

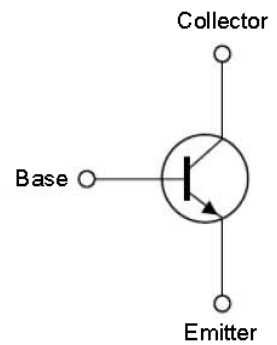
## High Voltage NPN Transistor

### 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



### INTERNAL SCHEMATIC DIAGRAM



### Application

- Electronic Ballasts
- Adapter
- Lighting

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

Parameter	Symbol	Max 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(TO251)		30	
Junction Temperature	TJ	150	$^{\circ}C$
Operating Junction and Storage Temperature Range	TSTG	-55 ~ +150	$^{\circ}C$

**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**

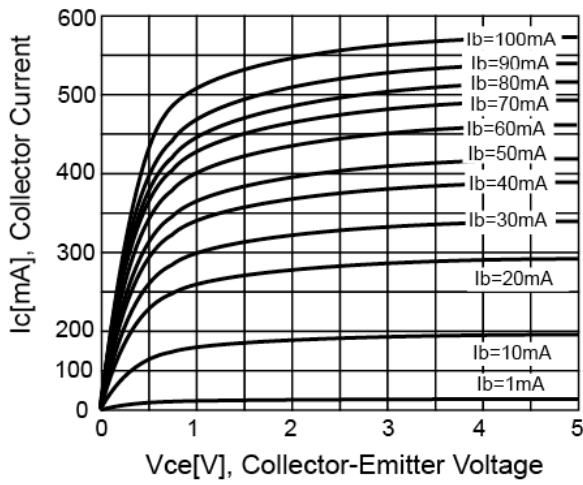
Frequency	f <sub>T</sub>	VCE=10V, IC=0.1A	4	–	–	MHz
Output Capacitance	Cob	VCB=10V, f=01.MHz	–	21	–	pF

**Resistive Load Switching Time (Ratings)**

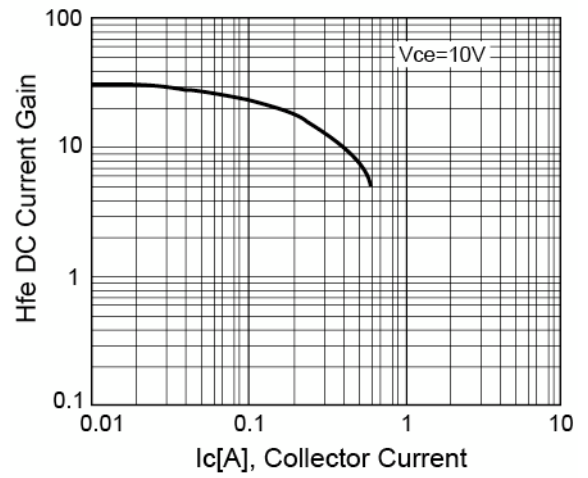
Rise Time	t <sub>r</sub>	Vcc=125V, IC=100mA,	–	–	2	uS
Storage Time	t <sub>STG</sub>	IB1 = IB2 = 20mA,	–	5	6	uS
Fall Time	t <sub>f</sub>	tp = 25uS Duty Cycle ≤ 1%	–	0.2	0.7	uS

