

**BU505**

## HIGH VOLTAGE NPN MULTIEPITAXIAL FAST-SWITCHING TRANSISTOR

- HIGH VOLTAGE CAPABILITY
- VERY HIGH SWITCHING SPEED
- HIGH REGGEDNESS

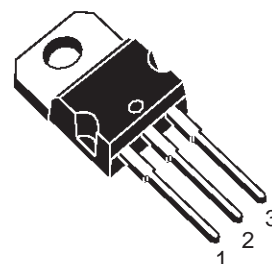
### APPLICATIONS

- ELECTRONIC BALLASTS FOR  
FLUORESCENT LIGHTING
- SWITCH MODE POWER SUPPLIES

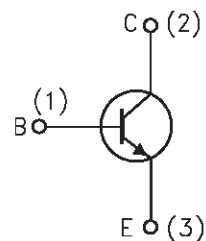
### DESCRIPTION

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

Its characteristics make it also ideal for power supplies.

**TO-220**

### INTERNAL SCHEMATIC DIAGRAM



### 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

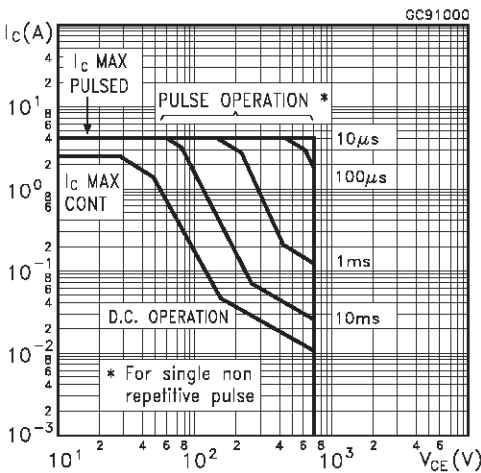
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	1.67	°C/W
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ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

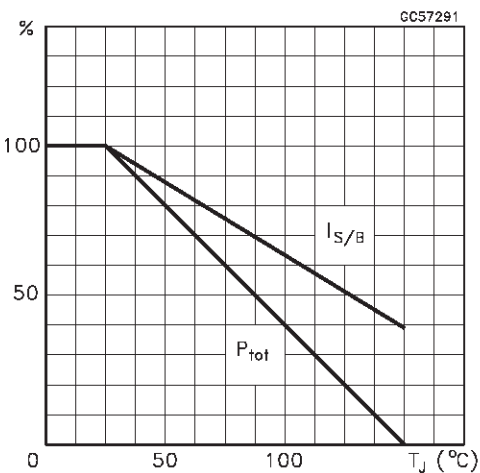
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 1500 V V <sub>CE</sub> = 1500 V      T <sub>case</sub> = 125°C			0.15 1	mA mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	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 %.

