

DDTC (R1 R2 SERIES) UA

NPN PRE-BIASED SMALL SIGNAL SOT-323
SURFACE MOUNT TRANSISTOR

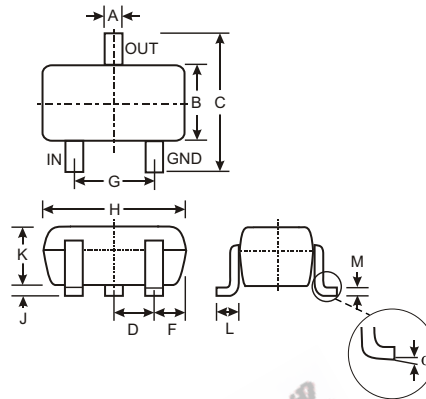
NEW PRODUCT

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1 R2

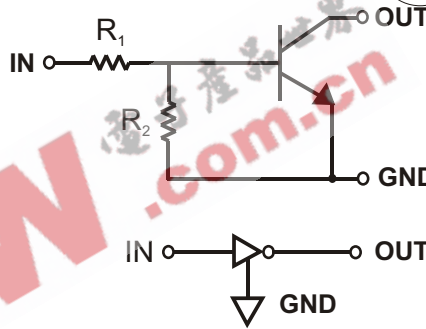
Mechanical Data

- Case: SOT-323, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- Weight: 0.006 grams (approx.)
- Ordering Information (See Page 2)



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
	0	8

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



SCHEMATIC DIAGRAM

Maximum Ratings @ T_A = 25 °C unless otherwise specified

Characteristic	Symbol	Value	Unit	
Supply Voltage, (3) to (1)	V _{CC}	50	V	
Input Voltage, (2) to (1)	V _{IN}	DDTC113ZUA DDTC123YUA DDTC123JUA DDTC143XUA DDTC143FUA DDTC143ZUA DDTC114YUA DDTC114WUA DDTC124XUA DDTC144VUA DDTC144WUA	-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	DDTC113ZUA DDTC123YUA DDTC123JUA DDTC143XUA DDTC143FUA DDTC143ZUA DDTC114YUA DDTC114WUA DDTC124XUA DDTC144VUA DDTC144WUA	100 100 100 100 100 100 70 100 50 30 30	mA
Output Current	I _C (Max)	All	100	mA
Power Dissipation	P _d		200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R _{JA}		625	C/W
Operating and Storage and Temperature Range	T _J , T _{STG}		-55 to +150	C

Note: 1. 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	DDTC113ZUA DDTC123YUA DDTC123JUA DDTC143XUA DDTC143FUA DDTC143ZUA DDTC114YUA DDTC114WUA DDTC124XUA DDTC144VUA DDTC144WUA	V _{I(off)}	0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.8 0.4 1.0 0.8				V	V _{CC} = 5V, I _O = 100 A
	DDTC113ZUA DDTC123YUA DDTC123JUA DDTC143XUA DDTC143FUA DDTC143ZUA DDTC114YUA DDTC114WUA DDTC124XUA DDTC144VUA DDTC144WUA		V _{I(on)}			3.0 3.0 1.1 2.5 1.3 1.3 1.4 3.0 2.5 5.0 4.0		
Output Voltage		V _{O(on)}		0.1	0.3	V	I _O /I _I = 5mA/0.25mA DDCT123JUA I _O /I _I = 5mA/0.25mA DDCT143ZUA I _O /I _I = 5mA/0.25mA DDCT114YUA I _O /I _I = 10mA/0.5mA All Others	
Input Current	DDTC113ZUA DDTC123YUA DDTC123JUA DDTC143XUA DDTC143FUA DDTC143ZUA DDTC114YUA DDTC114WUA DDTC124XUA DDTC144VUA DDTC144WUA	I _I			7.2 3.8 3.6 1.8 1.8 1.8 0.88 0.88 0.36 0.16 0.16	mA	V _I = 5V	
Output Current		I _{O(off)}			0.5	A	V _{CC} = 50V, V _I = 0V	
DC Current Gain	DDTC113ZUA DDTC123YUA DDTC123JUA DDTC143XUA DDTC143FUA DDTC143ZUA DDTC114YUA DDTC114WUA DDTC124XUA DDTC144VUA DDTC144WUA	G _I	33 33 80 30 68 80 68 24 68 33 56				V _O = 5V, I _O = 10mA	
Input Resistor Tolerance		DR ₁	-30		+30	%		
Resistance Ratio Tolerance		DR ₂ /R ₁	-20		+20	%		
Gain-Bandwidth Product*		f _T		250		MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz	

