



# DDTA (R1-ONLY SERIES) E

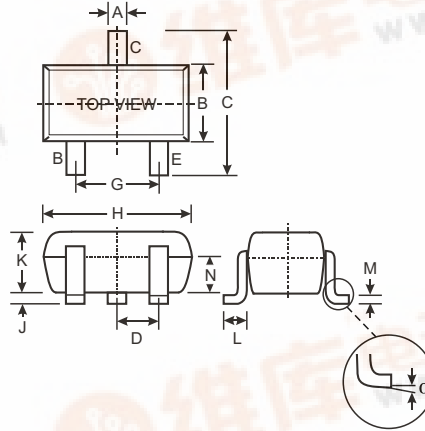
## PNP PRE-BIASED SMALL SIGNAL SOT-523 SURFACE MOUNT TRANSISTOR

### Features

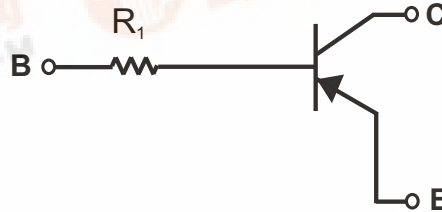
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistor, R1 only
- Lead Free/RoHS Compliant (Note 2)

### Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- Weight: 0.002 grams (approx.)
- Ordering Information (See Page 2)



SOT-523			
Dim	Min	Max	Typ
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D			0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
	0	8	
All Dimensions in mm			



SCHEMATIC DIAGRAM

P/N	R1 (NOM)	MARKING
DDTA113TE	1K	P01
DDTA123TE	2.2K	P03
DDTA143TE	4.7K	P07
DDTA114TE	10K	P12
DDTA124TE	22K	P16
DDTA144TE	47K	P19
DDTA115TE	100K	P23
DDTA125TE	200K	P25

### Maximum Ratings @ T<sub>A</sub> = 25 °C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-50	V
Emitter-Base Voltage	V <sub>EBO</sub>	-5	V
Collector Current	I <sub>C</sub> (Max)	-100	mA
Power Dissipation	P <sub>d</sub>	150	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>JA</sub>	833	C/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	C

- Note:
- Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
  - No purposefully added lead.

NEW PRODUCT



## Electrical Characteristics @ T<sub>A</sub> = 25 C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-50			V	I <sub>C</sub> = -50 A
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	-50			V	I <sub>C</sub> = -1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5			V	I <sub>E</sub> = -50 A
Collector Cutoff Current	I <sub>CBO</sub>			-0.5	A	V <sub>CB</sub> = -50V
Emitter Cutoff Current	I <sub>EBO</sub>			-0.5	A	V <sub>EB</sub> = -4V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>			-0.3	V	I <sub>C</sub> /I <sub>B</sub> = -10mA/-1mA DDTA113TE I <sub>C</sub> /I <sub>B</sub> = -5mA/-0.5mA DDTA123TE I <sub>C</sub> /I <sub>B</sub> = -2.5mA/- .25mA DDTA143TE I <sub>C</sub> /I <sub>B</sub> = -1mA/- .1mA DDTA114TE I <sub>C</sub> /I <sub>B</sub> = -5mA/-0.5mA DDTA124TE I <sub>C</sub> /I <sub>B</sub> = -2.5mA/- .25mA DDTA144TE I <sub>C</sub> /I <sub>B</sub> = -1mA/-0.1mA DDTA115TE I <sub>C</sub> /I <sub>B</sub> = -.5mA/- .05mA DDTA125TE
DC Current Transfer Ratio	h <sub>FE</sub>	100	250	600		I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V
Gain-Bandwidth Product*	f <sub>T</sub>		250		MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz

