DDTC (R1-ONLY SERIES) UA

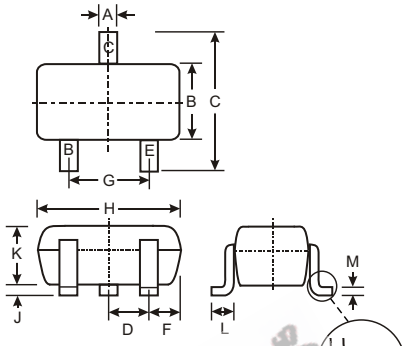
NPN PRE-BIASED SMALL SIGNAL SOT-323 SURFACE MOUNT TRANSISTOR

Features

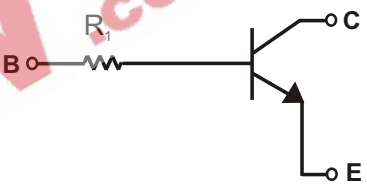
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistor, R1 only
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. 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: Date Code and Type Code (See Diagrams & Page 2)
- Type Code: See Table Below
- Ordering Information (See Page 2)
- 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
	0	8
All Dimensions in mm		



SCHEMATIC DIAGRAM

P/N	R1 (NOM)	Type Code
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

Maximum Ratings @ T_A = 25 C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	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	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.
2. No purposefully added lead.
3. Diodes Inc.'s "Green" Policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
4. Product manufactured with date code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics @ T_A = 25 C unless otherwise specified

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

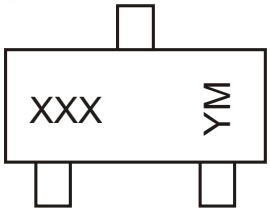
* Transistor - For Reference Only

Ordering Information (Note 4 & 5)

Device	Packaging	Shipping
DDTC1xxTUA-7-F	SOT-323	3000/Tape & Reel
DDTC1xxTUA-13-F	SOT-323	10,000/Tape & Reel

Notes: 4. Product manufactured with date code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
5. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



XXX = Product Type Marking Code, See Table on Page 1
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

