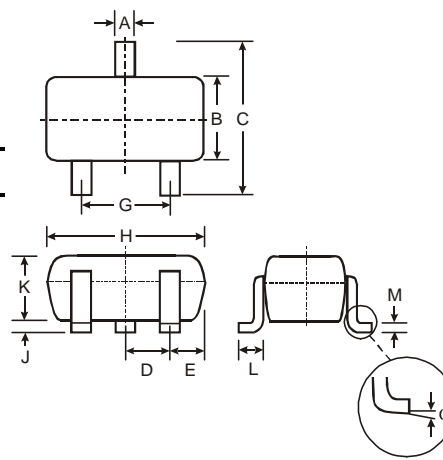


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1≠R2
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2 & 3)**

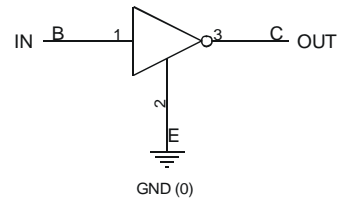
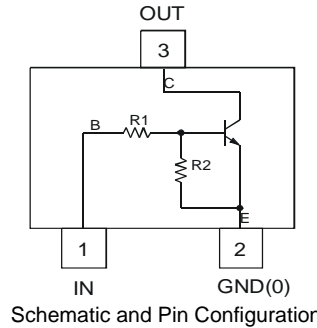
Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 3. 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 Information: See Page 4
- Type Code: See Table Below
- Ordering Information: See Page 4
- 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
α	0°	8°
All Dimensions in mm		

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTC113ZUA	1K Ω	10K Ω	N02
DDTC123YUA	2.2K Ω	10K Ω	N05
DDTC123JUA	2.2K Ω	47K Ω	N06
DDTC143XUA	4.7K Ω	10K Ω	N09
DDTC143FUA	4.7K Ω	22K Ω	N10
DDTC143ZUA	4.7K Ω	47K Ω	N11
DDTC114YUA	10K Ω	47K Ω	N14
DDTC114WUA	10K Ω	4.7K Ω	N15
DDTC124XUA	22K Ω	47K Ω	N18
DDTC144VUA	47K Ω	10K Ω	N21
DDTC144WUA	47K Ω	22K Ω	N22



Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V _{CC}	50	V
Input Voltage, (1) to (2)	V _{IN}	-5 to +10 -5 to +12 -5 to +12 -7 to +20 -6 to +30 -5 to +30 -6 to +40 -10 to +30 -10 to +40 -15 to +40 -10 to +40	V
Output Current	I _O	100 100 100 100 100 100 70 100 50 30 30	mA
Output Current	I _C (Max)	100	mA

- Notes:
1. No purposefully added lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. 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.

Maximum Ratings (continued) @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Output Current	I _C (Max)	100	mA
Power Dissipation	P _d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 4)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 4. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	V _{I(off)}	0.3			V	V _{CC} = 5V, I _O = 100μA	
		0.3					
		0.5					
		0.3					
		0.3					
		0.5	—	—			
		0.3					
		0.8					
		0.4					
		1.0					
0.8							
Input Voltage	V _{I(on)}			3.0	V	V _O = 0.3V, I _O = 20mA	
				3.0			V _O = 0.3V, I _O = 20mA
				1.1			V _O = 0.3V, I _O = 5mA
				2.5			V _O = 0.3V, I _O = 20mA
				1.3			V _O = 0.3V, I _O = 3mA
				1.3			V _O = 0.3V, I _O = 5mA
				1.4			V _O = 0.3V, I _O = 1mA
				3.0			V _O = 0.3V, I _O = 2mA
				2.5			V _O = 0.3V, I _O = 2mA
				5.0			V _O = 0.3V, I _O = 2mA
		4.0	V _O = 0.3V, I _O = 2mA				
Output Voltage	V _{O(on)}	—	0.1	0.3	V	I _O /I _I = 5mA/0.25mA DDTC123JUA I _O /I _I = 5mA/0.25mA DDTC143ZUA I _O /I _I = 5mA/0.25mA DDTC114YUA I _O /I _I = 10mA/0.5mA All Others	
Input Current	I _I			7.2	mA	V _I = 5V	
				3.8			
				3.6			
				1.8			
				1.8			
				1.8			
				0.88			
				0.88			
				0.36			
				0.16			
		0.16					
Output Current	I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V	
DC Current Gain	G _I	33			—	V _O = 5V, I _O = 5mA	
		33					V _O = 5V, I _O = 10mA
		80					V _O = 5V, I _O = 10mA
		30					V _O = 5V, I _O = 10mA
		68					V _O = 5V, I _O = 10mA
		80	—	—			V _O = 5V, I _O = 10mA
		68					V _O = 5V, I _O = 5mA
		24					V _O = 5V, I _O = 10mA
		68					V _O = 5V, I _O = 5mA
		33					V _O = 5V, I _O = 5mA
56			V _O = 5V, I _O = 5mA				
Input Resistor Tolerance	ΔR ₁	-30	—	+30	%	—	
Resistance Ratio Tolerance	ΔR ₂ /R ₁	-20	—	+20	%	—	
Gain-Bandwidth Product*	f _T	—	250	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz	

