

Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Part Number	R1(NOM)	R2(NOM)
DDTC113ZUA	1k Ω	10k Ω
DDTC123YUA	2.2k Ω	10k Ω
DDTC123JUA	2.2k Ω	47k Ω
DDTC143XUA	4.7k Ω	10k Ω
DDTC143FUA	4.7k Ω	22k Ω
DDTC143ZUA	4.7k Ω	47k Ω
DDTC114YUA	10k Ω	47k Ω
DDTC114WUA	10k Ω	4.7k Ω
DDTC124XUA	22k Ω	47k Ω
DDTC144VUA	47k Ω	10k Ω
DDTC144WUA	47k Ω	22k Ω

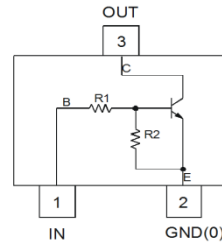
SOT323



Top View

Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 **(e3)**
- Weight: 0.006 grams (Approximate)



Device Schematic

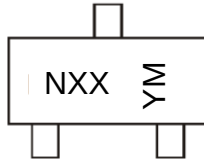
Ordering Information (Note 4)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DDTC113ZUA-7-F	AEC-Q101	N02	7	8	3,000
DDTC123YUA-7-F	AEC-Q101	N05	7	8	3,000
DDTC123JUA-7-F	AEC-Q101	N06	7	8	3,000
DDTC143XUA-7-F	AEC-Q101	N09	7	8	3,000
DDTC143FUA-7-F	AEC-Q101	N10	7	8	3,000
DDTC143ZUA-7-F	AEC-Q101	N11	7	8	3,000
DDTC114YUA-7-F	AEC-Q101	N14	7	8	3,000
DDTC114WUA-7-F	AEC-Q101	N15	7	8	3,000
DDTC124XUA-7-F	AEC-Q101	N18	7	8	3,000
DDTC144VUA-7-F	AEC-Q101	N21	7	8	3,000
DDTC144WUA-7-F	AEC-Q101	N22	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information

SOT323



NXX = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: D = 2016)
 M = Month (ex: 9 = September)

Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Code	D	E	F	G	H	I	J	K	L	M	N

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

Absolute Maximum Ratings NPN Section (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>	V _{CC}	50	V
Input Voltage <Pin: (1) to (2)>	V _{IN}	DDTC113ZUA -5 to +10 DDTC123YUA -5 to +12 DDTC123JUA -5 to +12 DDTC143XUA -7 to +20 DDTC143FUA -6 to +30 DDTC143ZUA -5 to +30 DDTC114YUA -6 to +40 DDTC114WUA -10 to +30 DDTC124XUA -10 to +40 DDTC144VUA -15 to +40 DDTC144WUA -10 to +40	V
Output Current	I _O	DDTC113ZUA 100 DDTC123YUA 100 DDTC123JUA 100 DDTC143XUA 100 DDTC143FUA 100 DDTC143ZUA 100 DDTC114YUA 70 DDTC114WUA 100 DDTC124XUA 50 DDTC144VUA 30 DDTC144WUA 30	mA
Output Current	I _C (Max)	100	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

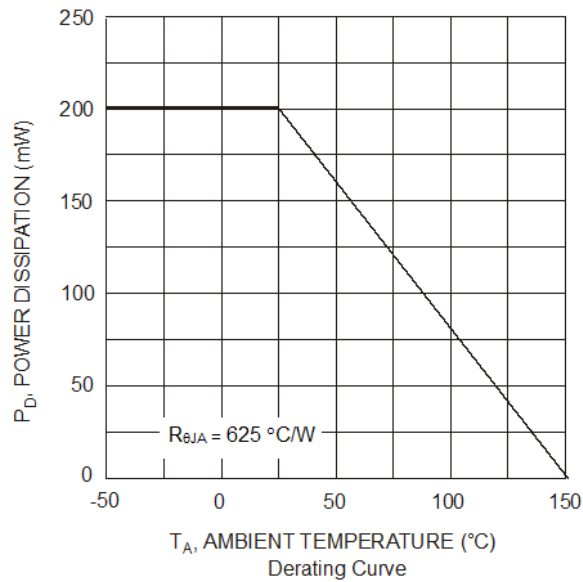
Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 5 & 6)	P _D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 5. Mounted on FR4 PC Board with minimum recommended pad layout.
 6. 150mW per element must not be exceeded.

