

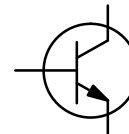
BUL43B

Product Preview

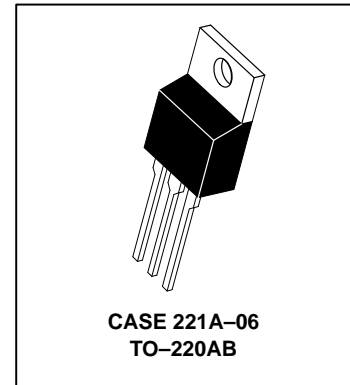
**SWITCHMODE NPN Silicon
Planar Power Transistor**

The BUL43B has an application specific state-of-the-art die designed for use in 220 V line operated Switchmode Power supplies and electronic ballast ("light ballast"). The main advantages brought by this new transistor are:

- Improved Efficiency Due to Low Base Drive Requirements:
 - High and Flat DC Current Gain h_{FE}
 - Fast and Tightened Switching Distributions
 - No Coil Required in Base Circuit for Fast Turn-Off (no current tail)



**POWER TRANSISTORS
2 AMPERES
700 VOLTS
40 WATTS**



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Sustaining Voltage	V_{CEO}	350	Vdc
Collector-Base Breakdown Voltage	V_{CBO}	650	Vdc
Collector-Emitter Breakdown Voltage	V_{CES}	650	Vdc
Emitter-Base Voltage	V_{EBO}	9	Vdc
Collector Current — Continuous	I_C	2	Adc
— Peak (1)	I_{CM}	4	
Base Current — Continuous	I_B	1	Adc
— Peak (1)	I_{BM}	2	
*Total Device Dissipation @ $T_C = 25^\circ\text{C}$	P_D	40	Watt
*Derate above 25°C		0.32	W/ $^\circ\text{C}$
Operating and Storage Temperature	T_J, T_{stg}	-65 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance			$^\circ\text{C}/\text{W}$
— Junction to Case	$R_{\theta JC}$	3.125	
— Junction to Ambient	$R_{\theta JA}$	62.5	
Maximum Lead Temperature for Soldering Purposes: 1/8" from case for 5 seconds	T_L	260	$^\circ\text{C}$

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle.

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BUL43B**ELECTRICAL CHARACTERISTICS** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage ($I_C = 100\text{ mA}$, $L = 25\text{ mH}$)	$V_{CEO(sus)}$	350			Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEO}$, $I_B = 0$)	I_{CEO}			100	μAdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CES}$, $V_{EB} = 0$)	I_{CES}			10 200	μAdc
Emitter–Cutoff Current ($V_{EB} = 9\text{ Vdc}$, $I_C = 0$)	I_{EBO}			100	μAdc

ON CHARACTERISTICS

Base–Emitter Saturation Voltage ($I_C = 2\text{ Adc}$, $I_B = 0.5\text{ Adc}$)	$V_{BE(sat)}$			1.25	Vdc
Collector–Emitter Saturation Voltage ($I_C = 2\text{ Adc}$, $I_B = 0.5\text{ Adc}$)	$V_{CE(sat)}$	@ $T_C = 25^\circ\text{C}$		1	Vdc
DC Current Gain ($I_C = 1\text{ Adc}$, $V_{CE} = 2\text{ Vdc}$)	h_{FE}	@ $T_C = 25^\circ\text{C}$	8		—
($I_C = 2\text{ Adc}$, $V_{CE} = 5\text{ Vdc}$)		@ $T_C = 25^\circ\text{C}$	6		—

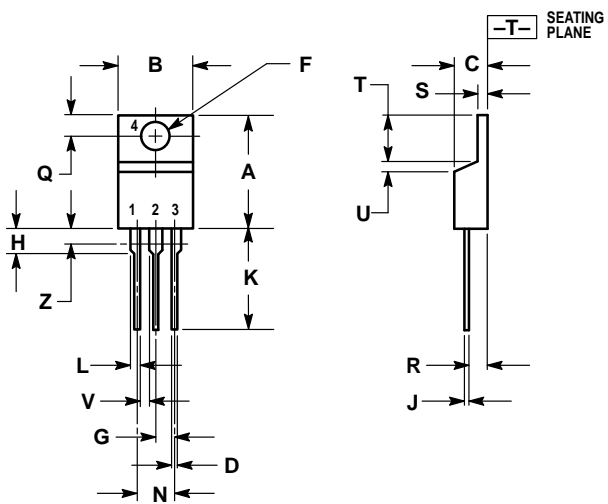
DYNAMIC CHARACTERISTICS

Current Gain Bandwidth ($I_C = 0.5\text{ Adc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1\text{ MHz}$)	f_T		13		MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 1\text{ MHz}$)	C_{ob}		40		pF
Input Capacitance ($V_{EB} = 8\text{ V}$)	C_{ib}		400		pF

SWITCHING CHARACTERISTICS: Resistive Load (D.C. $\leq 10\%$, Pulse Width = 20 μs)

Turn–off Time	$I_C = 1.2\text{ Adc}$, $I_{B1} = 0.4\text{ Adc}$ $I_{B2} = 0.1\text{ Adc}$ $V_{CC} = 300\text{ Vdc}$	@ $T_C = 25^\circ\text{C}$	t_{off}	4.7		5.8	μs
Fall Time	$I_C = 2.5\text{ Adc}$, $I_{B1} = 0.5\text{ Adc}$ $I_{B2} = 0.5\text{ Adc}$ $V_{CC} = 150\text{ Vdc}$	@ $T_C = 25^\circ\text{C}$	t_f			800	ns

PACKAGE DIMENSIONS




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

- STYLE 1:
- PIN 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR

CASE 221A-06
TO-220AB
ISSUE Y

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