



**BU505**

## HIGH VOLTAGE NPN MULTIEPITAXIAL FAST-SWITCHING TRANSISTOR

- HIGH VOLTAGE CAPABILITY
- VERY HIGH SWITCHING SPEED
- HIGH RUGGEDNESS

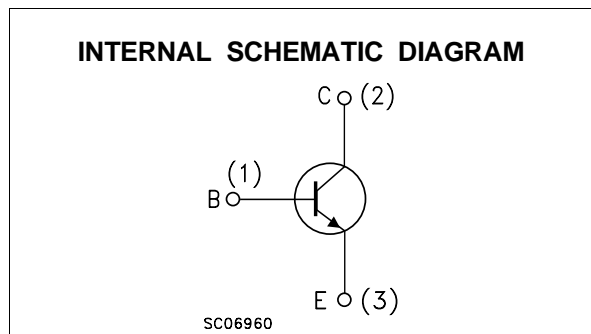
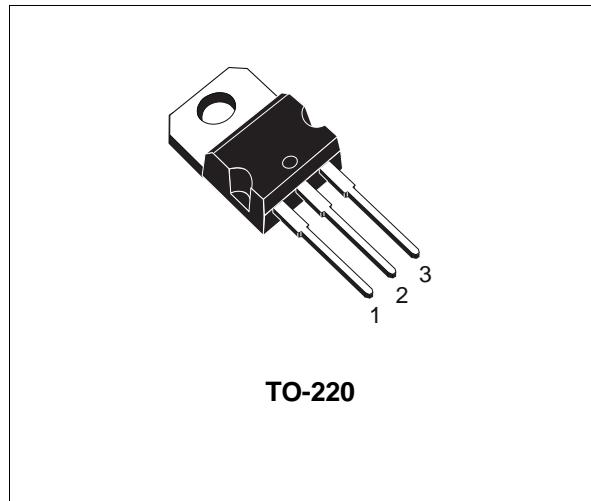
### APPLICATIONS

- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- SWITCH MODE POWER SUPPLIES

### DESCRIPTION

The BU505 is a high voltage NPN fastswitching transistor designed to be used in lighting application, like electronic ballast for fluorescent lamps.

Its characteristics make it also ideal for power supplies.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	1500	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	700	V
$I_C$	Collector Current	2.5	A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	4	A
$I_B$	Base Current	1	A
$I_{BM}$	Base Peak Current ( $t_p < 5$ ms)	2	A
$P_{tot}$	Total Dissipation at $T_c \leq 25$ °C	75	W
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

**THERMAL DATA**

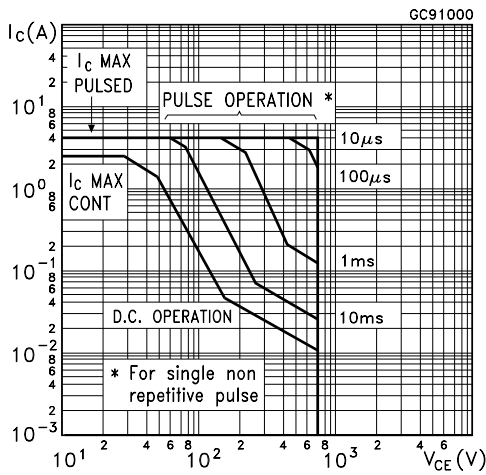
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.67	°C/W
-----------------------	----------------------------------	-----	------	------

