



DDTC (R1-ONLY SERIES) UA

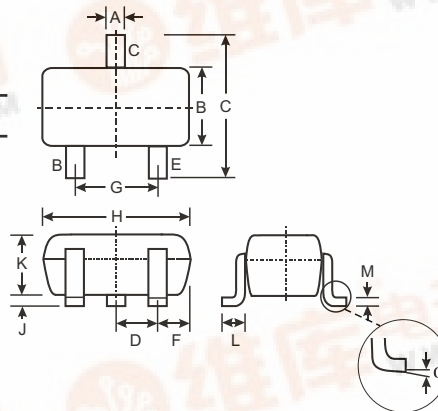
NPN PRE-BIASED SMALL SIGNAL SOT-323 SURFACE MOUNT TRANSISTOR

Features

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

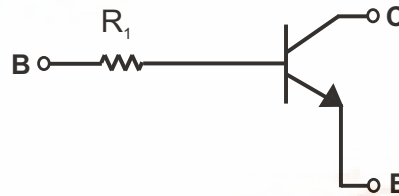
Mechanical Data

- 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
All Dimensions in mm		

P/N	R1 (NOM)	MARKING
DDTC113TUA	1K	N01
DDTC123TUA	2.2K	N03
DDTC143TUA	4.7K	N07
DDTC114TUA	10K	N12
DDTC124TUA	22K	N16
DDTC144TUA	47K	N19
DDTC115TUA	100K	N23
DDTC125TUA	200K	N25



SCHEMATIC DIAGRAM

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	50	V
Collector-Emitter Voltage	V_{CE0}	50	V
Emitter-Base Voltage	V_{EB0}	5	V
Collector Current	I_C (Max)	100	mA
Power Dissipation	P_d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R_{JA}	833	$^\circ\text{C/W}$
Operating and Storage and Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50			V	$I_C = 50\text{ A}$
Collector-Emitter Breakdown Voltage	BV_{CEO}	50			V	$I_C = 1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	5			V	$I_E = 50\text{ A}$
Collector Cutoff Current	I_{CBO}			0.5	A	$V_{CB} = 50\text{V}$
Emitter Cutoff Current	I_{EBO}			0.5	A	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.3	V	$I_C/I_B = 10\text{mA}/1\text{mA}$ DDTC113TUA $I_C/I_B = 5\text{mA}/0.5\text{mA}$ DDTC123TUA $I_C/I_B = 2.5\text{mA}/.25\text{mA}$ DDTC143TUA $I_C/I_B = 1\text{mA}/.1\text{mA}$ DDTC114TUA $I_C/I_B = 5\text{mA}/0.5\text{mA}$ DDTC124TUA $I_C/I_B = 2.5\text{mA}/.25\text{mA}$ DDTC144TUA $I_C/I_B = 1\text{mA}/0.1\text{mA}$ DDTC115TUA $I_C/I_B = .5\text{mA}/.05\text{mA}$ DDTC125TUA
DC Current Transfer Ratio	h_{FE}	100	250	600		$I_C = 1\text{mA}$, $V_{CE} = 5\text{V}$
Input Resistor (R_1) Tolerance	DR_1	-30		+30	%	
Gain-Bandwidth Product*	f_T		250		MHz	$V_{CE} = 10\text{V}$, $I_E = -5\text{mA}$, $f = 100\text{MHz}$

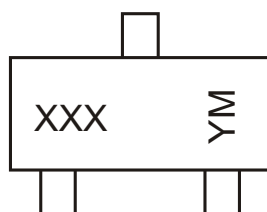
* Transistor - For Reference Only

Ordering Information (Note 2)

Device	Packaging	Shipping
DDTC113TUA-7	SOT-323	3000/Tape & Reel
DDTC123TUA-7	SOT-323	3000/Tape & Reel
DDTC143TUA-7	SOT-323	3000/Tape & Reel
DDTC114TUA-7	SOT-323	3000/Tape & Reel
DDTC124TUA-7	SOT-323	3000/Tape & Reel
DDTC144TUA-7	SOT-323	3000/Tape & Reel
DDTC115TUA-7	SOT-323	3000/Tape & Reel
DDTC125TUA-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