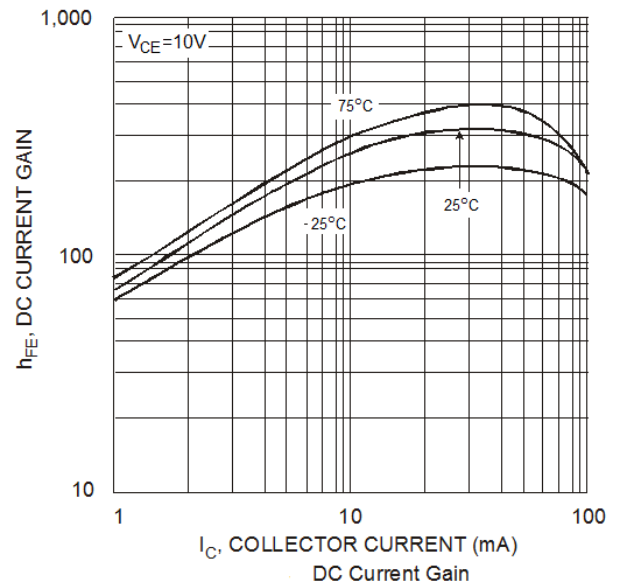
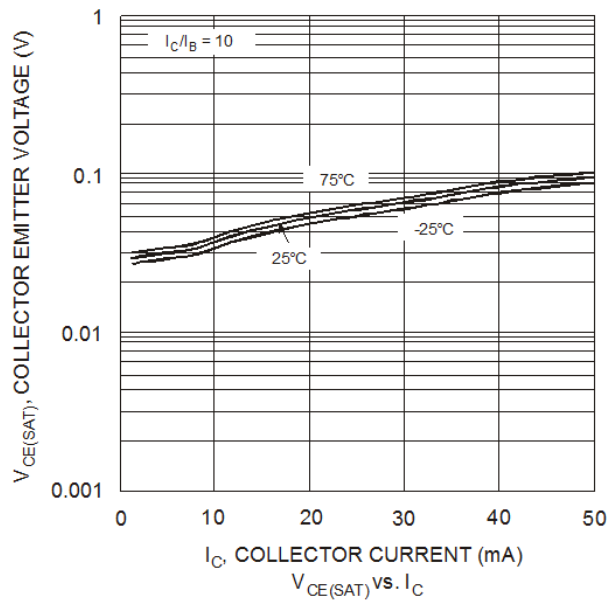
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTC113ZUA	V _{I(OFF)}	0.3	—	—	V	V _{CC} = 5V, I _O = 100μA
	DDTC123YUA		0.3				
	DDTC123JUA		0.5				
	DDTC143XUA		0.3				
	DDTC143FUA		0.3				
	DDTC143ZUA		0.5				
	DDTC114YUA		0.3				
	DDTC114WUA		0.8				
	DDTC124XUA		0.4				
	DDTC144VUA		1.0				
	DDTC144WUA		0.8				
	DDTC113ZUA	V _{I(ON)}	—	—	3.0		V _O = 0.3V, I _O = 20mA
	DDTC123YUA				3.0		V _O = 0.3V, I _O = 20mA
	DDTC123JUA				1.1		V _O = 0.3V, I _O = 5mA
	DDTC143XUA				2.5		V _O = 0.3V, I _O = 20mA
	DDTC143FUA				1.3		V _O = 0.3V, I _O = 3mA
	DDTC143ZUA				1.3		V _O = 0.3V, I _O = 5mA
	DDTC114YUA				1.4		V _O = 0.3V, I _O = 1mA
	DDTC114WUA				3.0		V _O = 0.3V, I _O = 2mA
	DDTC124XUA				2.5		V _O = 0.3V, I _O = 2mA
	DDTC144VUA				5.0		V _O = 0.3V, I _O = 2mA
	DDTC144WUA				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	DDTC113ZUA	I _I	—	—	7.2	mA	V _I = 5V
	DDTC123YUA				3.8		
	DDTC123JUA				3.6		
	DDTC143XUA				1.8		
	DDTC143FUA				1.8		
	DDTC143ZUA				1.8		
	DDTC114YUA				0.88		
	DDTC114WUA				0.88		
	DDTC124XUA				0.36		
	DDTC144VUA				0.16		
	DDTC144WUA				0.16		
Output Current		I _{O(OFF)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	DDTC113ZUA	G _I	33	—	—	—	V _O = 5V, I _O = 5mA
	DDTC123YUA		33				V _O = 5V, I _O = 10mA
	DDTC123JUA		80				V _O = 5V, I _O = 10mA
	DDTC143XUA		30				V _O = 5V, I _O = 10mA
	DDTC143FUA		68				V _O = 5V, I _O = 10mA
	DDTC143ZUA		80				V _O = 5V, I _O = 10mA
	DDTC114YUA		68				V _O = 5V, I _O = 5mA
	DDTC114WUA		24				V _O = 5V, I _O = 10mA
	DDTC124XUA		68				V _O = 5V, I _O = 5mA
	DDTC144VUA		33				V _O = 5V, I _O = 5mA
	DDTC144WUA		56				V _O = 5V, I _O = 5mA
Input Resistor (R ₁) 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

