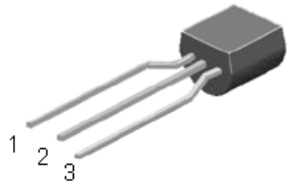
High Voltage NPN Power Transistor with Diode

Features

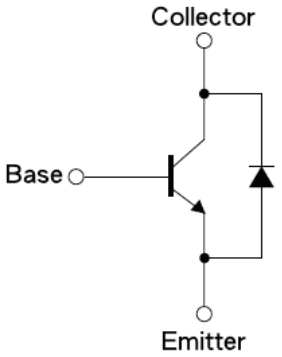
- High Voltage
- BV_{CEO} : 400V
- BV_{CBO} : 800V
- I_C : 1.5A
- Silicon Triple Diffused Type
- NPN Silicon Transistor with Diode
- Free-wheeling Diode Inside
- Low Variable Storage-time Spread
- Low Base Drive Requirement
- Half Bridge Light Ballast Application



TO-92

Pin Definition
1. Emitter
2. Collector
3. Base

INTERNAL SCHMATIC DIAGRAM



Application

- Electronic Ballasts
- Adapter
- Lighting

ABSOLUTE MAXIMUM RATINGS (Tc = 25℃)

Parameter	Symbol	Max rating	Unit
Collector-Base Voltage	VCBO	800	V
Collector-Emitter Voltage	VCEO	400	V
Emitter-Base Voltage	VEBO	10	V
Collector Current (DC)	I_C	1.5	A
Collector Current (Pulse)		3	A
Base Current (DC)	I_B	0.5	A
Base Current (Pulse)		1	A
Total Power Dissipation (TO-92)	PD	1.5	W
Junction Temperature	TJ	+150	℃
Operating Junction and Storage Temperature Range	TSTG	-65 ~ +150	℃

ELECTRICAL CHARACTERISTICS (Tc = 25℃)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Voltage	BVCBO	IC = 1mA, IB=0	700	–	–	V
Collector-Emitter Breakdown Voltage	BVCEO	IC = 10mA, IE=0	400	–	–	V
Emitter- Base Breakdown Voltage	BVEBO	IE = 1mA, IC=0	10	–	–	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 = 5V, IC=10mA	10	–	–	
	hFE2	VCE = 5V, IC=400mA	10	–	30	
	hFE3	VCE = 5V, IC=1A	5	–	–	
Collector-Emitter Saturation Voltage	VCE(SAT1)	IC = 0.5A, IB =0.1A	–	–	0.5	V
	VCE(SAT2)	IC = 1A, IB =0.25A	–	1.1	1.5	
Base-Emitter Saturation Voltage	VBE(SAT1)	IC = 0.5A, IB =0.1A	–	–	1.1	V
	VBE(SAT2)	IC = 1A, IB =0.25A	–	–	1.2	V

Resistive Load Switching Time (Ratings)

Rise Time	t_r	Vcc=250V, IC=1A, IB1=0.2A, IB2 = 0.2A, tp = 25uS Duty Cycle < 1%	–	0.5	0.7	uS
Storage Time	t_{STG}		–	0.5	0.9	uS
Fall Time	t_f		–	0.2	0.4	uS

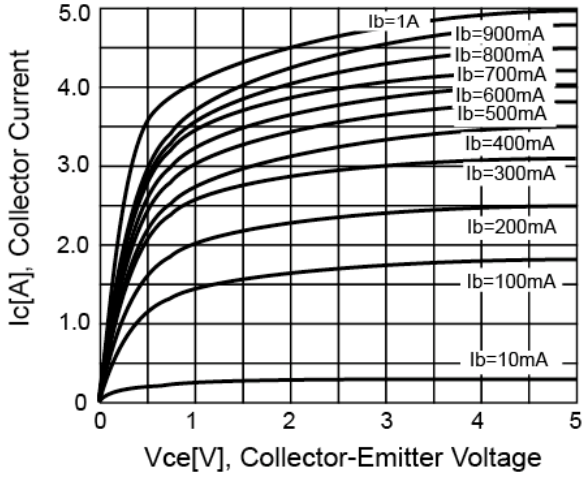
Note: Pulse Duration = 300uS, duty cycle ≦ 2%

Thermal Performance

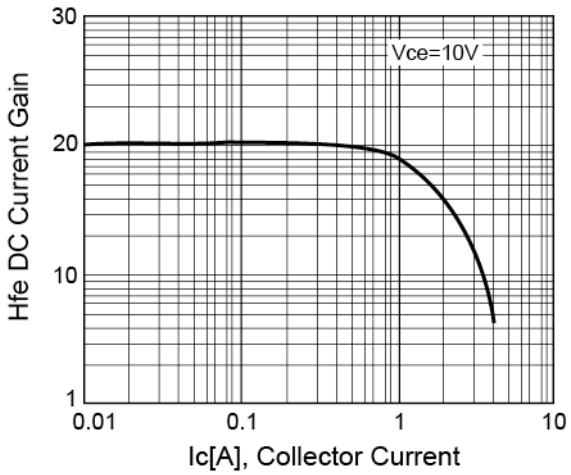
Parameter	Symbol	Limit	Unit
Junction to Case Thermal Resistance	RΘ JC	83.3	₀C/W
Junction to Ambient Thermal Resistance	RΘ JA	200	₀C/W