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

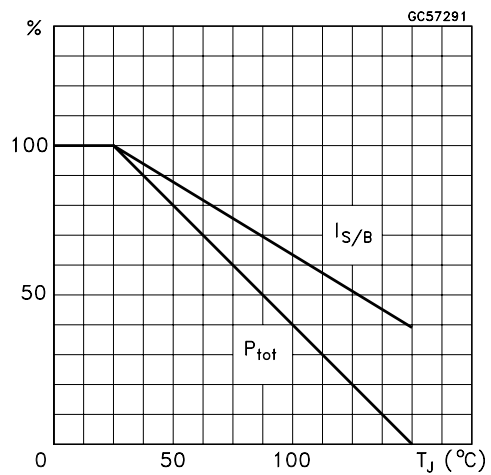
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 1500 V V <sub>CE</sub> = 1500 V    T <sub>case</sub> = 125°C			0.15 1	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-emitter Sustaining Voltage (I <sub>B</sub> = 0)	I <sub>C</sub> = 100 mA    L = 25mH	700			V
V <sub>CE(sat)*</sub>	Collector-emitter Saturation Voltage	I <sub>C</sub> = 2 A    I <sub>B</sub> = 0.9 A			5	V
V <sub>BE(sat)*</sub>	Base-emitter Saturation Voltage	I <sub>C</sub> = 2 A    I <sub>B</sub> = 0.9 A			1.3	V
I <sub>s/b</sub>	Second Breakdown Current	V <sub>CE</sub> = 120 V    t = 200 μs	2			A
t <sub>s</sub> t <sub>f</sub>	INDUCTIVE LOAD Storage Time Fall Time	V <sub>Clamp</sub> = 250 V    I <sub>C</sub> = 2 A I <sub>B1</sub> = 0.7 A    V <sub>be(off)</sub> = -5V R <sub>bb</sub> = 0    L = 200μH		2 350		μs ns