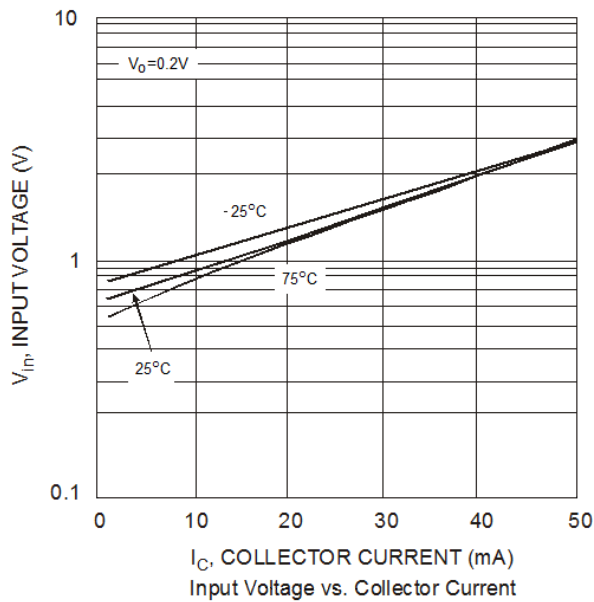
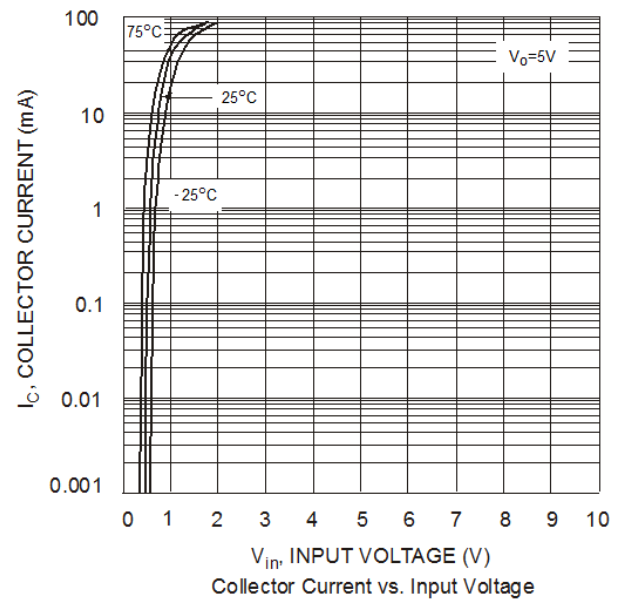
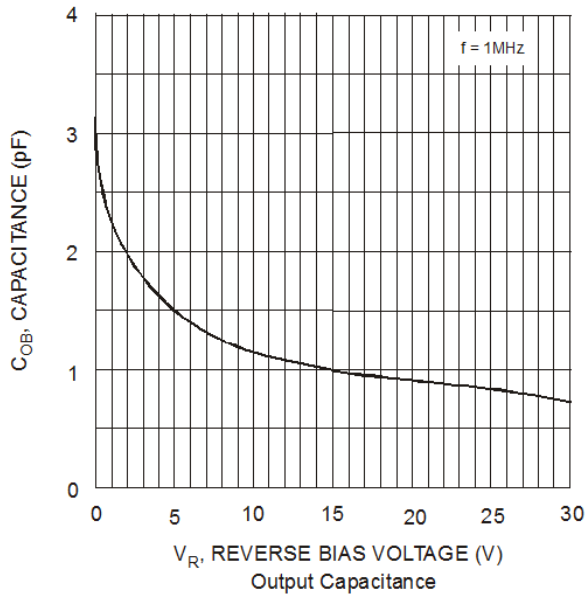
Typical Curves – Total Device



