

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**

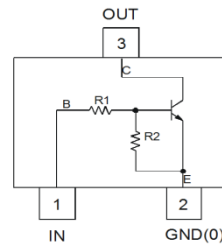
Mechanical Data

- 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)

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



Top View

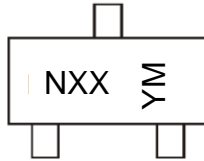


Device Schematic

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.)

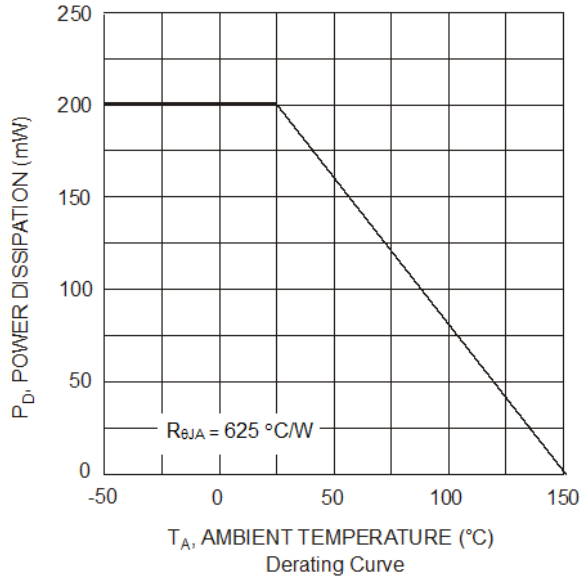
Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 5 & 6)	P _D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

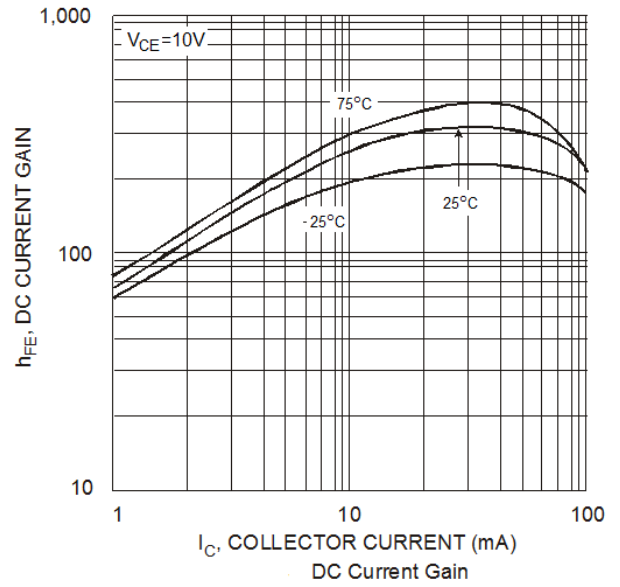
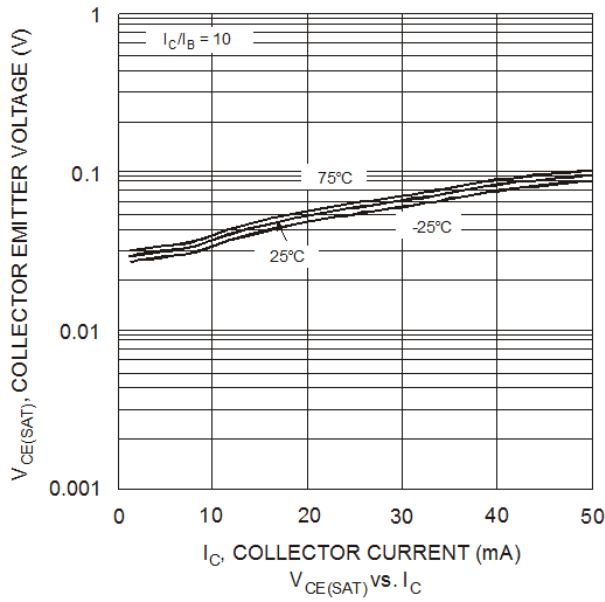
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition					
Input Voltage	DDTC113ZUA	V _{I(OFF)}	—	—	V	V _{CC} = 5V, I _O = 100μA					
	DDTC123YUA										
	DDTC123JUA										
	DDTC143XUA										
	DDTC143FUA										
	DDTC143ZUA										
	DDTC114YUA										
	DDTC114WUA										
	DDTC124XUA										
	DDTC144VUA										
	DDTC144WUA										
	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	—	—	mA	V _I = 5V					
	DDTC123YUA										
	DDTC123JUA										
	DDTC143XUA										
	DDTC143FUA										
	DDTC143ZUA										
	DDTC114YUA										
	DDTC114WUA										
	DDTC124XUA										
	DDTC144VUA										
	DDTC144WUA										
	Output Current						I _{O(OFF)}	—	—	0.5	μA
DC Current Gain	DDTC113ZUA	G _I	—	—	—	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					