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

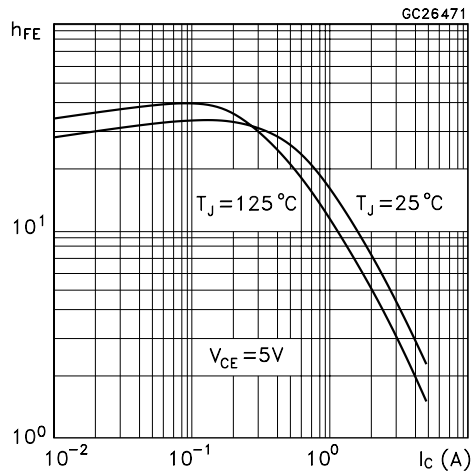
**Safe Operating Area**



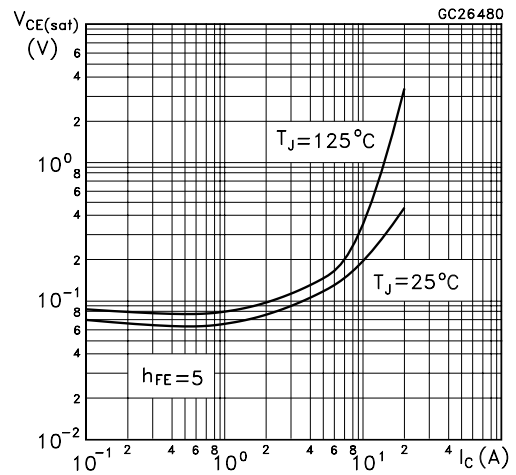
**Derating Curve**



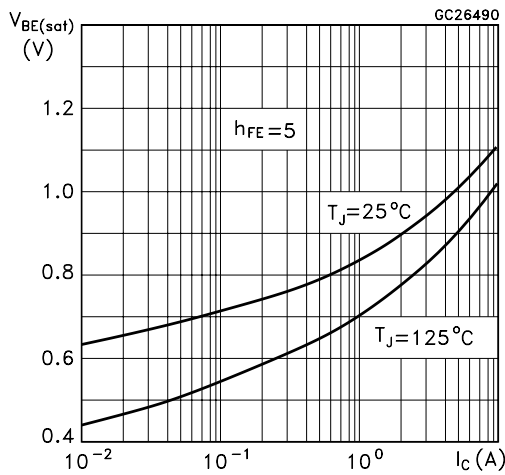
DC Current Gain



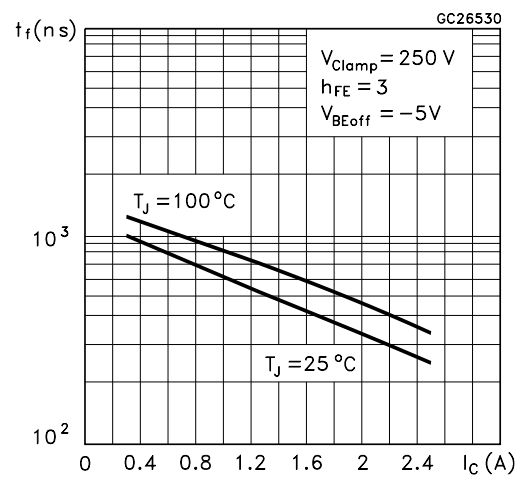
Collector Emitter Saturation Voltage



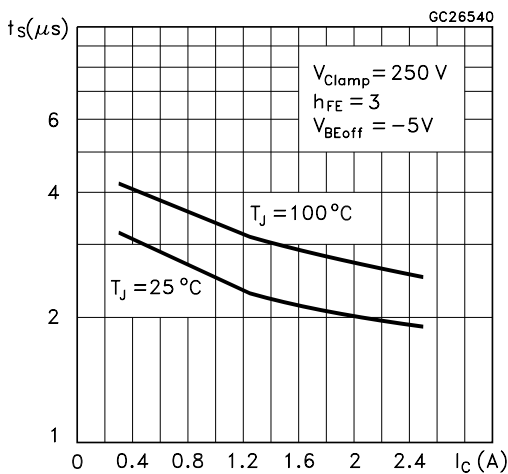
Base Emitter Saturation Voltage



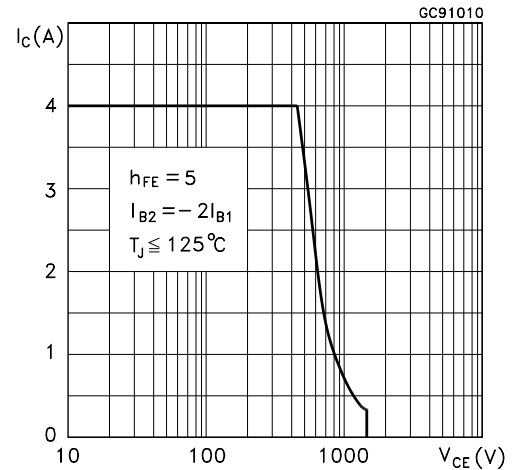
Inductive Fall Time



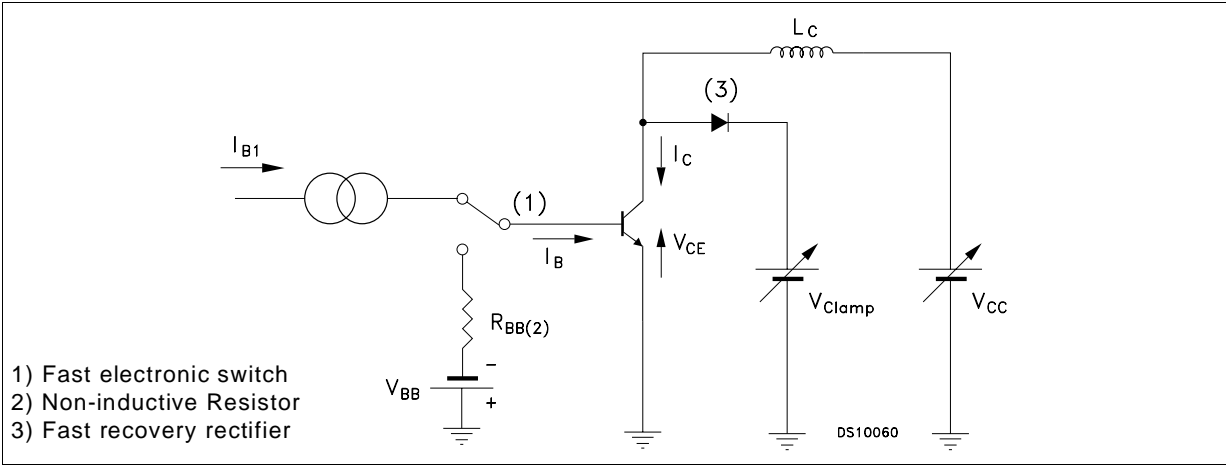
