

**Silicon NPN Power Transistors**

**BUL381D**

**DESCRIPTION**

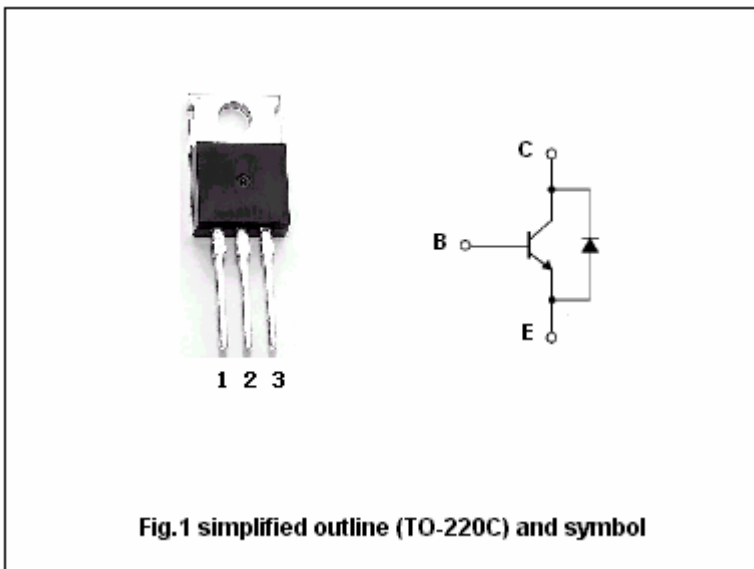
- With TO-220C package
- High voltage ,high speed
- Integrated antiparallel collector-emitter diode

**APPLICATIONS**

- Designed for use in lighting applications and low cost switch-mode power supplies.

**PINNING**

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter



**Absolute maximum ratings(Ta=25 )**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$V_{CBO}$	Collector-base voltage	Open emitter	800	V
$V_{CEO}$	Collector-emitter voltage	Open base	400	V
$V_{EBO}$	Emitter-base voltage	Open collector	9	V
$I_C$	Collector current		5	A
$I_{CM}$	Collector current-Peak ( $t_p < 5$ ms)		8	A
$I_B$	Base current		2	A
$I_{BM}$	Base current-Peak ( $t_p < 5$ ms)		4	A
$P_T$	Total power dissipation	$T_C = 25$	70	W
$T_j$	Junction temperature		150	
$T_{stg}$	Storage temperature		-65~150	

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th j-c}$	Thermal resistance from junction to case	1.78	/W

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## CHARACTERISTICS

T<sub>j</sub>=25 unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEQ(SUS)</sub>	Collector-emitter sustaining voltage	I <sub>C</sub> =100mA; L=25mH	400			V
V <sub>(BR)EBO</sub>	Emitter-base breakdown voltage	I <sub>E</sub> =10mA; I <sub>C</sub> =0				
V <sub>CEsat-1</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =1A ; I <sub>B</sub> =0.2A			0.5	V
V <sub>CEsat-2</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =2A ; I <sub>B</sub> =0.4A			0.7	V
V <sub>CEsat-3</sub>	Collector-emitter saturation voltage	I <sub>C</sub> =3A ; I <sub>B</sub> =0.75A			1.1	V
V <sub>BEsat-1</sub>	Base-emitter saturation voltage	I <sub>C</sub> =1A ; I <sub>B</sub> =0.2A			1.1	V
V <sub>BEsat-2</sub>	Base-emitter saturation voltage	I <sub>C</sub> =2A ; I <sub>B</sub> =0.4A			1.2	V
I <sub>CES</sub>	Collector cut-off current	V <sub>CE</sub> =800V; V <sub>BE</sub> =0 T <sub>j</sub> =125			100 500	μ A
I <sub>CEO</sub>	Collector cut-off current	V <sub>CE</sub> =400V; I <sub>B</sub> =0			250	μ A
h <sub>FE-1</sub>	DC current gain	I <sub>C</sub> =2A ; V <sub>CE</sub> =5V	8			
h <sub>FE-2</sub>	DC current gain	I <sub>C</sub> =10mA ; V <sub>CE</sub> =5V	10			
V <sub>F</sub>	Diode forward voltage	I <sub>C</sub> =2A			2.5	V

Switching times resistive load

t <sub>s</sub>	Storage time	V <sub>CC</sub> =250V , I <sub>C</sub> =2A I <sub>B1</sub> =- I <sub>B2</sub> =0.4A; t <sub>p</sub> =30 μ s	1.5		2.5	μ s
t <sub>f</sub>	Fall time				0.8	μ s

