

BUL1203EFP

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

- HIGH VOLTAGE CAPABILITY
- LOW SPREAD OF DYNAMIC PARAMETERS
- MINIMUM LOT-TO-LOT SPREAD FOR RELIABLE OPERATION
- VERY HIGH SWITCHING SPEED
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING

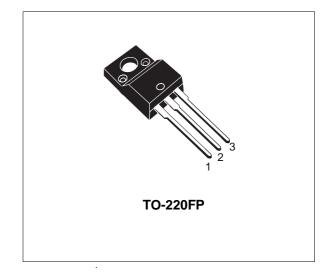
APPLICATIONS

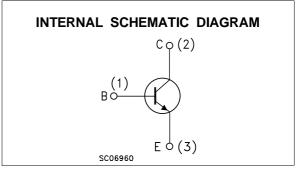
 ELECTRONIC BALLASTS FOR FLUORESCENT LIGHTING (277 V HALF BRIDGE AND 120 V PUSH-PULL TOPOLOGIES)

DESCRIPTION

The BUL1203EFP is a new device manufactured using Diffused Collector technology to enhance switching speeds and tight h_{FE} range while maintaining a wide RBSOA.

Thanks to his structure it has an intrinsic ruggedness which enables the transistor to withstand a high collector current level during Breakdown condition, without using the transil protection usually necessary in typical converters for lamp ballast.





Symbol	Parameter	Value	Unit V	
V _{CBO}	Collector-BaseVoltage (I _E = 0)	1200		
VCES	Collector-Emitter Voltage (V _{BE} = 0)	1200	V	
V _{CEO}	Collector-Emitter Voltage $(I_B = 0)$	550	V	
Vebo	Emitter-Base Voltage $(I_C = 0)$	9	V	
Ic	Collector Current	5	A	
Ісм	Collector Peak Current (t _p < 5 ms)	8	А	
IB	Base Current	2	А	
I _{BM}	Base Peak Current (t _p < 5 ms)	4	A	
P _{tot}	Total Dissipation at $T_c = 25 \ ^{\circ}C$	36	W	
Visol	Insulation Withstand Voltage (RMS) from All Three Leads to Exernal Heatsink	1500	V	
T _{stg}	Storage Temperature	-65 to 150	°C	
Tj	Max. Operating Junction Temperature	150	°C	

ABSOLUTE MAXIMUM RATINGS

THERMAL DATA

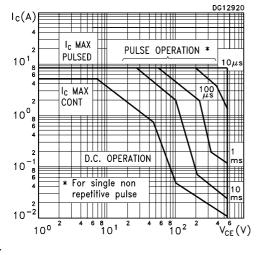
R _{thj-case}	Thermal Resistance Junction-case	Max	3.47	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-ambient	Max	62.5	°C/W

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

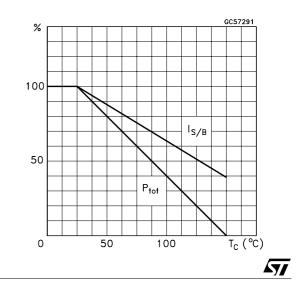
Symbol	Parameter	Test	Conditions	Min.	Тур.	Max.	Unit
I _{CES}	Collector Cut-off Current (V _{BE} = 0)	V _{CE} = 1200 V				100	μA
ICEO	Collector Cut-off Current ($I_B = 0$)	V _{CE} = 550 V				100	μA
$V_{CEO(sus)^*}$	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 100 mA	L = 25 mH	550			V
V_{EBO}	Emitter-Base Voltage (I _C = 0)	I _E = 10 mA		9			V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	$I_{C} = 1 A$ $I_{C} = 2 A$ $I_{C} = 3 A$	$I_B = 0.2 A$ $I_B = 0.4 A$ $I_B = 1 A$			0.5 0.7 1.5	V V V
V _{BE(sat)} *	Base-Emitter Saturation Voltage	I _C = 2 A I _C = 3 A	I _B = 0.4 A I _B = 1 A			1.5 1.5	V V
h _{FE} *	DC Current Gain	$I_{C} = 1 \text{ mA}$ $I_{C} = 10 \text{ mA}$ $I_{C} = 0.8 \text{ A}$ $I_{C} = 2 \text{ A}$	V _{CE} = 5 V V _{CE} = 5 V V _{CE} = 3 V V _{CE} = 5 V	10 10 14 9		32 28	
t _{on} t _s tf	RESISTIVE LOAD Turn-on Time Storage Time Fall Time	$I_{C} = 2 A$ $I_{B2} = -0.8 A$ $V_{CC} = 150 V$	$I_{B1} = 0.4 \text{ A}$ tp = 30 µs (see figure 2)		2.5 0.2	0.5 3.0 0.3	μs μs μs
Ear	Repetitive Avalanche Energy	L = 2 mH V _{CC} = 50 V (see figure 3)	C = 1.8 nF V _{BE} = -5 V	6			mJ