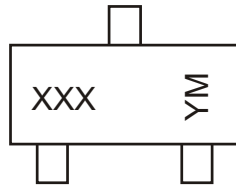
* Transistor - For Reference Only

Ordering Information (Note 2)

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

Notes: 2. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



XXX = Product Type Marking Code
 See Sheet 1 Diagrams
 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

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TYPICAL CURVES - DDTC123JUA

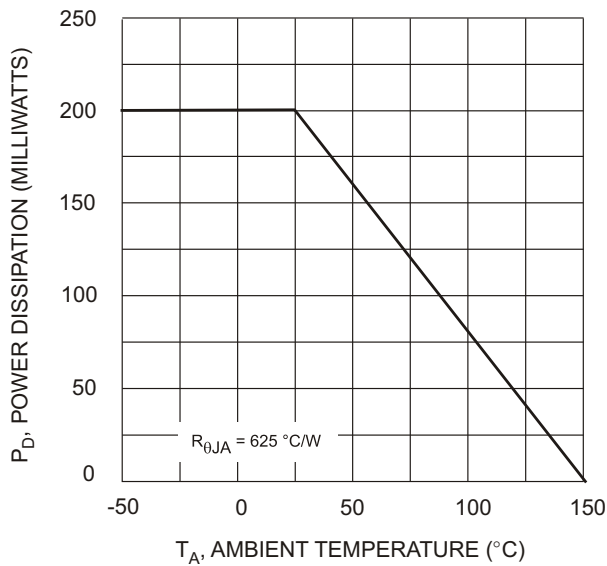


Fig. 1 Derating Curve

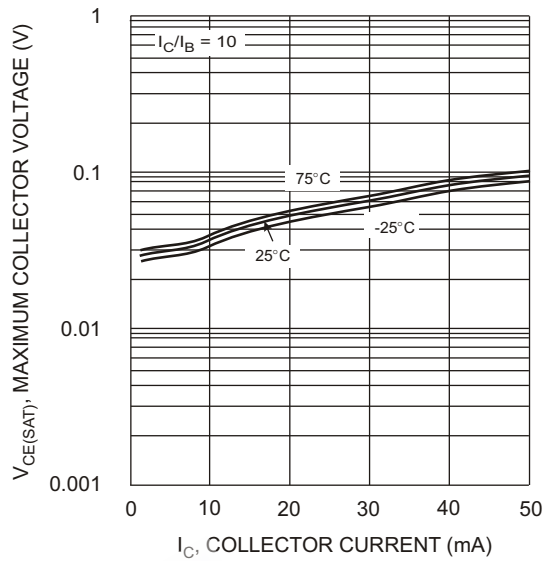


Fig. 2 $V_{CE(SAT)}$ vs. I_C

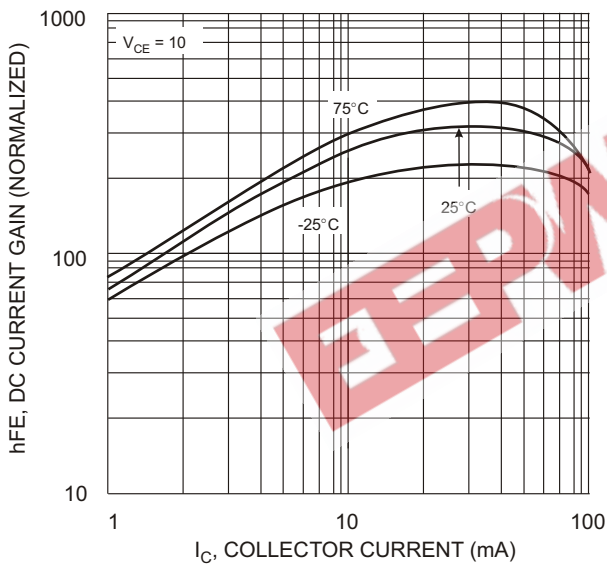


Fig. 3 DC CURRENT GAIN

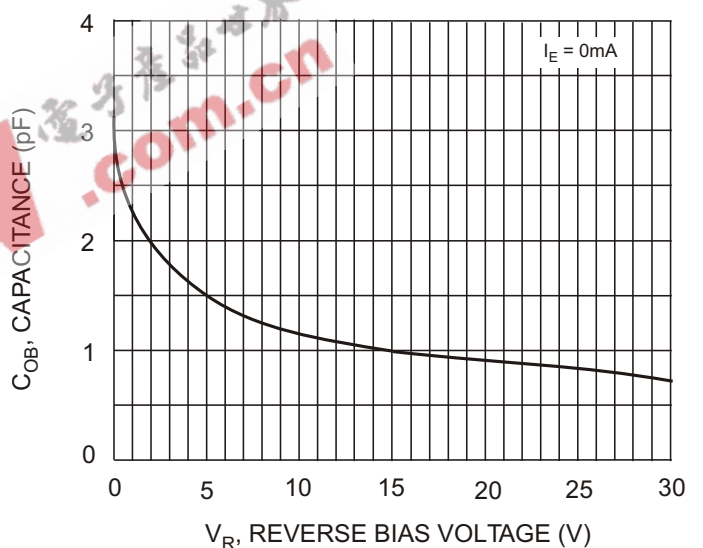


Fig. 4 Output Capacitance

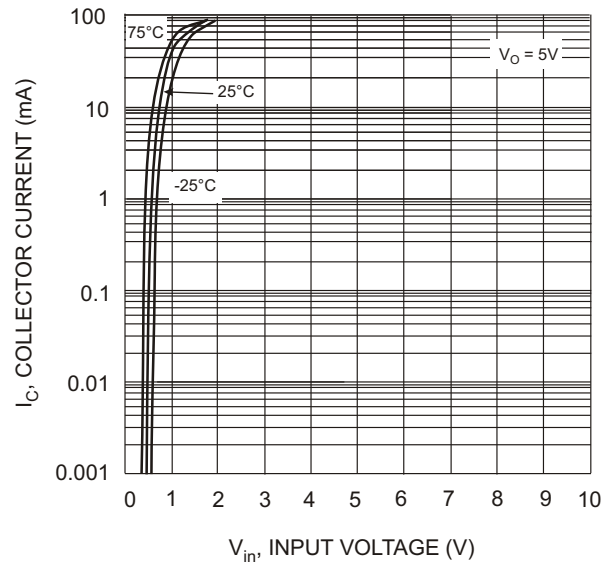


Fig. 5 Collector Current Vs. Input Voltage

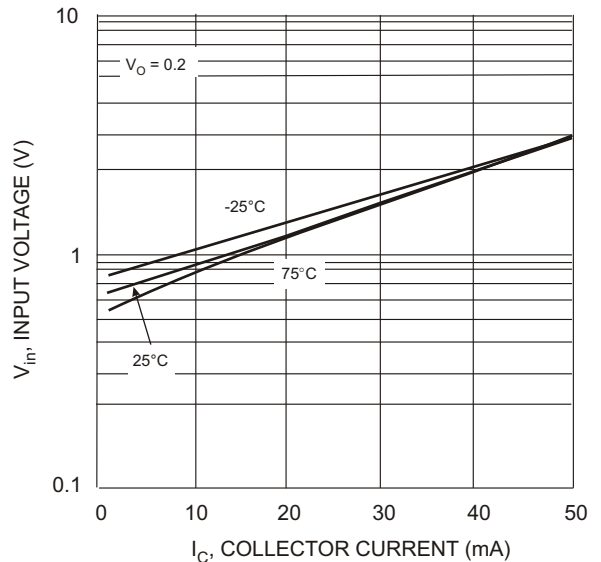


Fig. 6 Input Voltage vs. Collector Current