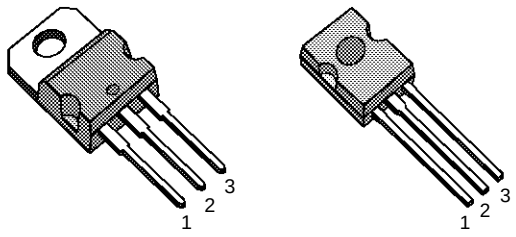
SGS-THOMSON MICROELECTRONICS

BUL26D
BULK26D

MEDIUM VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

PRELIMINARY DATA

- SGS-THOMSON PREFERRED SALESTYPES
- MEDIUM VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- FULLY CHARACTERISED AT 125°C
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE



TO-220 **SOT-82**

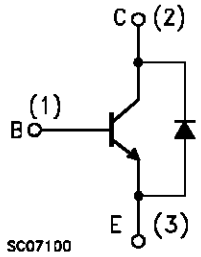
APPLICATIONS

- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- FLYBACK AND FORWARD SINGLE TRANSISTOR LOW POWER CONVERTERS

DESCRIPTION

The BUL26D and BULK26D are manufactured using medium voltage Multi Epitaxial Planar technology for high switching speeds and medium voltage capability. They use a Cellular Emitter structure with planar edge termination to enhance switching speeds while maintaining a wide RBSOA.
The BUL series is designed for use in lighting applications and low cost switch-mode power supplies.

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BUL26D	BULK26D	
V_{CES}	Collector-Emitter Voltage (V_{BE} = 0)	600		V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	300		V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	12		V
I_C	Collector Current	4		A
I_{CM}	Collector Peak Current (t_p < 5 ms)	8		A
I_B	Base Current	2		A
I_{BM}	Base Peak Current (t_p < 5 ms)	4		A
P_{tot}	Total Dissipation at T_c = 25 °C	60	50	W
T_{stg}	Storage Temperature Range	-65 to 150		°C
T_j	Max. Operating Junction Temperature	150		°C

THERMAL DATA

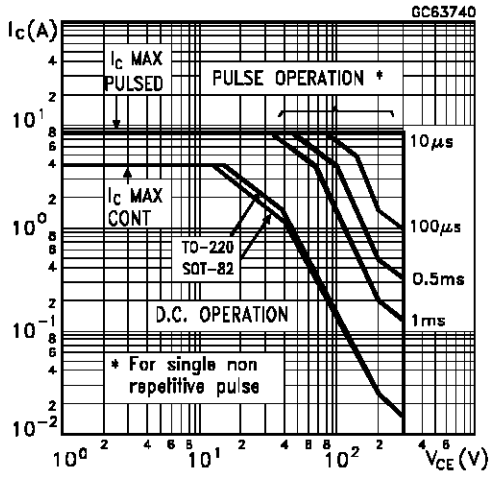
		TO220	SOT-82	
$R_{thj\text{-}case}$	Thermal Resistance Junction-Case Max	2.08	2.5	$^oC/W$
$R_{thj\text{-}amb}$	Thermal Resistance Junction-Ambient Max	62.5	62.5	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

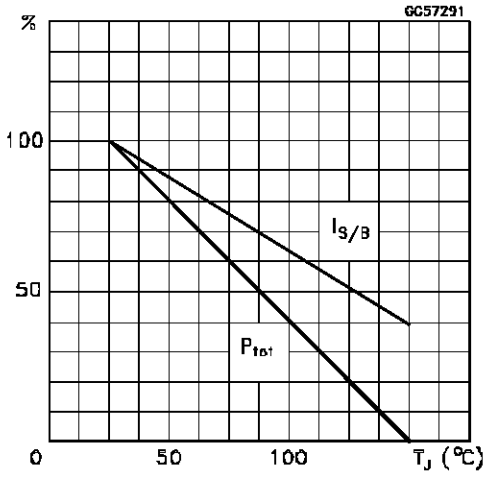
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 600 V			200	µA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 300 V			250	µA
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	I_C = 100 mA	300			V
V_{EBO}	Emitter-Base Voltage	I_E = 10 mA	12			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 1 A I_B = 0.2 A I_C = 2 A I_B = 0.4 A I_C = 3 A I_B = 0.6 A			0.5 0.7 1	V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 1 A I_B = 0.2 A I_C = 2 A I_B = 0.4 A I_C = 3 A I_B = 0.6 A			1.1 1.2 1.3	V V V
h_{FE}*	DC Current Gain	I_C = 10 mA V_{CE} = 5 V I_C = 1 A V_{CE} = 3 V	10 15		 45	
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 3 A I_{B1} = 0.6 A $V_{BE(off)}$ = -5 V R_{BB} = 0 Ω V_{CL} = 250 V L = 200 µH		 0.8 70	 1.3 130	 µs ns
t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	I_C = 3 A I_{B1} = 0.6 A $V_{BE(off)}$ = -5 V R_{BB} = 0 Ω V_{CL} = 250 V L = 200 µH T_j = 125 ^oC		 1.2 100		 µs ns
V_f	Diode Forward Voltage	I_C = 2.5 A			3	V

