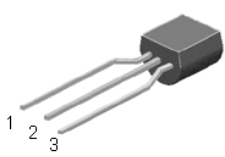


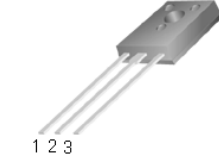
### High Voltage NPN Transistor



**TO-92**

**Pin Definition**

1. Emitter
2. Collector
3. Base

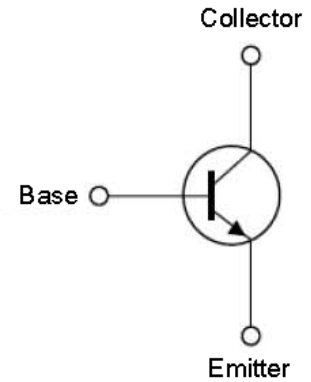


**TO-126**

**Pin Definition**

1. Emitter
2. Collector
3. Base

**INTERNAL SCHMATIC DIAGRAM**



### Features

- High Voltage
- Very High Switch Speed
- $BV_{CEO} : 400V$
- $BV_{CBO} : 800V$
- $I_C : 1.5A$
- $V_{CE(SAT)} : 2V@I_C / I_B=800mA / 200mA$
- Silicon Triple Diffused Type

### Application

- Electronic Ballasts
- Adapter
- Lighting

### ABSOLUTE MAXIMUM RATINGS ( $T_c = 25^\circ C$ )

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	VCBO	800	V
Collect-Break Down Voltage	VCES	800	V
Collector-Emitter Voltage	VCEO	400	V
Emitter-Base Voltage	VEBO	9	V
Collector Current(DC)	IC	1.5	A
Collector Current(Pulse)	ICP	2	A
Total Power Dissipation(TO92)	PD	1.5	W
Total Power Dissipation(TO126)		20	
Junction Temperature	TJ	150	°C
Operating Junction and Storage Temperature Range	TSTG	-55 ~ +150	°C

### ELECTRICAL CHARACTERISTICS ( T<sub>c</sub> = 25°C )

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Voltage	BVCBO	IC = 1mA, IB=0	800	–	–	V
Collector-Emitter Breakdown Voltage	BVCEO	IC = 1mA, IE=0	400	–	–	V
Emitter- Base Breakdown Voltage	BVEBO	IE = 1mA, IC=0	9	–	–	V
Collector Cutoff Current	ICBO	VCB = 700V, IE=0	–	–	1	μA
Emitter Cutoff Current	IEBO	VEB = 9V, IC=0	–	–	1	μA
DC Current Gain	hFE1	VCE = 10V, IC=10mA	20	–	–	
	hFE2	VCE = 10V, IC=100mA	25	–	45	
	hFE3	VCE = 10V, IC=280mA	20	–	–	
Collector-Emitter Saturation Voltage	VCE(SAT1)	IC/IB = 50mA / 10mA	–	–	0.5	V
	VCE(SAT2)	IC/IB = 100mA / 10mA	–	–	1	
	VCE(SAT3)	IC/IB = 200mA / 20mA	–	–	3	
Base-Emitter Saturation Voltage	VBE(SAT1)	IC/IB = 50mA / 10mA	–	–	1.15	V
	VBE(SAT2)	IC/IB = 100mA / 10mA	–	–	1.25	

### Dynamic

Frequency	f <sub>T</sub>	VCE=10V, IC=0.1A	4	–	–	MHz
Output Capacitance	C <sub>ob</sub>	VCB=10V, f=01.MHz	–	21	–	pF

### Resistive Load Switching Time (Ratings)

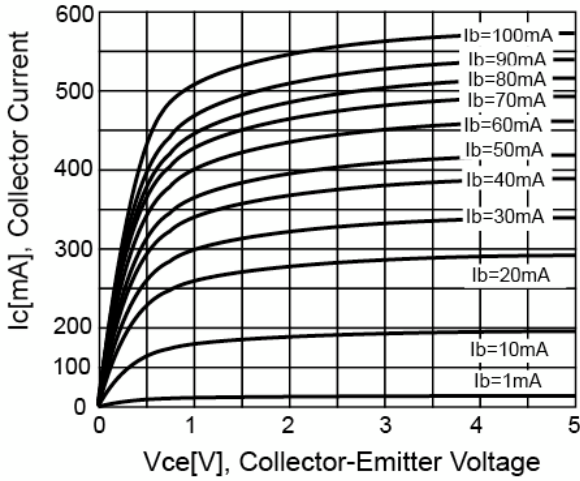
Rise Time	t <sub>r</sub>	V <sub>cc</sub> =125V, IC=100mA,	–	–	2	uS
Storage Time	t <sub>STG</sub>	IB1 = IB2 = 20mA, tp = 25uS	–	5	6	uS
Fall Time	t <sub>f</sub>	Duty Cycle ≤ 1%	–	0.2	0.7	uS