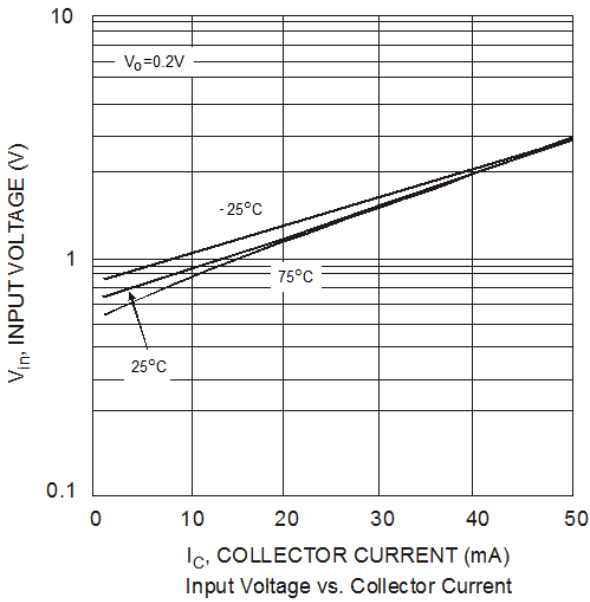
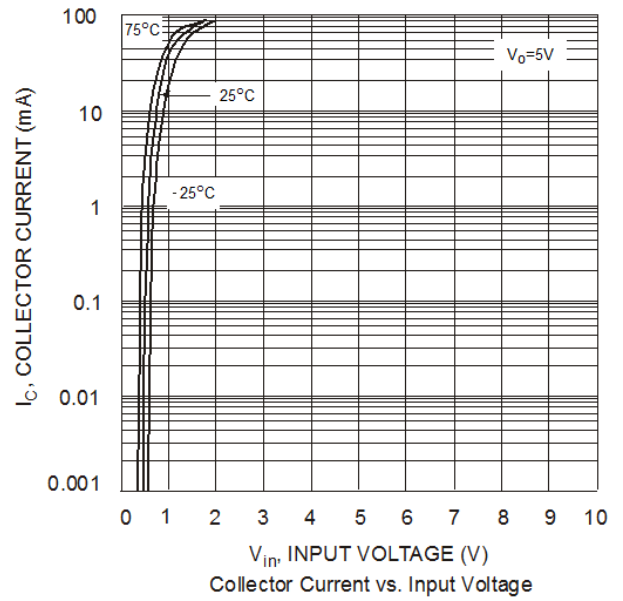
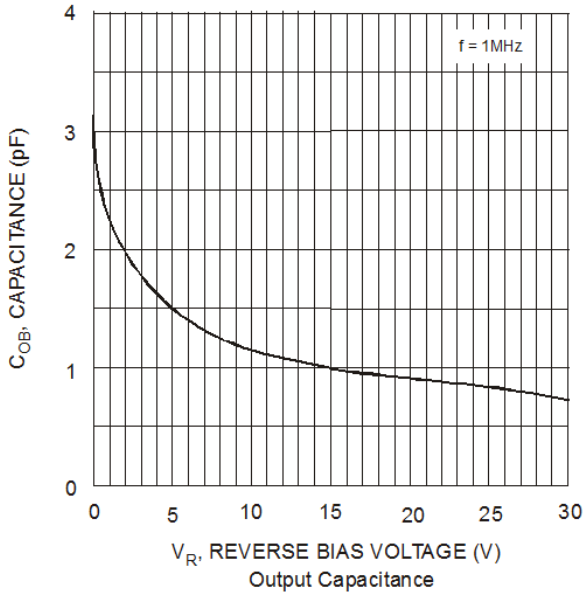
Typical Curves – Total Device



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



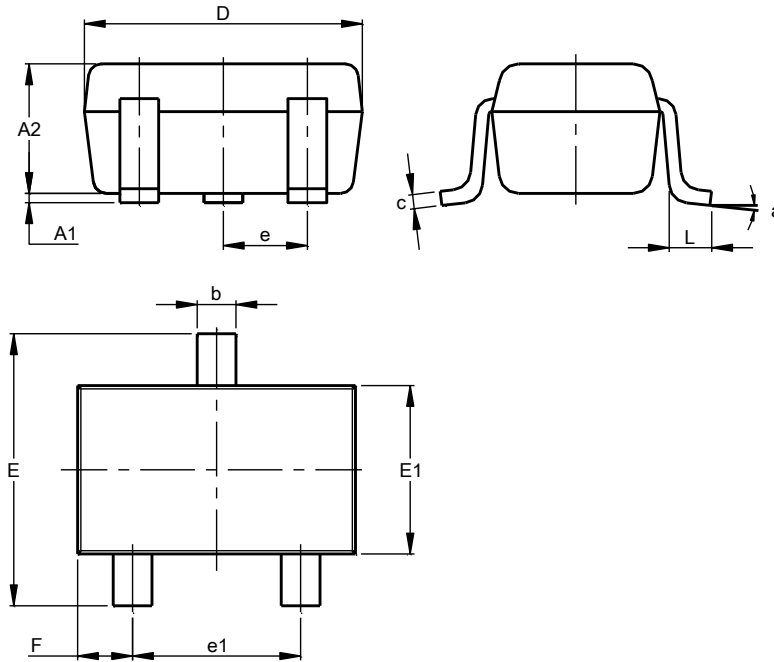
Typical Curves – DDTC123JUA (continued)



Package Outline Dimensions

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

SOT323

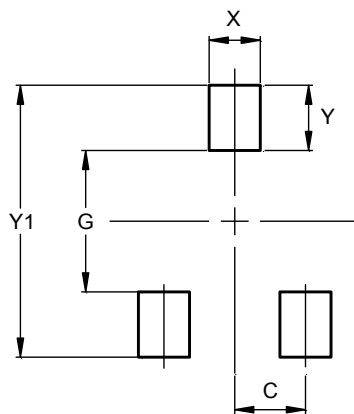


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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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