* Transistor - For Reference Only

Typical Curves – DDT123JUA

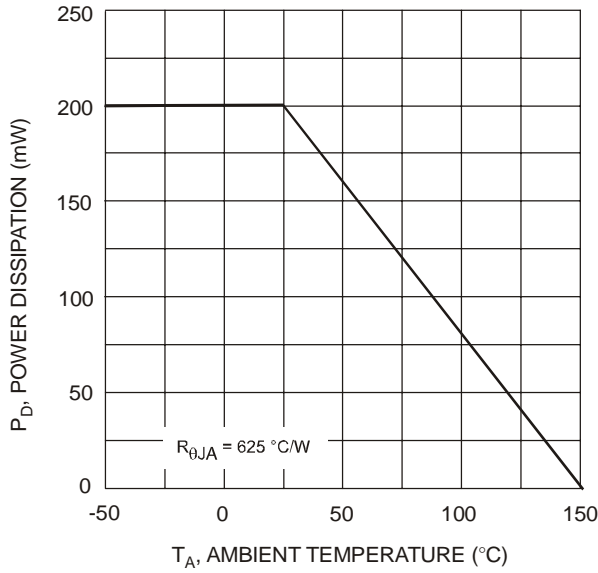


Fig. 1 Derating Curve

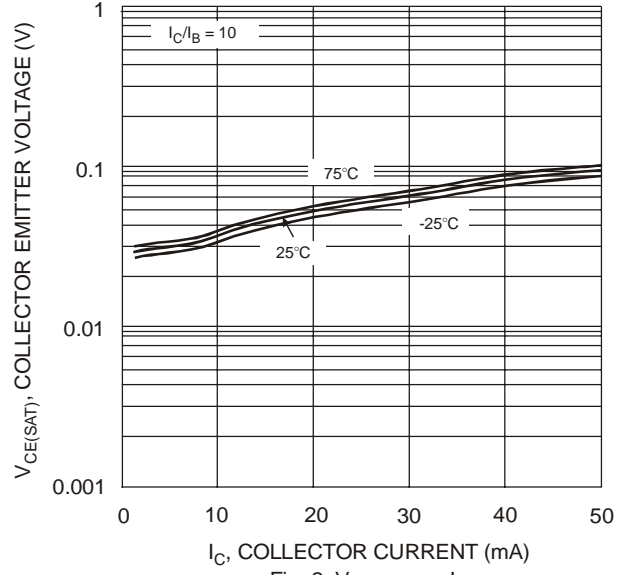


Fig. 2 $V_{CE(SAT)}$ vs. I_C

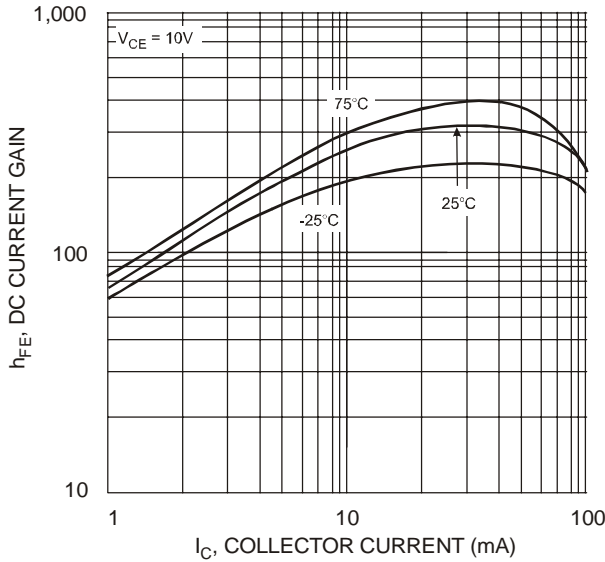


Fig. 3 DC Current Gain

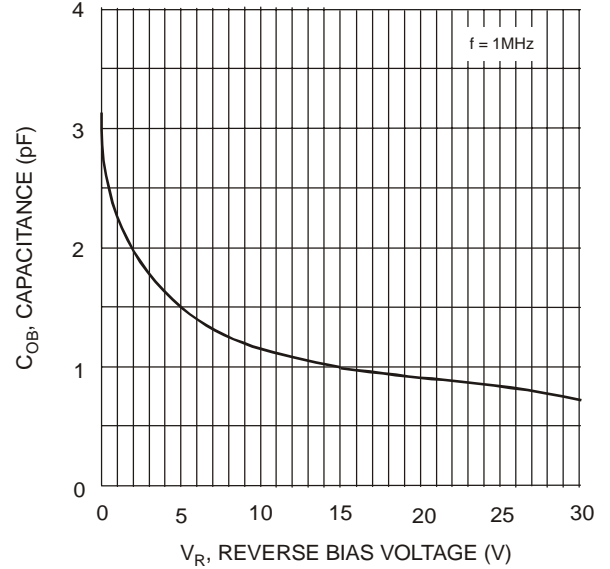


Fig. 4 Output Capacitance

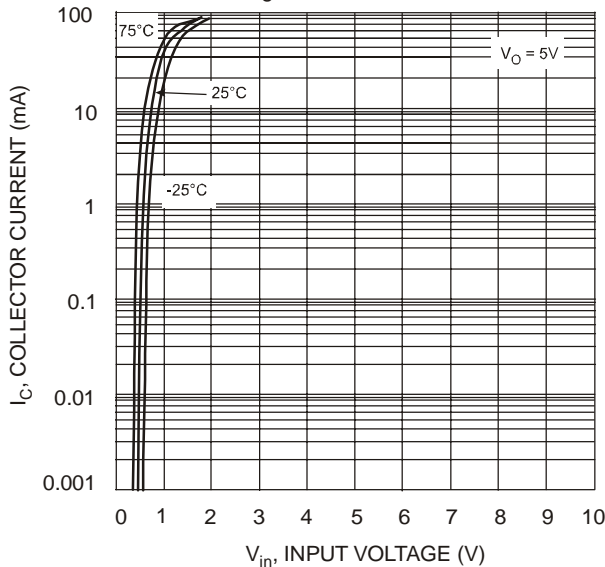


Fig. 5 Collector Current vs. Input Voltage

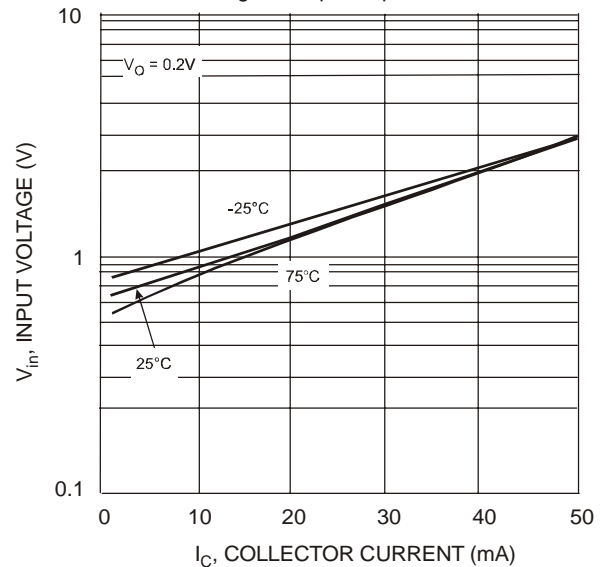


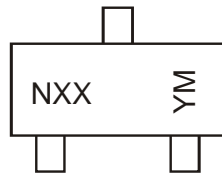
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 3 & 5)

Device	Packaging	Shipping
DDTC113ZUA-7-F	SOT-323	3000/Tape & Reel
DDTC123YUA-7-F	SOT-323	3000/Tape & Reel
DDTC123JUA-7-F	SOT-323	3000/Tape & Reel
DDTC143XUA-7-F	SOT-323	3000/Tape & Reel
DDTC143FUA-7-F	SOT-323	3000/Tape & Reel
DDTC143ZUA-7-F	SOT-323	3000/Tape & Reel
DDTC114YUA-7-F	SOT-323	3000/Tape & Reel
DDTC114WUA-7-F	SOT-323	3000/Tape & Reel
DDTC124XUA-7-F	SOT-323	3000/Tape & Reel
DDTC144VUA-7-F	SOT-323	3000/Tape & Reel
DDTC144WUA-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



NXX = Product Type Marking Code
See Page 1 Diagrams
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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[DDTC123YUA-7](#) [DDTC124XUA-7](#) [DDTC143FUA-7](#) [DDTC143XUA-7](#) [DDTC143ZUA-7](#)