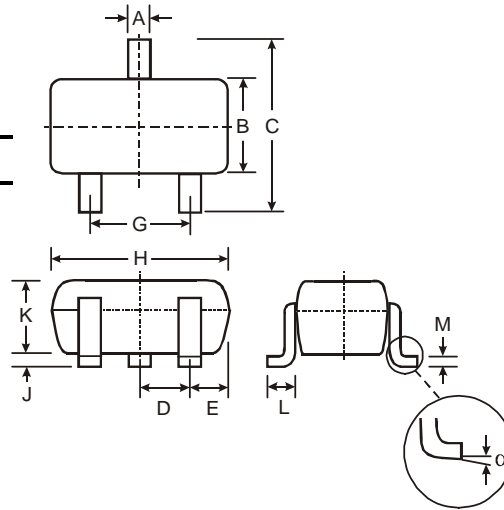


**Features**

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTD)
- Built-In Biasing Resistors, R1, R2
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

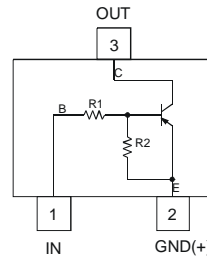
**Mechanical Data**

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Code & Date Code Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)



SOT-323		
Dim	Min	Max
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
$\alpha$	0°	8°
<b>All Dimensions in mm</b>		

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTB113EU	1K	1K	P60
DDTB123EU	2.2K	2.2K	P61
DDTB143EU	4.7K	4.7K	P62
DDTB114EU	10K	10K	P63
DDTB122JU	0.22K	4.7K	P64
DDTB113ZU	1K	10K	P65
DDTB123YU	2.2K	10K	P66
DDTB133HU	3.3K	10K	P67
DDTB123TU	2.2K	OPEN	P69
DDTB143TU	4.7K	OPEN	P70
DDTB114TU	10K	OPEN	P71
DDTB114GU	0	10K	P72



Schematic and Pin Configuration

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V <sub>CC</sub>	-50	V
Input Voltage, (1) to (2)	V <sub>IN</sub>	DDTB113EU	+10 to -10
		DDTB123EU	+10 to -12
		DDTB143EU	+10 to -30
		DDTB114EU	+10 to -40
		DDTB122JU	+5 to -5
		DDTB113ZU	+5 to -10
		DDTB123YU	+5 to -12
		DDTB133HU	+6 to -20
Input Voltage, (2) to (1)	V <sub>EBO (MAX)</sub>	-5	V
Output Current	I <sub>C</sub>	-500	mA
Power Dissipation	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. No purposefully added lead.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  4. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

**R1, R2 Types**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	$V_{I(off)}$	-0.5 -0.5 -0.5 -0.5 -0.5 -0.3 -0.3 -0.3	—	—	V	$V_{CC} = -5V, I_O = -100\mu A$
	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	$V_{I(on)}$	—	—	-3.0 -3.0 -3.0 -3.0 -3.0 -2.0 -2.0 -2.0	V	$V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -10mA$ $V_O = -0.3V, I_O = -30mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$
Output Voltage		$V_{O(on)}$	—	—	-0.3V	V	$I_O/I_I = -50mA/-2.5mA$
Input Current	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	$I_I$	—	—	-7.2 -3.8 -1.8 -0.88 -28 -7.2 -3.6 -2.4	mA	$V_I = -5V$
Output Current		$I_{O(off)}$	—	—	-0.5	$\mu A$	$V_{CC} = -50V, V_I = 0V$
DC Current Gain	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	$G_I$	33 39 47 56 47 56 56 56	—	—	—	$V_O = -5V, I_O = -50mA$
Gain-Bandwidth Product*		$f_T$	—	200	—	MHz	$V_{CE} = -10V, I_E = -5mA, f = 100MHz$

\* Transistor - For Reference Only

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

**R1-Only, R2-Only Types**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Collector-Base Breakdown Voltage	$BV_{CBO}$	-50	—	—	V	$I_C = -50\mu A$	
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	-40	—	—	V	$I_C = -1mA$	
Emitter-Base Breakdown Voltage	DDTB123TU DDTB143TU DDTB114TU DDTB114GU	$BV_{EBO}$	-5	—	—	V	$I_E = -50\mu A$ $I_E = -50\mu A$ $I_E = -50\mu A$ $I_E = -720\mu A$
Collector Cutoff Current		$I_{CBO}$	—	—	-0.5	$\mu A$	$V_{CB} = -50V$
Emitter Cutoff Current	DDTB123TU DDTB143TU DDTB114TU DDTB114GU	$I_{EBO}$	— — — -300	—	-0.5 -0.5 -0.5 -580	$\mu A$	$V_{EB} = -4V$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	-0.3	V	$I_C = -50mA, I_B = -2.5mA$
DC Current Transfer Ratio	DDTB123TU DDTB143TU DDTB114TU DDTB114GU	$h_{FE}$	100 100 100 56	250 250 250 —	600 600 600 —	—	$I_C = -5mA, V_{CE} = -5V$
Gain-Bandwidth Product*		$f_T$	—	200	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$

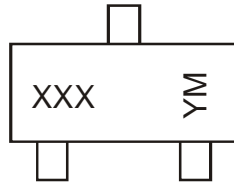
\* Transistor - For Reference Only

## Ordering Information (Note 4 & 5)

Device	Packaging	Shipping
DDTB113EU-7-F	SOT-323	3000/Tape & Reel
DDTB123EU-7-F	SOT-323	3000/Tape & Reel
DDTB143EU-7-F	SOT-323	3000/Tape & Reel
DDTB114EU-7-F	SOT-323	3000/Tape & Reel
DDTB122JU-7-F	SOT-323	3000/Tape & Reel
DDTB113ZU-7-F	SOT-323	3000/Tape & Reel
DDTB123YU-7-F	SOT-323	3000/Tape & Reel
DDTB133HU-7-F	SOT-323	3000/Tape & Reel
DDTB123TU-7-F	SOT-323	3000/Tape & Reel
DDTB143TU-7-F	SOT-323	3000/Tape & Reel
DDTB114TU-7-F	SOT-323	3000/Tape & Reel
DDTB114GU-7-F	SOT-323	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



XXX = Product Type Marking Code, See Table on Page 1  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

### Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	N	P	R	S	T	U	V	W	X	Y	Z

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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