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

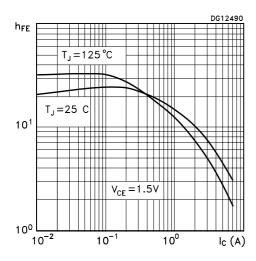
Safe Operating Area



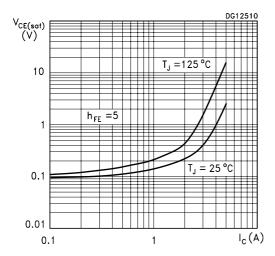
Derating Curve

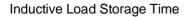


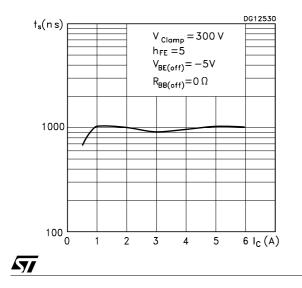
DC Current Gain



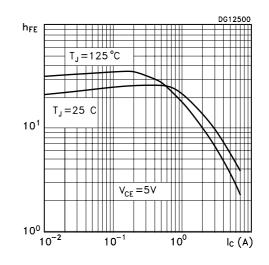
Collector-Emitter Saturation Voltage



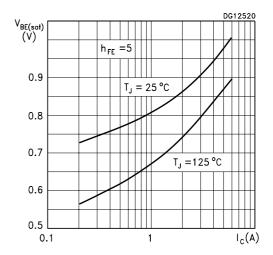


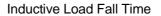


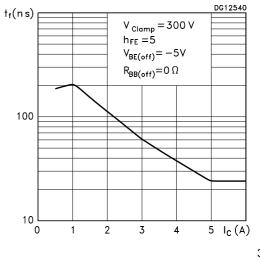
DC Current Gain











Reverse Biased Safe Operating Area

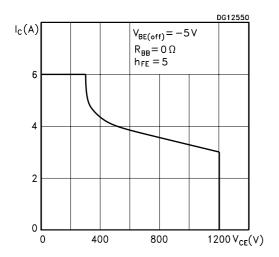


Figure 1: Inductive Load Switching Test Circuit

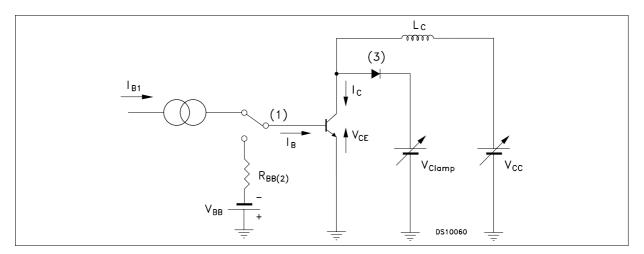


Figure 2: Resistive Load Switching Test Circuit

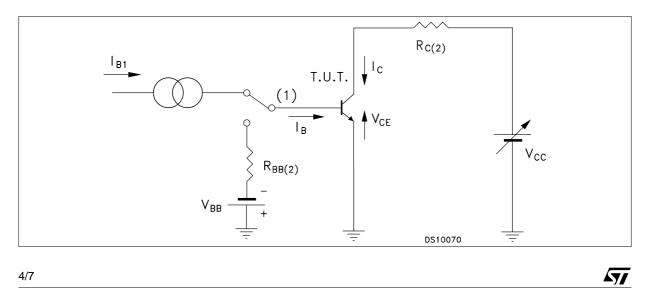
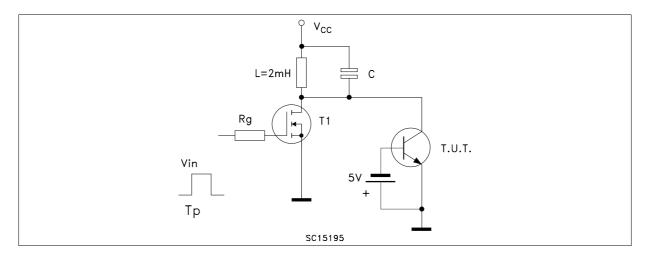
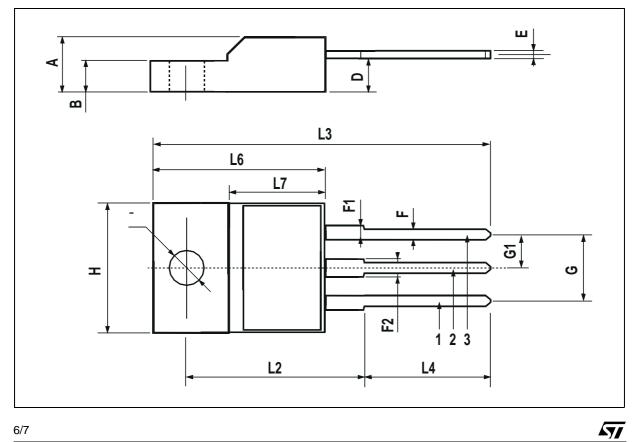


Figure 3: Energy Rating Test Circuit



DIM.		mm		inch			
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
А	4.4		4.6	0.173		0.181	
В	2.5		2.7	0.098		0.106	
D	2.5		2.75	0.098		0.108	
E	0.45		0.7	0.017		0.027	
F	0.75		1	0.030		0.039	
F1	1.15		1.7	0.045		0.067	
F2	1.15		1.7	0.045		0.067	
G	4.95		5.2	0.195		0.204	
G1	2.4		2.7	0.094		0.106	
Н	10		10.4	0.393		0.409	
L2		16			0.630		
L3	28.6		30.6	1.126		1.204	
L4	9.8		10.6	0.385		0.417	
L6	15.9		16.4	0.626		0.645	
L7	9		9.3	0.354		0.366	

TO-220FP MECHANICAL DATA



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