TYPICAL CURVES - DDTC114TUA

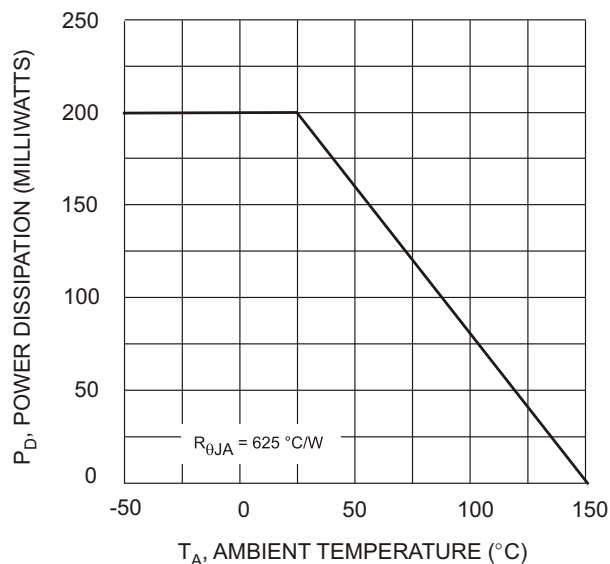


Fig. 1 Derating Curve

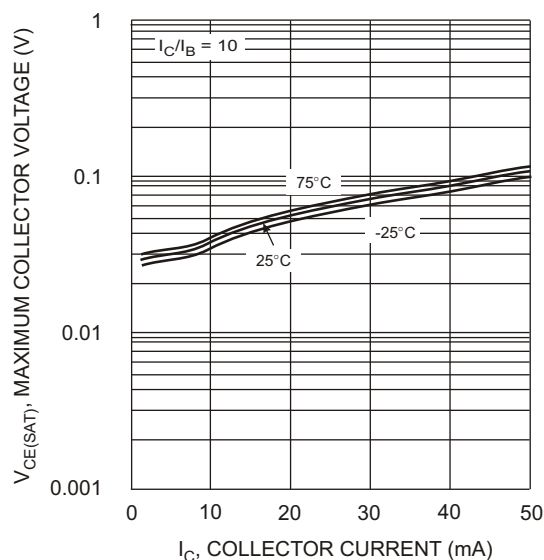


Fig. 2 $V_{CE(SAT)}$ vs. I_C

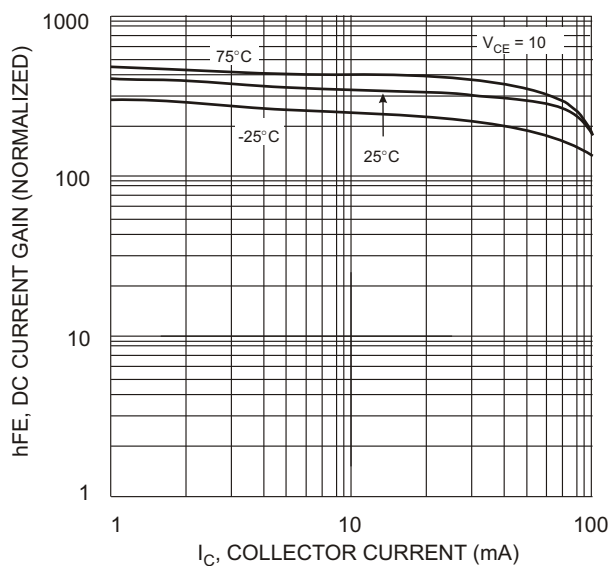


Fig. 3 DC Current Gain

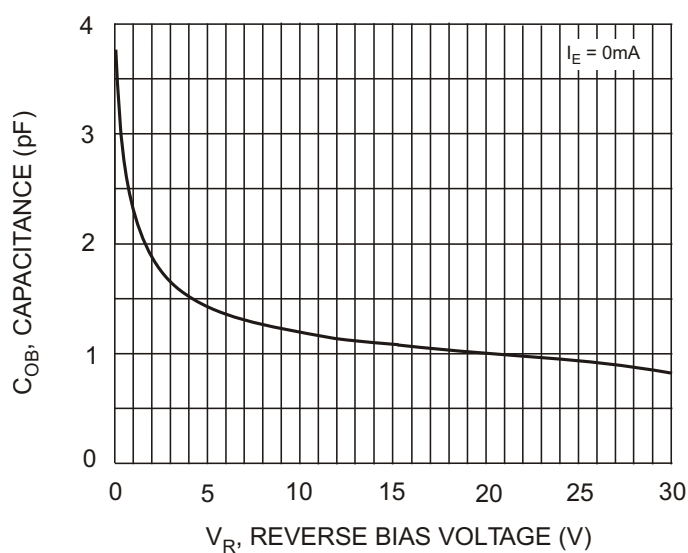


Fig. 4 Output Capacitance

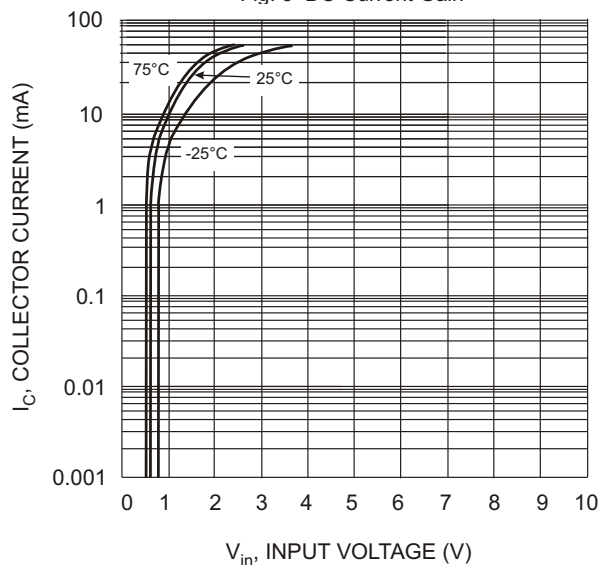


Fig. 5 Collector Current Vs. Input Voltage

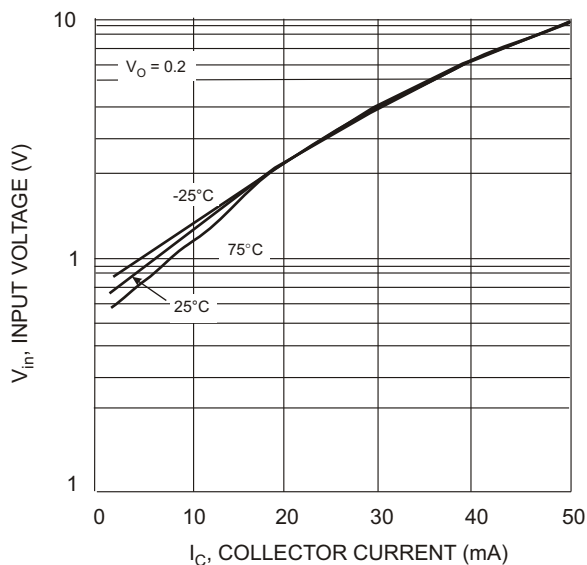


Fig. 6 Input Voltage vs. Collector Current