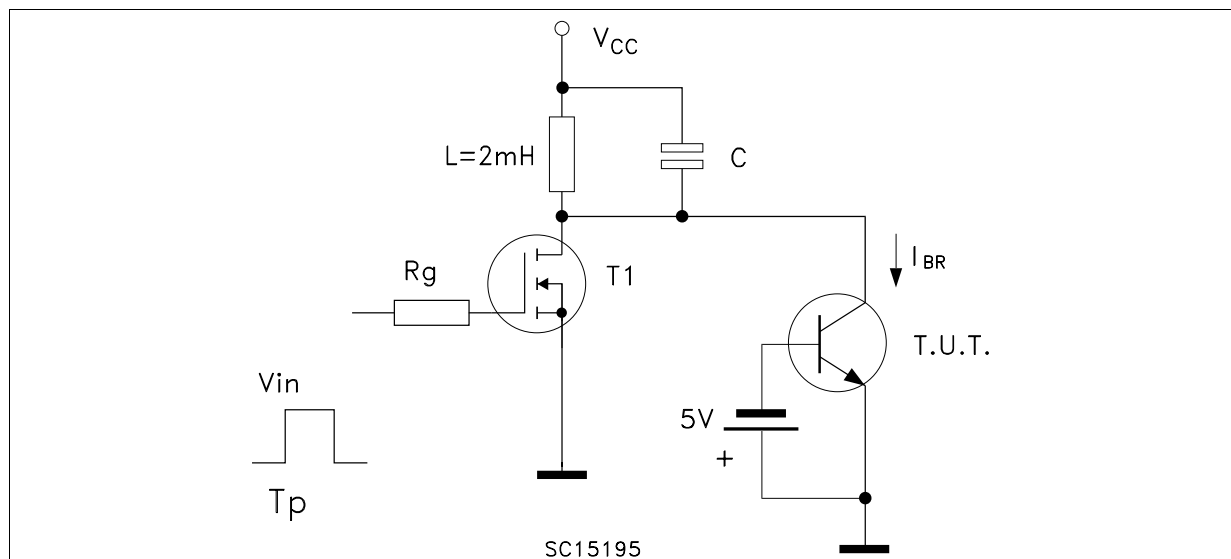


Resistive Load Switching Times



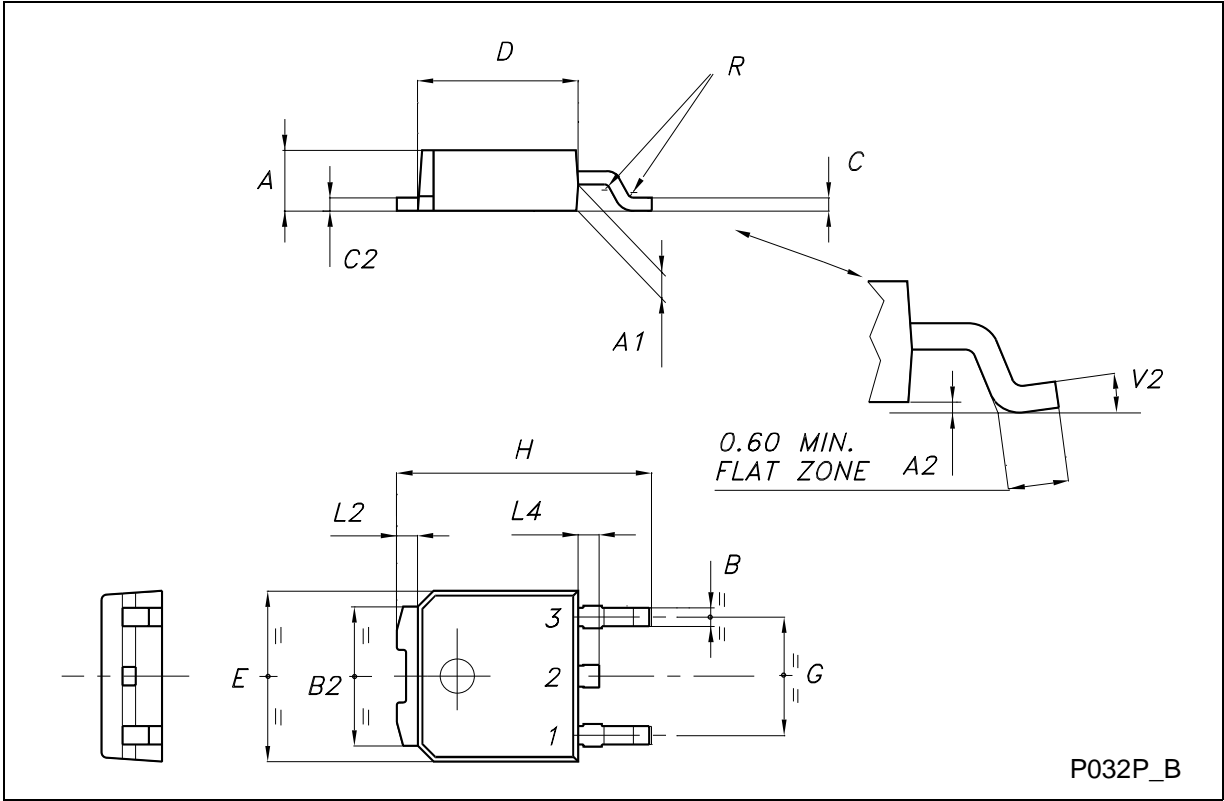
Reverse Biased Safe Operating Area



**Figure 1: Resistive Load Switching Test Circuit****Figure 2: Energy Rating Test Circuit**

TO-252 (DPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
C	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.398
L2		0.8			0.031	
L4	0.60		1.00	0.024		0.039
V2	0°		8°	0°		0°



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>