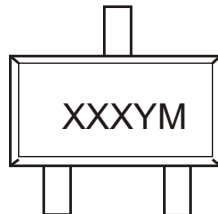
\* Transistor - For Reference Only

## Ordering Information (Note 3)

Device	Packaging	Shipping
DDTA113TE-7-F	SOT-523	3000/Tape & Reel
DDTA123TE-7-F	SOT-523	3000/Tape & Reel
DDTA143TE-7-F	SOT-523	3000/Tape & Reel
DDTA114TE-7-F	SOT-523	3000/Tape & Reel
DDTA124TE-7-F	SOT-523	3000/Tape & Reel
DDTA144TE-7-F	SOT-523	3000/Tape & Reel
DDTA115TE-7-F	SOT-523	3000/Tape & Reel
DDTA125TE-7-F	SOT-523	3000/Tape & Reel

Notes: 3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



XXX = Product Type Marking Code (See Page 1, e.g. P01 = DDTA113TE)  
 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 - DDTA114TE**

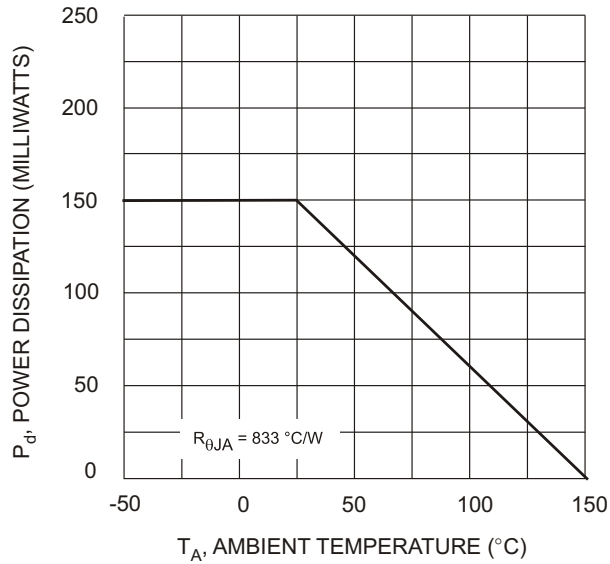


Fig. 1 Derating Curve

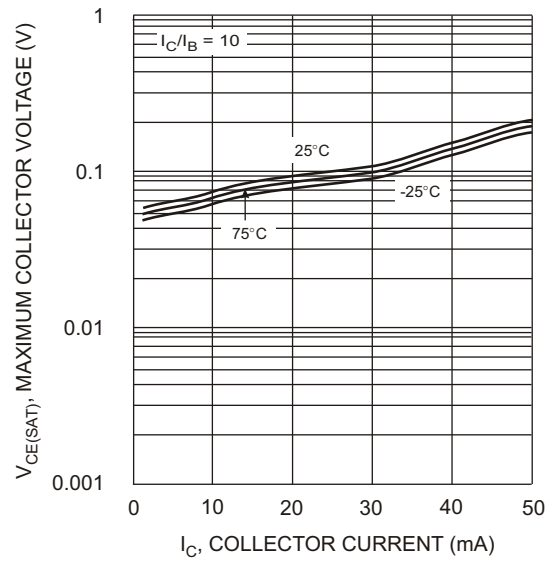


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

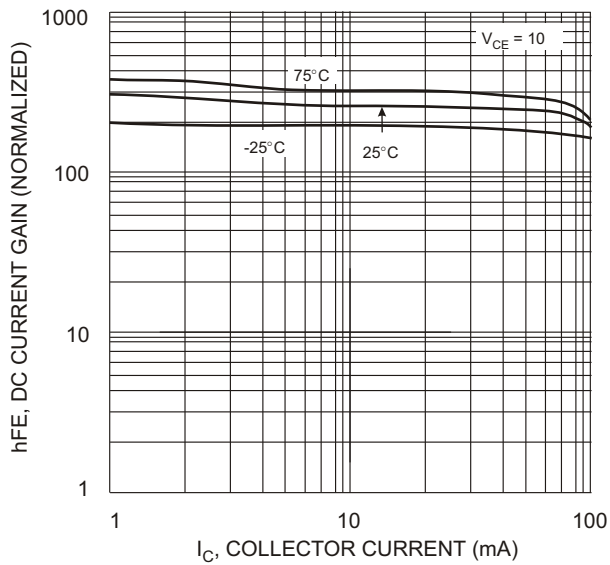


Fig. 3 DC Current Gain

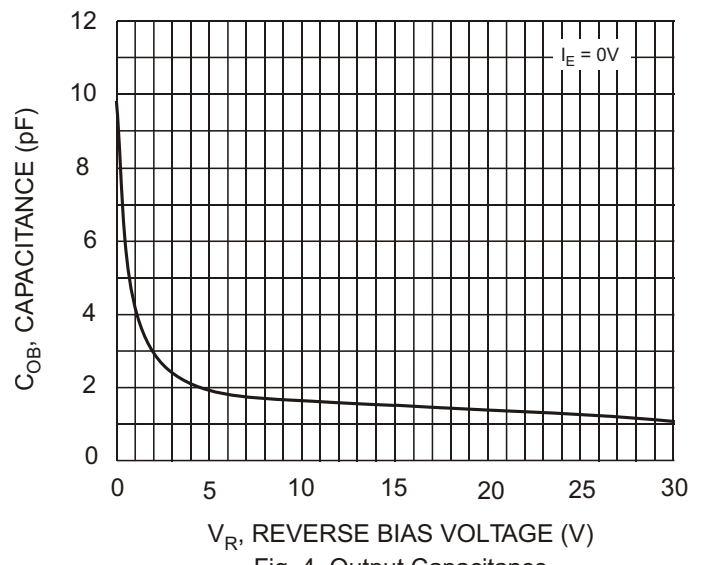


Fig. 4 Output Capacitance

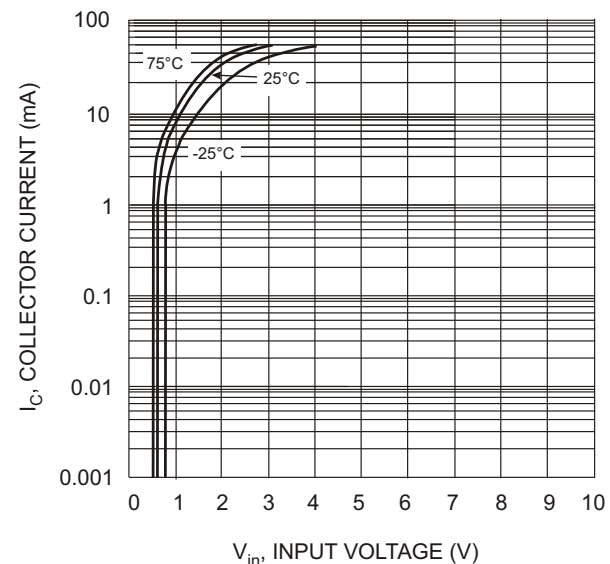


Fig. 5 Collector Current Vs. Input Voltage

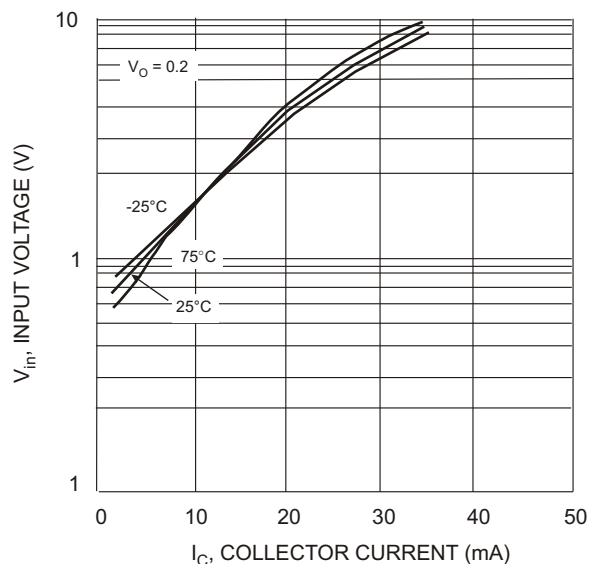


Fig. 6 Input Voltage vs. Collector Current



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