Inductive Storage Time



Reverse Biased SOA

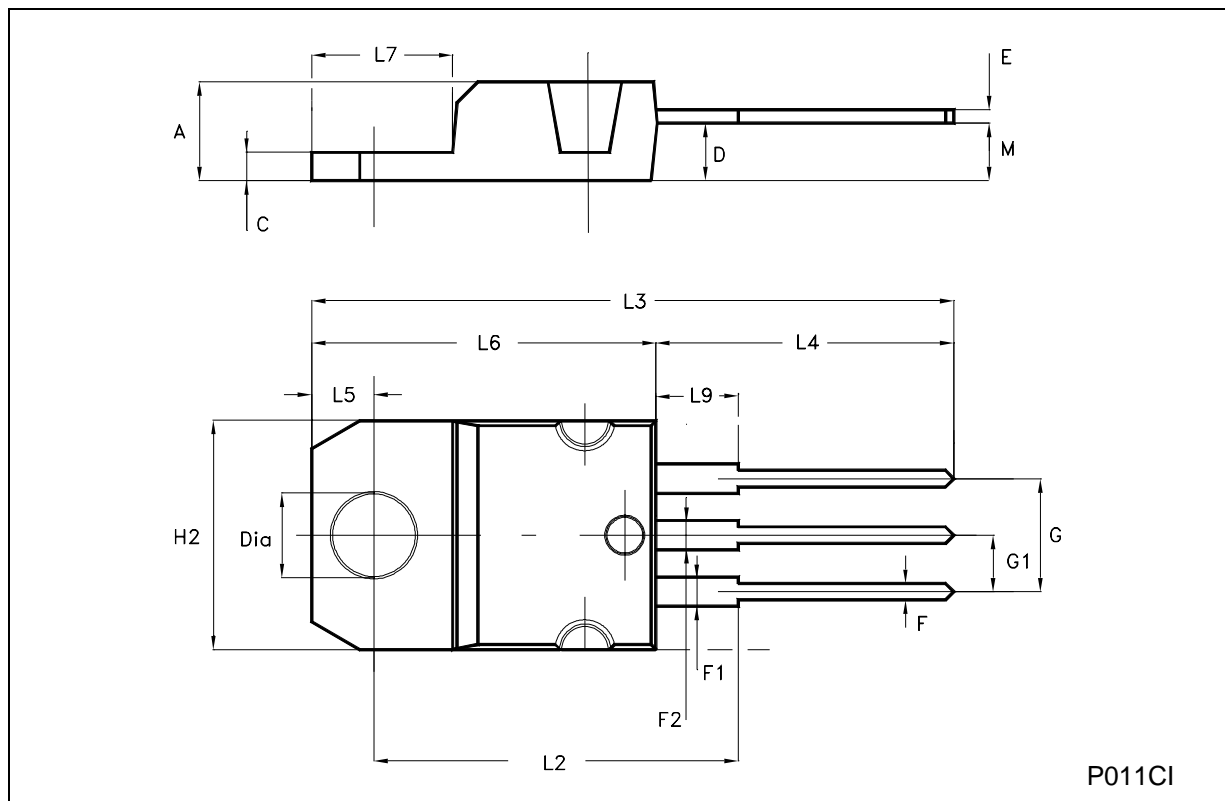


Inductive Load Switching Test Circuits



## TO-220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	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
M		2.60			0.102	
DIA.	3.75		3.85	0.147		0.151



P011CI

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

© 2001 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco -  
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>