## Electrical Characteristic Curves

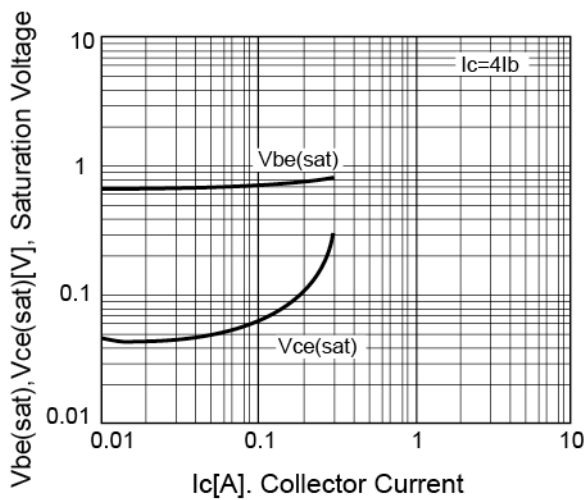
Static Characteristics



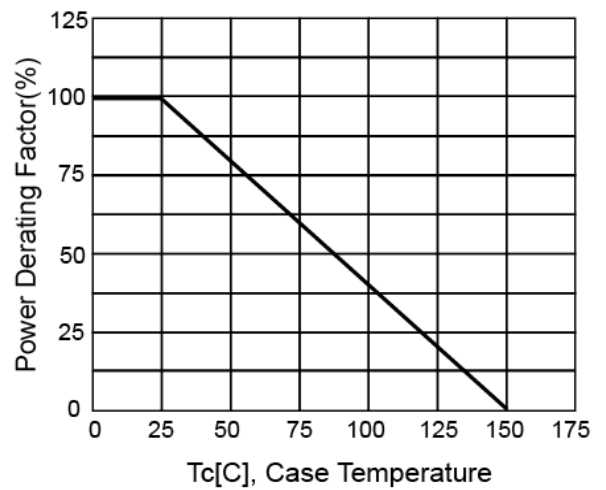
DC Current Gain



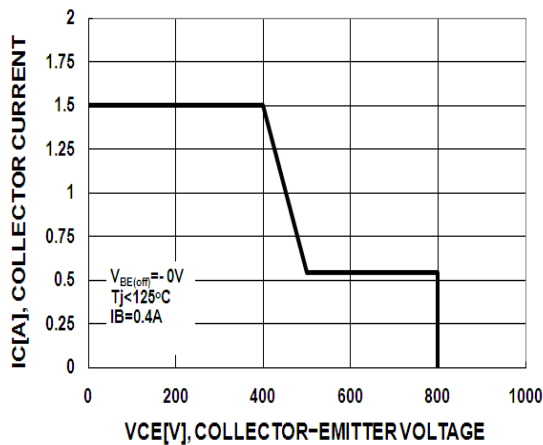
$V_{CE(SAT)}$  v.s.  $V_{BE(SAT)}$



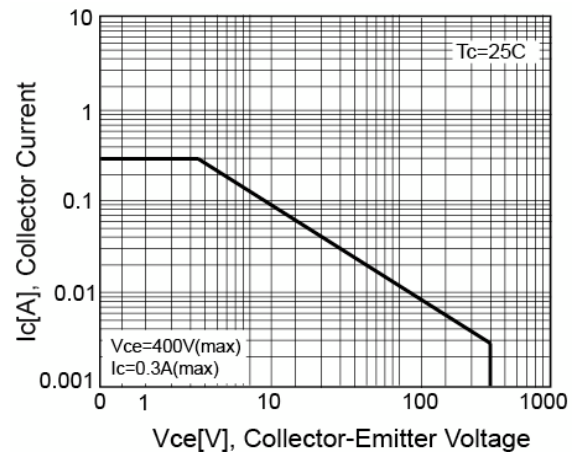
Power Derating



Reverse Bias SOA



Safety Operating Area



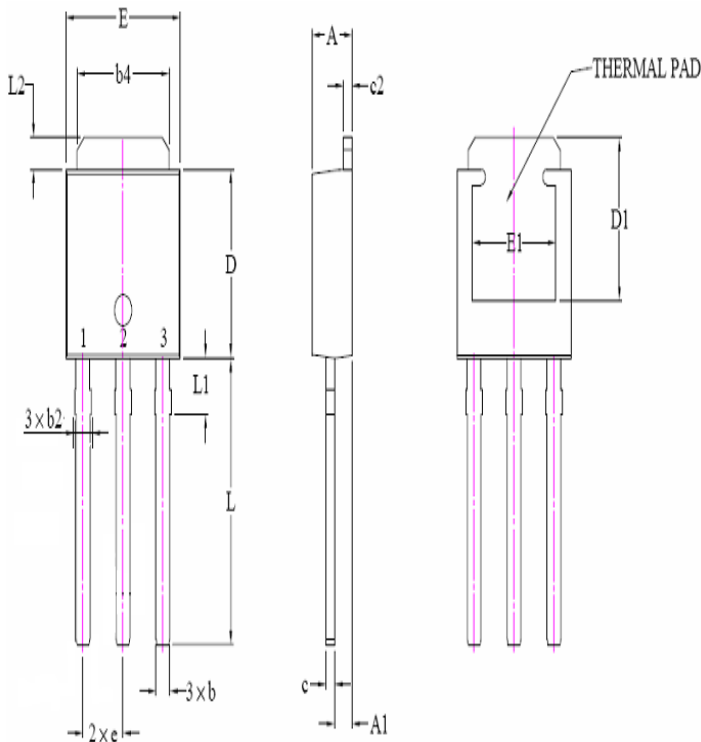
### Ordering Information

Type NO	Marking	Package Code
WTI46	46I	TO-251

### Marking and Pin Define

First Line	WTC	Company Name	
Second Line	46I	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-251 Package Dimension



Symbol	TO-251DL			
	Millimeters		Inches	
	Min	Max	Min	Max
A	2.220	2.420	0.087	0.095
A1	0.890	1.140	0.035	0.045
b	0.550	0.670	0.022	0.026
b2	0.760	0.960	0.030	0.038
b4	5.200	5.400	0.205	0.213
c	0.460	0.570	0.018	0.023
c2	0.450	0.550	0.018	0.022
D	5.950	6.250	0.234	0.246
D1	4.200	4.500	0.165	0.177
E	6.400	6.700	0.252	0.264
E1	4.750	4.850	0.187	0.191
e	2.28 REF		0.090 REF	
L	8.900	9.500	0.350	0.374
L1	1.900	2.290	0.075	0.090
L2	0.900	1.000	0.035	0.038