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

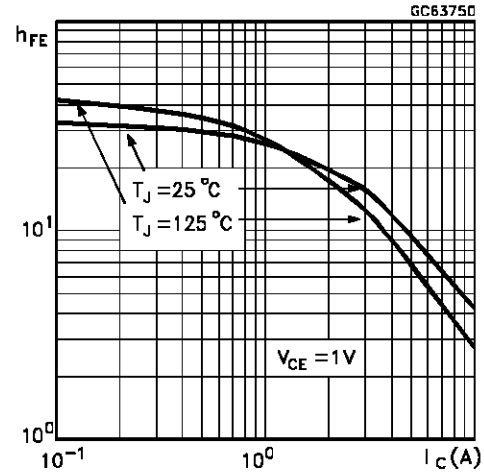
Safe Operating Areas



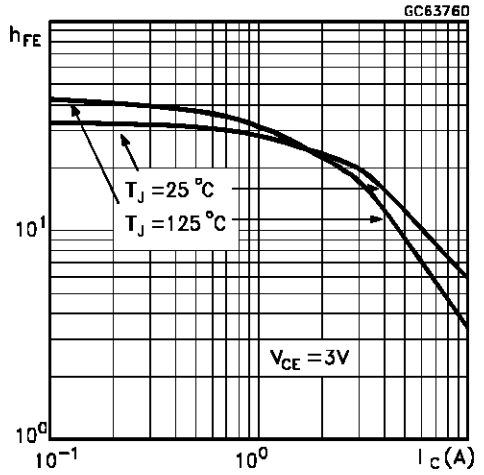
Derating Curves



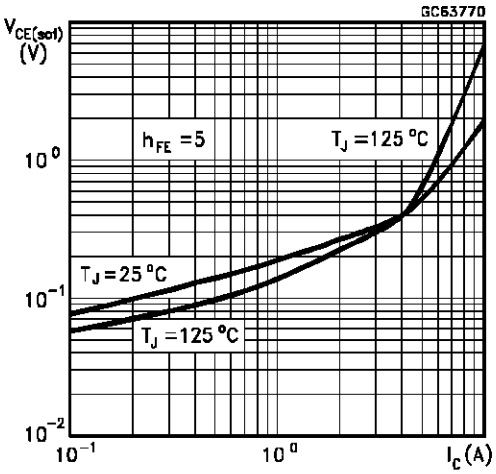
DC Current Gain



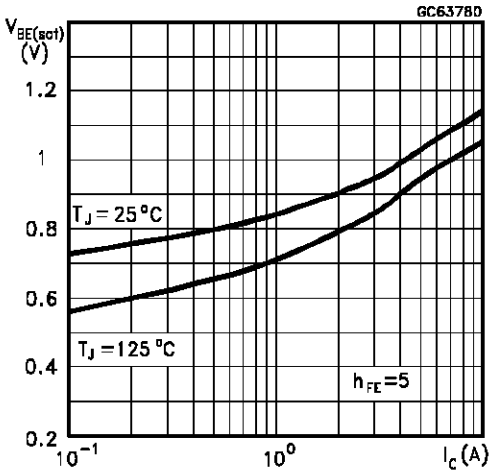
DC Current Gain



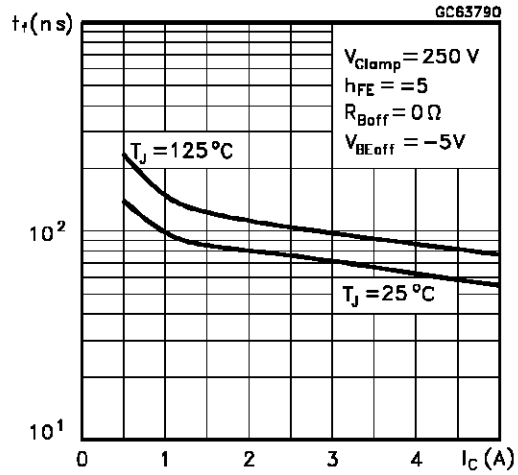
Collector-Emitter Saturation Voltage



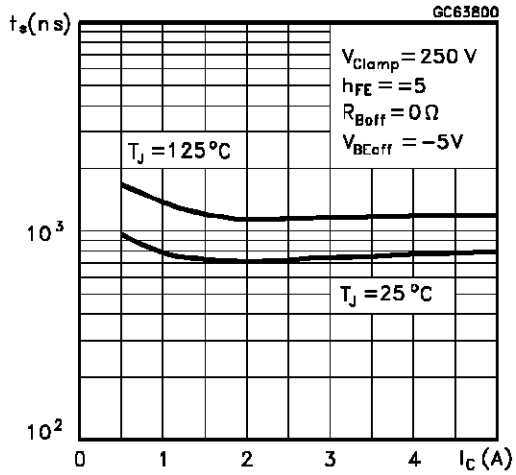