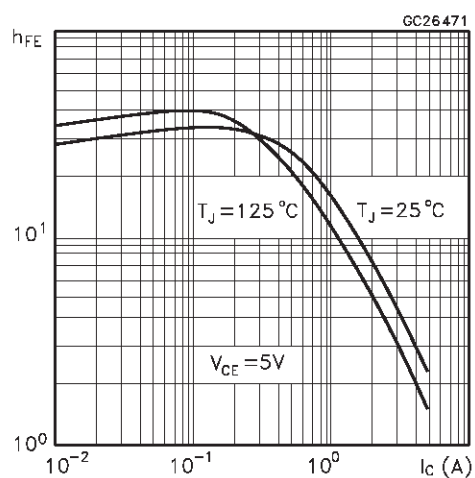
Safe Operating Area



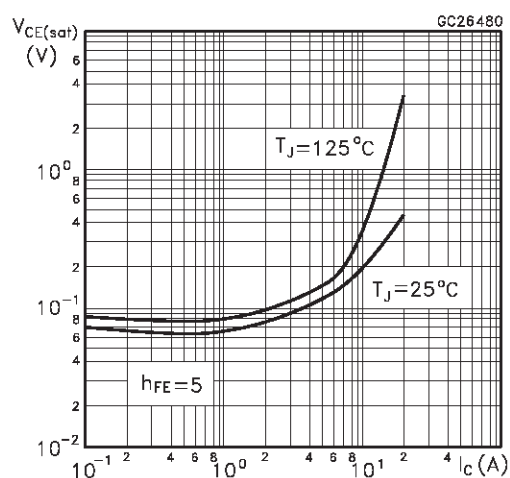
Derating Curve



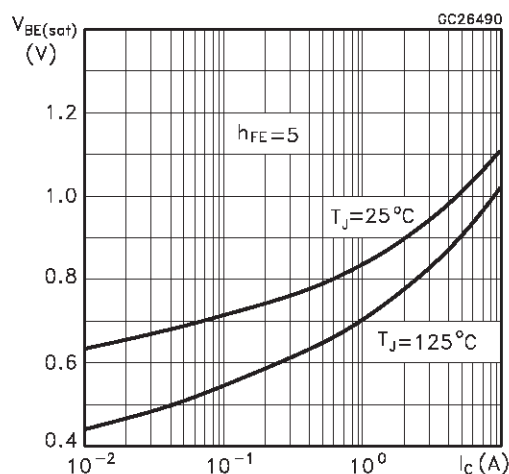
## DC Current Gain



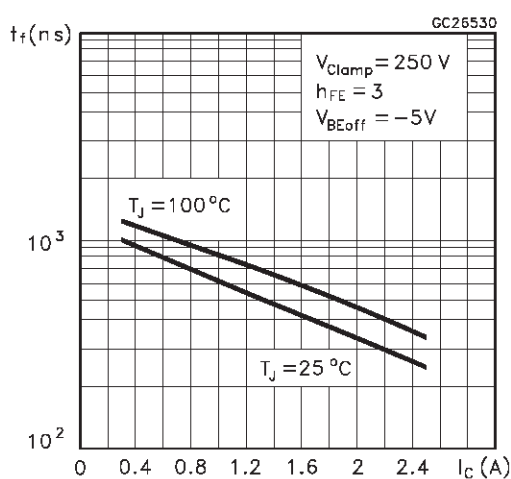
## Collector Emitter Saturation Voltage



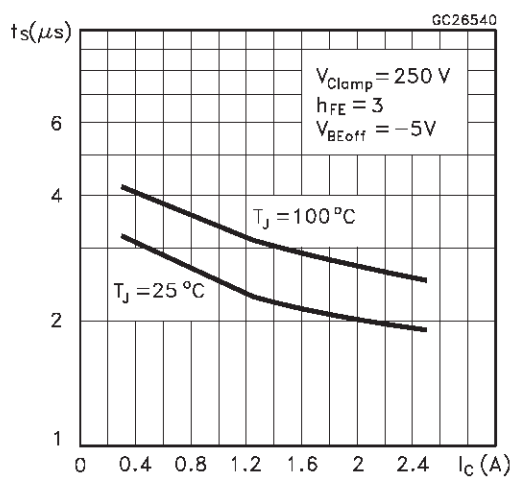
## Base Emitter Saturation Voltage



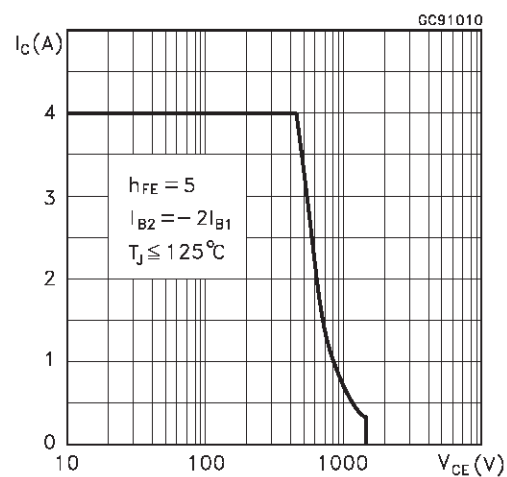
## Inductive Fall Time



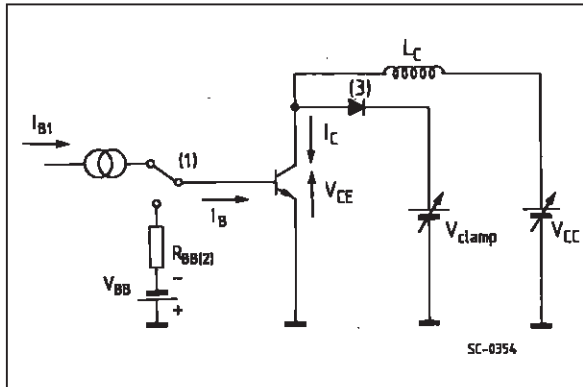
## Inductive Storage Time



## Reverse Biased SOA



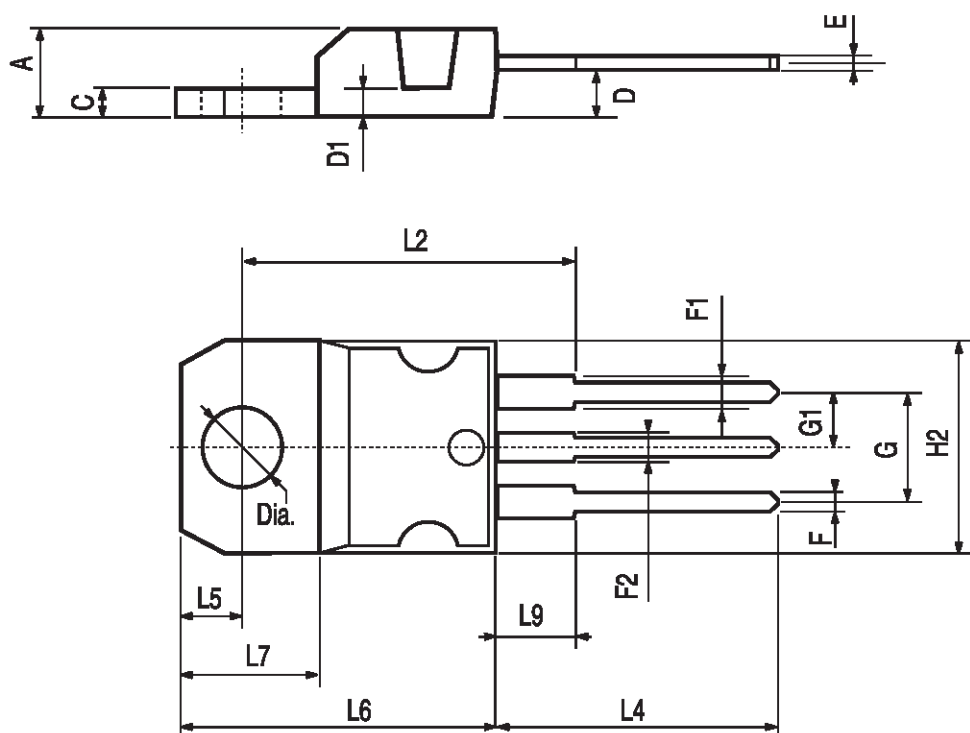
## RBSOA and Inductive Load Switching Test Circuits



- (1) Fast electronic switch
- (2) Non-inductive Resistor
- (3) Fast recovery rectifier

## 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		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
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		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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