Electrical Characteristic Curves

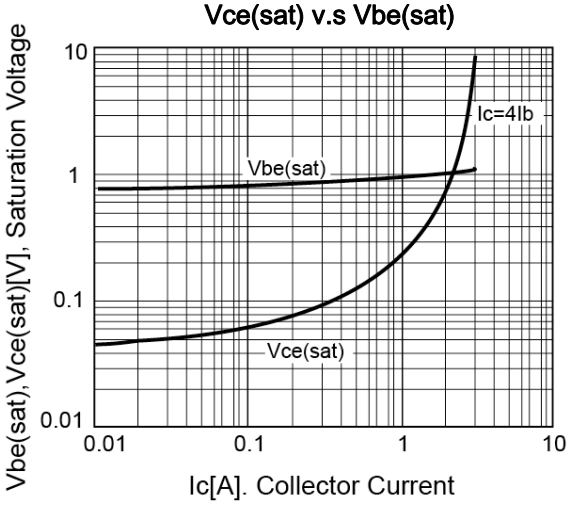
Static Characteristics



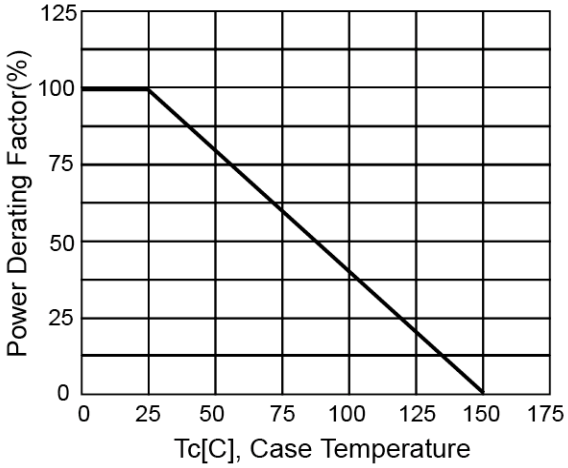
DC Current Gain



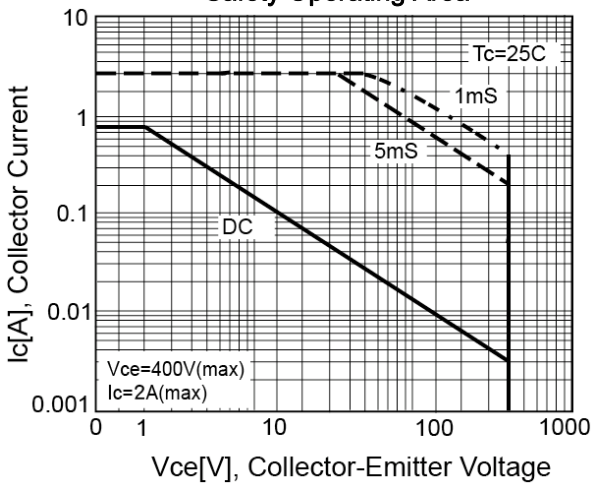
Vce(sat) v.s Vbe(sat)



Power Derating



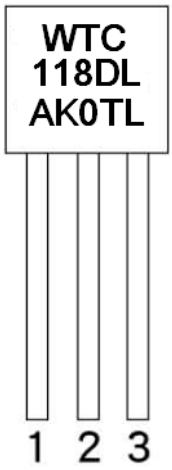
Safety Operating Area



Ordering Information

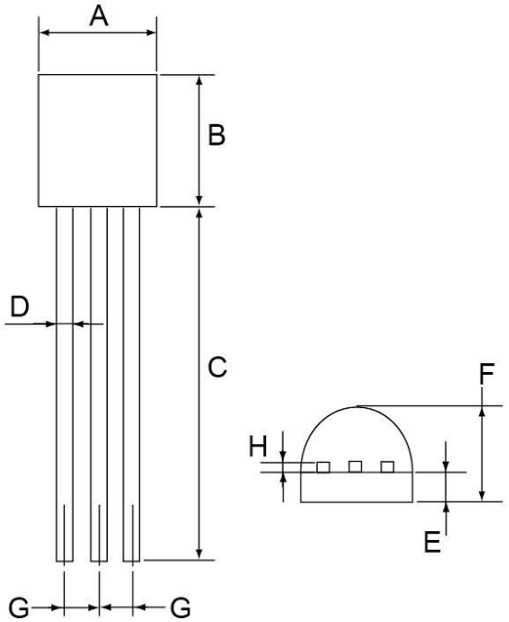
Type NO	Marking	Package Code
WTBV118DL	118DL	TO-92

Marking and Pin Define



First Line	WTC	Company Name	
Second Line	118DL	Product Code	
Third Line	AK0TL	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)	0~1 , A~9
		4th (Product Code)	M - MOS , T - Transistor
		5th (Package Code)	D - TO-252 , L - TO-92
		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