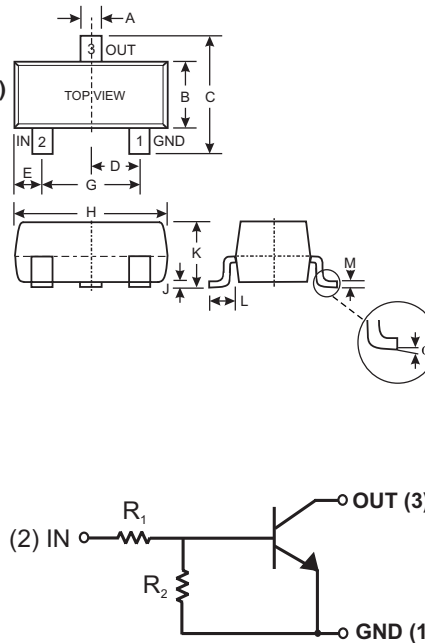


### Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors, R1, R2
- Available in Lead Free/RoHS Compliant Version (Note 2)

### Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. 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
- Also Available in Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe). Please see Ordering Information, Note 4, on Page 3
- Marking: Date Code and Marking Code (See Table Below & Page 3)
- Ordering Information (See Page 3)
- Weight: 0.008 grams (approximate)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.89	1.00
L	0.45	0.61
M	0.085	0.110
$\alpha$	0°	8°
All Dimensions in mm		

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTD113EC	1K	1K	N60
DDTD123EC	2.2K	2.2K	N61
DDTD143EC	4.7K	4.7K	N62
DDTD114EC	10K	10K	N63
DDTD122JC	0.22K	4.7K	N64
DDTD113ZC	1K	10K	N65
DDTD123YC	2.2K	10K	N66
DDTD133HC	3.3K	10K	N67
DDTD123TC	2.2K	OPEN	N69
DDTD143TC	4.7K	OPEN	N70
DDTD114TC	10K	OPEN	N71
DDTD114GC	0	10K	N72

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

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V <sub>CC</sub>	50	V
Input Voltage, (2) to (1)	V <sub>IN</sub>	-10 to +10 -10 to +12 -10 to +30 -10 to +40 -5 to +5 -5 to +10 -5 to +12 -6 to +20	V
Input Voltage, (1) to (2)	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 and Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.  
2. No purposefully added lead.

**Electrical Characteristics** @ T<sub>A</sub> = 25°C unless otherwise specified

**R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTD113EC DDTD123EC DDTD143EC DDTD114EC DDTD122JC DDTD113ZC DDTD123YC DDTD133HC	V <sub>I(off)</sub>	0.5 0.5 0.5 0.5 0.5 0.3 0.3 0.3	—	—	V	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA
	DDTD113EC DDTD123EC DDTD143EC DDTD114EC DDTD122JC DDTD113ZC DDTD123YC DDTD133HC	V <sub>I(on)</sub>	—	—	3.0 3.0 3.0 3.0 3.0 2.0 2.0 2.0	V	V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 10mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 30mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA
Output Voltage		V <sub>O(on)</sub>	—	—	0.3V	V	I <sub>O</sub> /I <sub>I</sub> = -50mA/-2.5mA
Input Current	DDTD113EC DDTD123EC DDTD143EC DDTD114EC DDTD122JC DDTD113ZC DDTD123YC DDTD133HC	I <sub>I</sub>	—	—	7.2 3.8 1.8 0.88 28 7.2 3.6 2.4	mA	V <sub>I</sub> = 5V
	Output Current		I <sub>O(off)</sub>	—	—	0.5	μA
DC Current Gain	DDTD113EC DDTD123EC DDTD143EC DDTD114EC DDTD122JC DDTD113ZC DDTD123YC DDTD133HC	G <sub>I</sub>	33 39 47 56 47 56 56 56	—	—	—	V <sub>O</sub> = 5V, I <sub>O</sub> = 50mA
	Gain-Bandwidth Product*		f <sub>T</sub>	—	200	—	MHz

\* Transistor - For Reference Only

**Electrical Characteristics** @ T<sub>A</sub> = 25°C unless otherwise specified

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV <sub>CB0</sub>	50	—	—	V	I <sub>C</sub> = 50μA
Collector-Emitter Breakdown Voltage		BV <sub>CEO</sub>	40	—	—	V	I <sub>C</sub> = 1mA
Emitter-Base Breakdown Voltage	DDTD123TC DDTD143TC DDTD114TC DDTD114GC	BV <sub>EBO</sub>	5	—	—	V	I <sub>E</sub> = 50μA I <sub>E</sub> = 50μA I <sub>E</sub> = 50μA I <sub>E</sub> = 720μA
Collector Cutoff Current		I <sub>CB0</sub>	—	—	0.5	μA	V <sub>CB</sub> = 50V
Emitter Cutoff Current	DDTD123TC DDTD143TC DDTD114TC DDTD114GC	I <sub>EBO</sub>	— — — 300	—	0.5 0.5 0.5 580	μA	V <sub>EB</sub> = 4V
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	—	—	0.3	V	I <sub>C</sub> = 50mA, I <sub>B</sub> = 2.5mA
DC Current Transfer Ratio	DDTD123TC DDTD143TC DDTD114TC DDTD114GC	h <sub>FE</sub>	100 100 100 56	250 250 250 —	600 600 600 —	—	I <sub>C</sub> = 5mA, V <sub>CE</sub> = 5V
Gain-Bandwidth Product*		f <sub>T</sub>	—	200	—	MHz	V <sub>CE</sub> = 10V, I <sub>E</sub> = -5mA, f = 100MHz

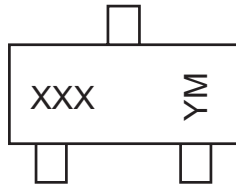
\* Transistor - For Reference Only

**Ordering Information** (Note 3)

Device	Packaging	Shipping
DDTD113EC-7	SOT-23	3000/Tape & Reel
DDTD123EC-7	SOT-23	3000/Tape & Reel
DDTD143EC-7	SOT-23	3000/Tape & Reel
DDTD114EC-7	SOT-23	3000/Tape & Reel
DDTD122JC-7	SOT-23	3000/Tape & Reel
DDTD113ZC-7	SOT-23	3000/Tape & Reel
DDTD123YC-7	SOT-23	3000/Tape & Reel
DDTD133HC-7	SOT-23	3000/Tape & Reel
DDTD123TC-7	SOT-23	3000/Tape & Reel
DDTD143TC-7	SOT-23	3000/Tape & Reel
DDTD114TC-7	SOT-23	3000/Tape & Reel
DDTD114GC-7	SOT-23	3000/Tape & Reel

- Notes: 3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.  
 4. For Lead Free/RoHS Compliant version part numbers, please add "-F" suffix to the part numbers above. Example: DDTD114GC-7-F.

**Marking Information**



XXX = Product Type Marking Code,  
 See Table on Page 1  
 YM = Date Code Marking  
 Y = Year ex: N = 2002  
 M = Month ex: 9 = September

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009
Code	N	P	R	S	T	U	V	W

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