### Thermal Performance

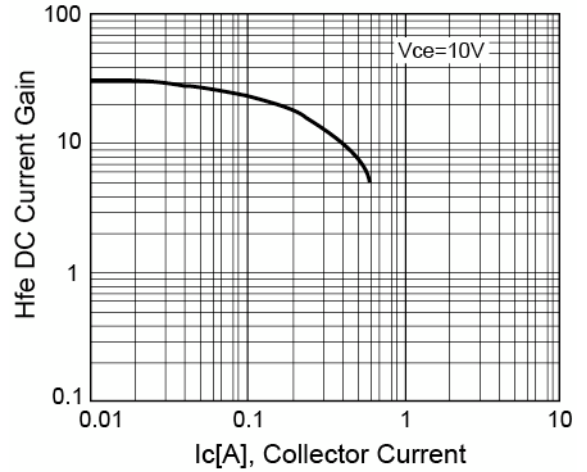
Parameter	Symbol	Limit	Unit
Junction to Ambient Thermal Resistance (TO92)	R <sub>θJA</sub>	122	°C/W
Junction to Ambient Thermal Resistance (TO126)		90	

### Electrical Characteristic Curves

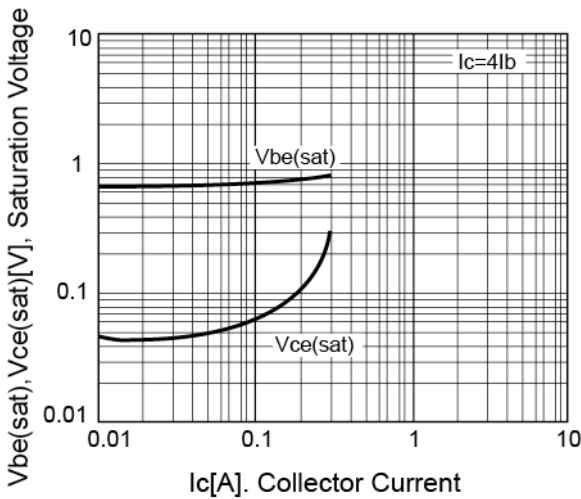
Static Characteristics



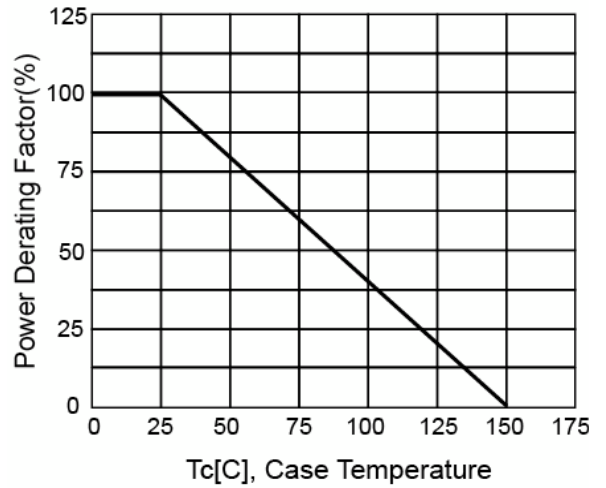
DC Current Gain



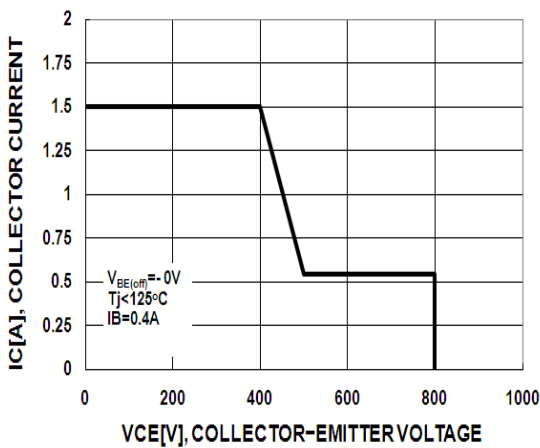
VCE(SAT) v.s. VBE(SAT)