Typical Curves – DDTC123JUA (@ $T_A = +25^{\circ}\text{C}$, unless otherwise specified.)



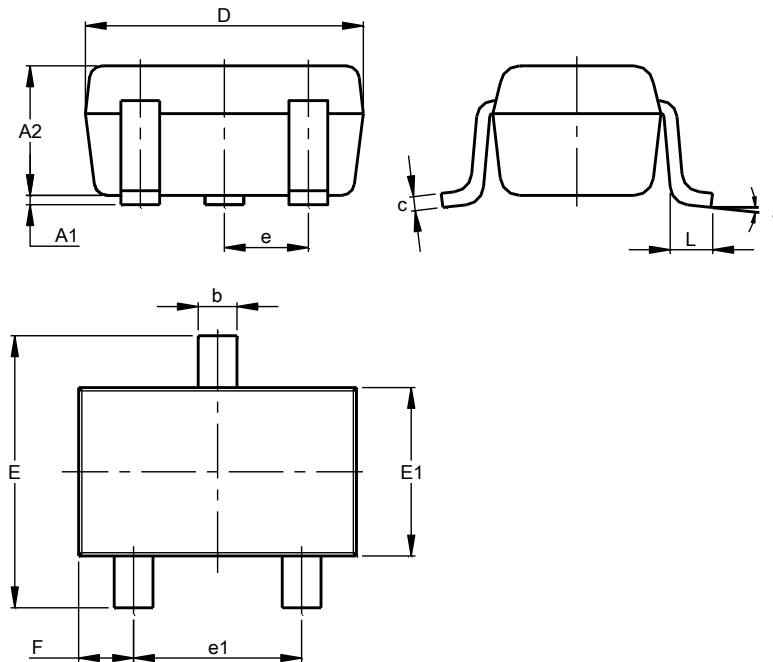
Typical Curves – DDTC123JUA (continued)



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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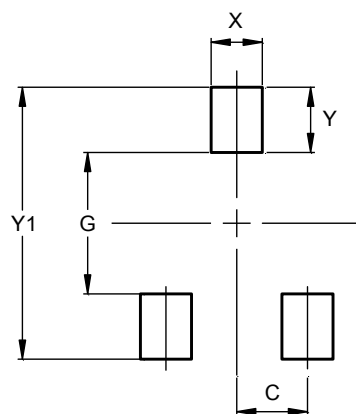


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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