

BUL216

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE
- NPN TRANSISTOR
- HIGH VOLTAGE CAPABILITY
- VERY HIGH SWITCHING SPEED
- HIGH OPERATING JUNCTION TEMPERATURE
- HIGH RUGGEDNESS

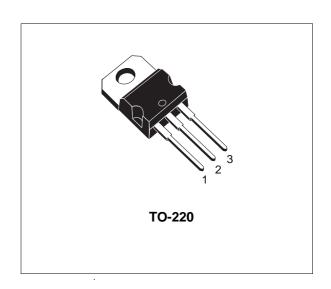
APPLICATIONS

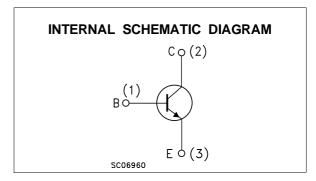
- ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING
- SWITCH MODE POWER SUPPLIES



The BUL216 is manufactured using high voltage Multiepitaxial Mesa technology for cost-effective high performance. It uses a Hollow Emitter structure to enhance switching speeds.

The BUL series is designed for use in lighting applications and low cost switch-mode power supplies.





ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CES}	Collector-Emitter Voltage (V _{BE} = 0)	1600	V
V_{CEO}	Collector-Emitter Voltage (I _B = 0)	800	V
VEBO	Emitter-Base Voltage (Ic = 0)	9	V
Ic	Collector Current	4	Α
Ісм	Collector Peak Current (tp < 5 ms)	6	Α
I _B	Base Current	2	Α
I _{BM}	Base Peak Current (t _p < 5 ms)	4	Α
P _{tot}	Total Dissipation at T _c = 25 °C	90	W
T _{stg}	Storage Temperature	-65 to 150	°C
Tj	Max. Operating Junction Temperature	150	°C

June 2001 1/6

THERMAL DATA

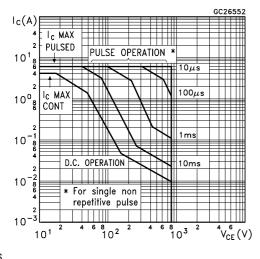
R _{thj-case}	Thermal Resistance Junction-Case	Max	1.39	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-Ambier	nt Max	62.5	°C/W

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

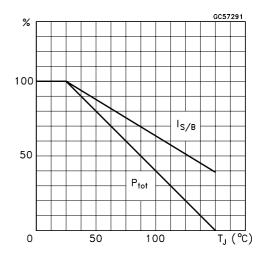
Symbol Parameter		Test Conditions	Min.	Тур.	Max.	Unit
Ices	Collector Cut-off Current (V _{BE} = 0)	$V_{CE} = 1600 \text{ V}$ $V_{CE} = 1600 \text{ V}$ $T_j = 125 \text{ °C}$			100 500	μA μA
I _{CEO}	Collector Cut-off Current (I _B = 0)	V _{CE} = 800 V			250	μΑ
V _{CEO(sus)}	$V_{CEO(sus)}$ Collector-Emitter $I_C = 100 \text{ mA}$ L = 25 mH Sustaining Voltage		800			V
V_{EBO}	Emitter-Base Voltage (I _C = 0)	I _E = 10 mA	9			V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	$I_C = 1 A$ $I_B = 0.2 A$ $I_C = 2 A$ $I_B = 0.66 A$			1 3	V V
V _{BE(sat)} *	Base-Emitter Saturation Voltage	I _C = 1 A I _B = 0.2 A I _C = 2 A I _B = 0.66 A			1.2 1.2	V V
h _{FE} *	h_{FE}^* DC Current Gain $I_C = 0.4 \text{ A}$ V_{CE} $I_C = 10 \text{ mA}$ V_{CE}		12 10		40	
t _s t _f	INDUCTIVE LOAD Storage Time Fall Time	$ \begin{aligned} I_{C} &= 1.5 \text{ A} & I_{B1} &= 0.5 \text{ A} \\ V_{BE(off)} &= -5 \text{ V} & R_{BB} &= 0 \Omega \\ V_{CL} &= 250 \text{ V} & L &= 200 \mu\text{H} \end{aligned} $		2.1 450	3.3 720	μs ns
t _s t _f	(,			3 600		μs ns