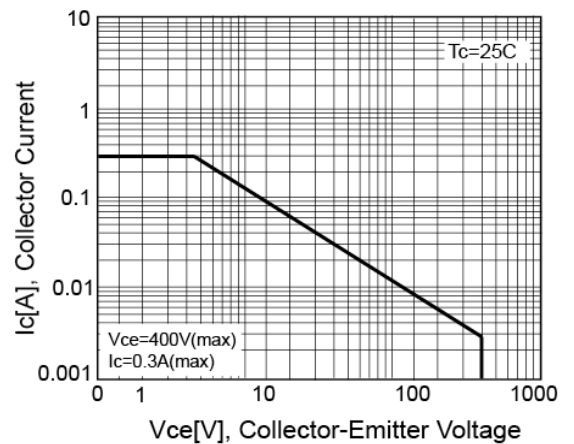
Power Derating



Reverse Bias SOA



Safety Operating Area



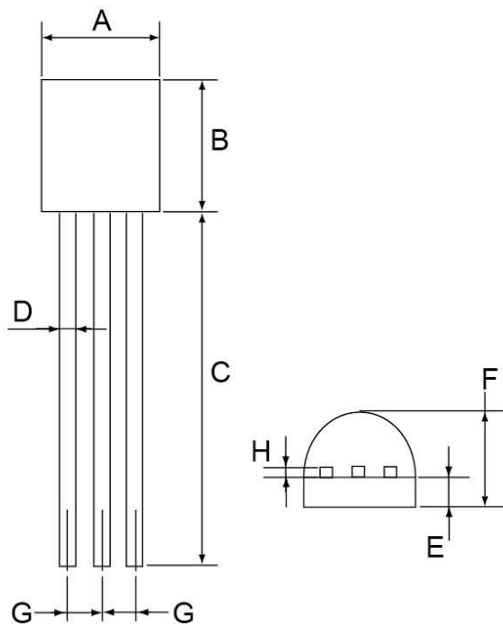
Ordering Information

Type NO	Marking	Package Code
WTBV46	BV46	TO-92

Marking and Pin Define

First Line	WTC	Company Name	
Second Line	BV46	Product Code	
Third Line	A J 0 T L	1st (Year Code)	A-2010 B-2011 C-2012 ...
		2nd (Month Code)	A-Jan, B-Feb, C-Mar, D-Apr, E-May, F-Jun, G-Jul, H-Aug, I-Sep, J-Oct, K-Nov, L-Dec
		3rd (Lot Code)	0~9 , A~Z
		4th (Product Code)	M - MOS , T - Transistor, L - Linear
		5th (Package Code)	I - TO251, D - TO252 , L - TO92, M - TO126, X - TO220, F - TO220F, Y - SOT89, S - SOP8
		6th (Spec Code)	(Reserve)

TO-92 Package Dimension



TO-92 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.3	4.7	0.169	0.185
B	4.3	4.7	0.169	0.185
C	13.53(typ)		0.532(typ)	
D	0.39	0.49	0.015	0.019
E	1.18	1.28	0.046	0.5
F	3.3	3.7	0.13	0.146
G	1.27	1.31	0.05	0.051
H	0.33	0.43	0.013	0.017

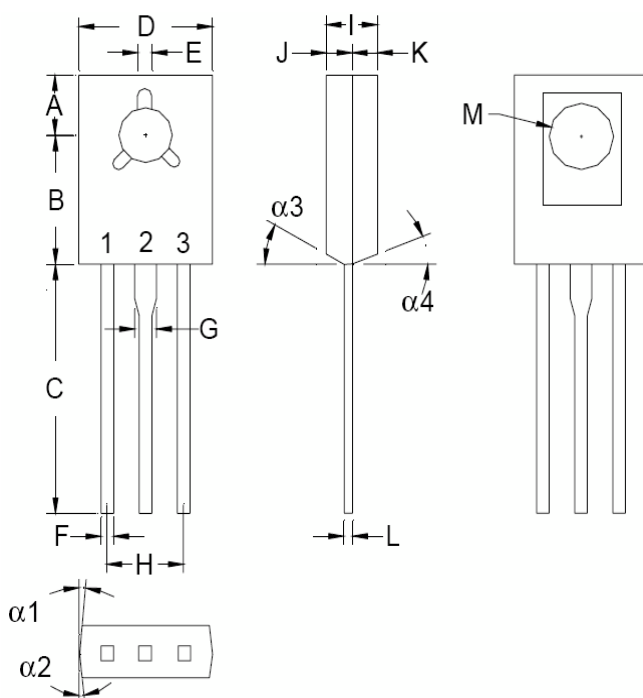
### Ordering Information

Type NO	Marking	Package Code
WTBV46M	BV46M	TO-126

### Marking and Pin Define

First Line	WTC	Company Name		
Second Line	BV46M	Product Code		
Third Line	A J 0 T M	1st (Year Code)	A-2010 B-2011 C-2012 ...	
		2nd (Month Code)	A-Jan, B-Feb, C-Mar, D-Apr, E-May, F-Jun, G-Jul, H-Aug, I-Sep, J-Oct, K-Nov, L-Dec	
		3rd (Lot Code)	0~9, A~Z	
		4th (Product Code)	M - MOS, T - Transistor, L - Linear	
		5th (Package Code)	I - TO251, D - TO252, L - TO92, M - TO126, X - TO220, F - TO220F, Y - SOT89, S - SOP8	
		6th (Spec Code)	(Reserve)	

### TO-126 Package Dimension



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
α1	—	3°	—	3°
α2	—	3°	—	3°
α3	—	3°	—	3°
α4	—	3°	—	3°
A	0.15	0.153	3.81	3.91
B	0.275	0.279	6.99	7.09
C	0.531	0.61	13.5	15.5
D	0.285	0.303	7.52	7.72
E	0.034	0.041	0.95	1.05
F	0.028	0.031	0.71	0.81
G	0.048	0.052	1.22	1.32
H	0.17	0.189	4.34	4.8
I	0.095	0.105	2.41	2.66
J	0.045	0.055	1.14	1.39
K	0.045	0.055	1.14	1.39
L	—	0.021	—	0.55
M	0.137	0.152	3.5	3.86