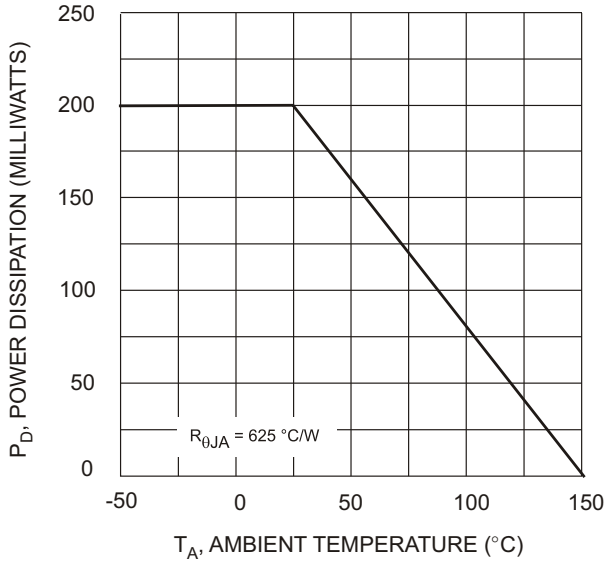


Fig. 1 Derating Curve

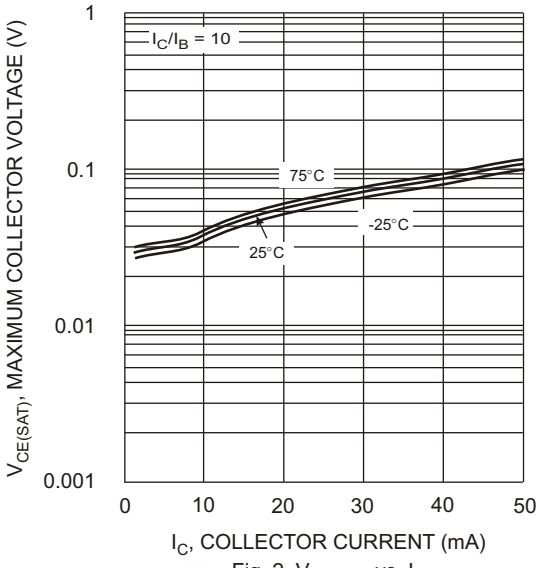


Fig. 2 $V_{CE(SAT)}$ vs. I_C

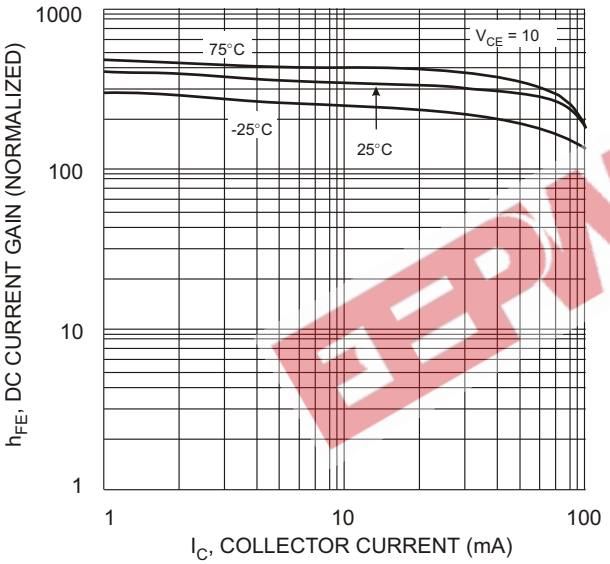


Fig. 3 DC Current Gain

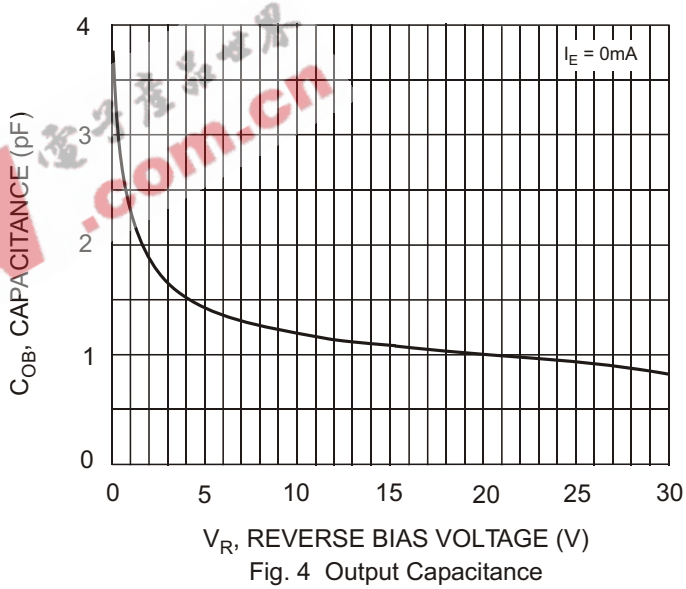


Fig. 4 Output Capacitance

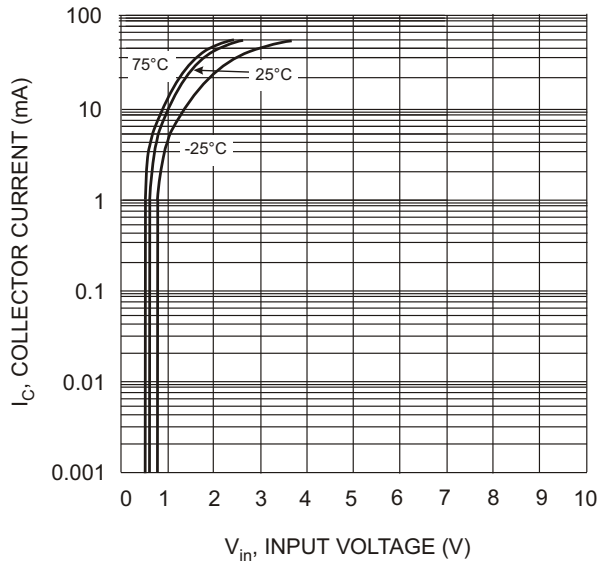


Fig. 5 Collector Current Vs. Input Voltage

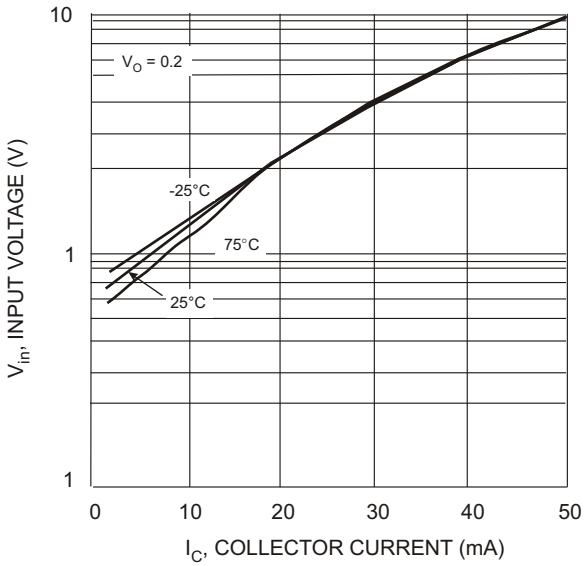


Fig. 6 Input Voltage vs. Collector Current

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