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

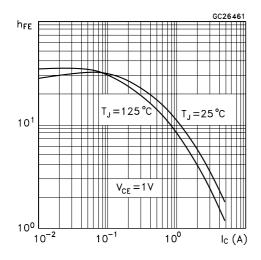
Safe Operating Areas



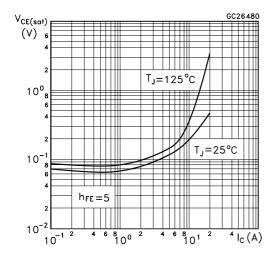
Derating Curve



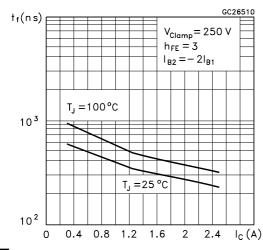
DC Current Gain



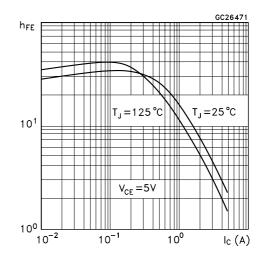
Collector Emitter Saturation Voltage



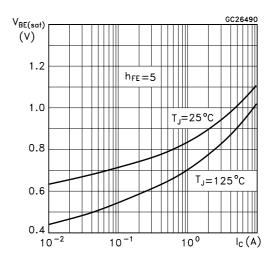
Inductive Fall Time



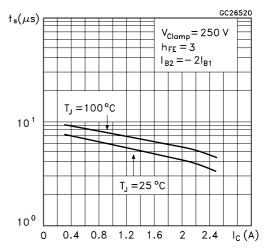
DC Current Gain



Base Emitter Saturation Voltage

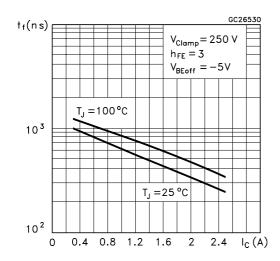


Inductive Storage Time

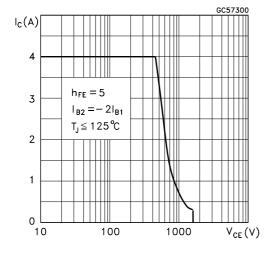


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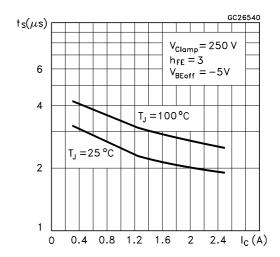
Inductive Fall Time



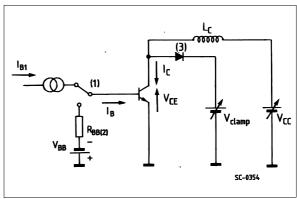
Reverse Biased SOA



Inductive Storage Time



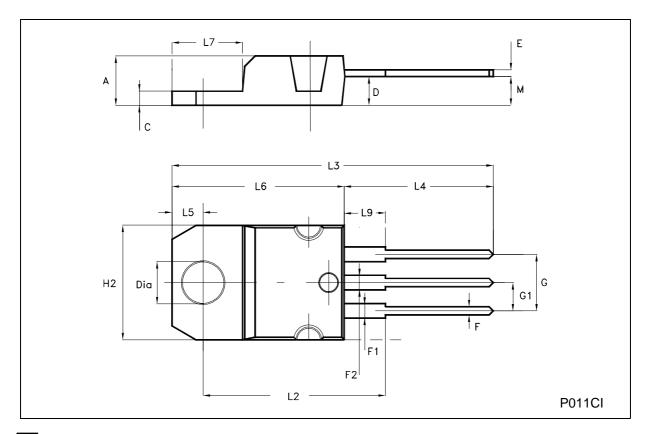
RBSOA and Inductive Load Switching Test Circuits



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

TO-220 MECHANICAL DATA

DIM	mm		inch			
DIM.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
Α	4.40		4.60	0.173		0.181
С	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
М		2.60			0.102	
DIA.	3.75		3.85	0.147		0.151



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