Base-Emitter Saturation Voltage



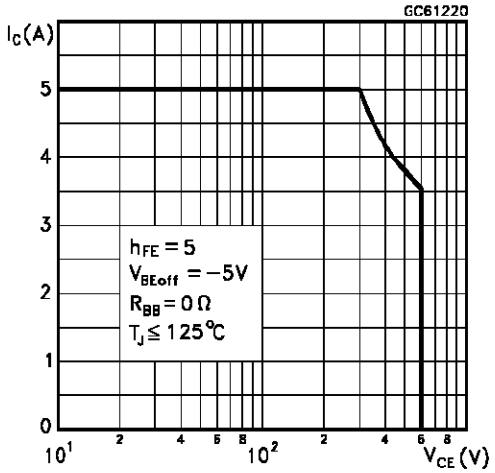
Inductive Fall Time



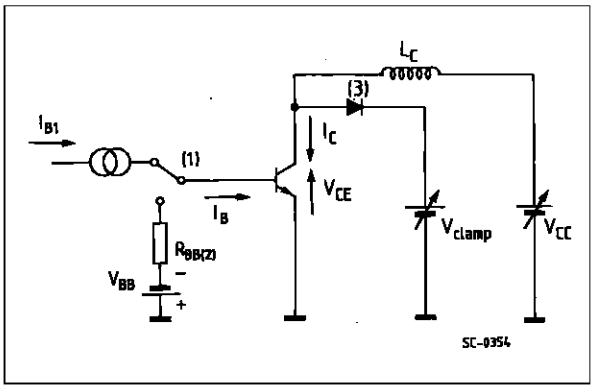
Inductive Storage Time



Reverse Biased SOA



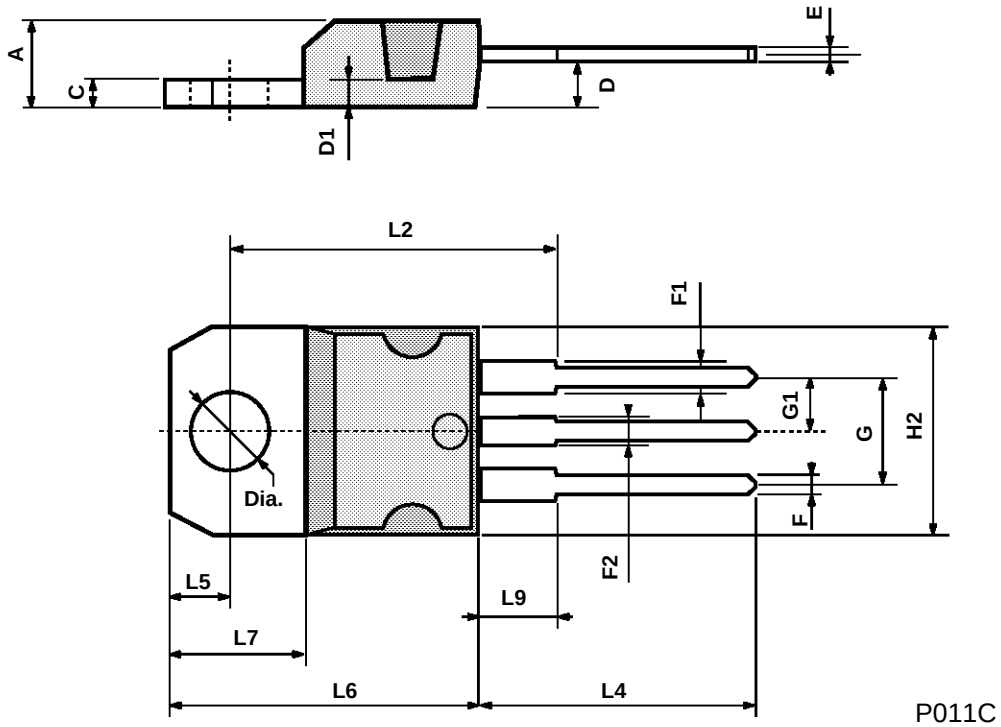
RBSOA and Inductive Load Switching Test Circuit



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

TO-220 MECHANICAL DATA

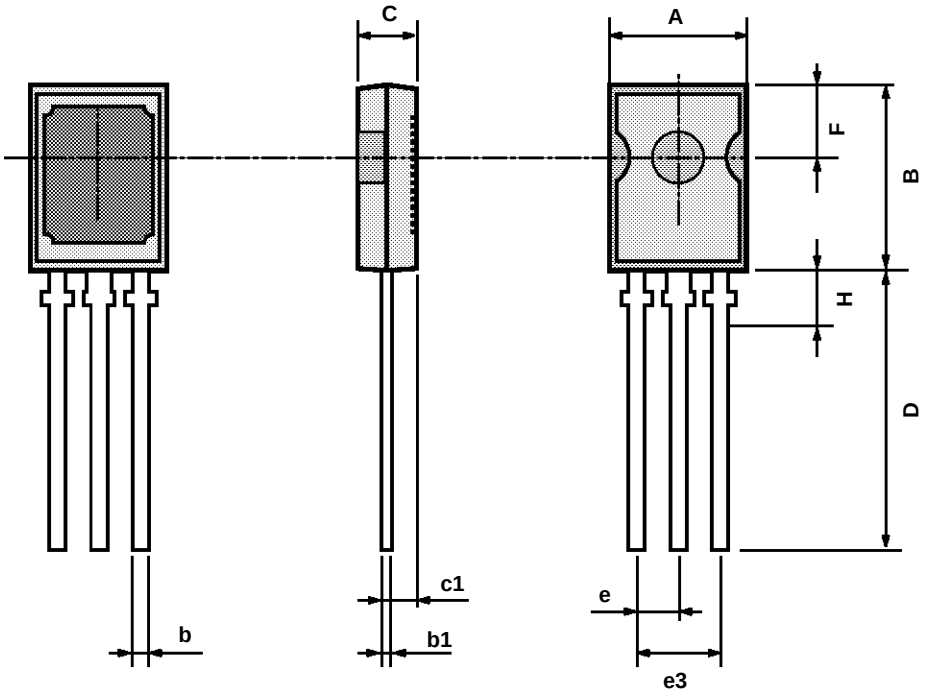
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
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



P011C

SOT-82 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	7.4		7.8	0.291		0.307
B	10.5		11.3	0.413		0.445
b	0.7		0.9	0.028		0.035
b1	0.49		0.75	0.019		0.030
C	2.4		2.7	0.04		0.106
c1		1.2			0.047	
D		15.7			0.618	
e		2.2			0.087	
e3		4.4			0.173	
F		3.8			0.150	
H			2.54		0.100	



P032A