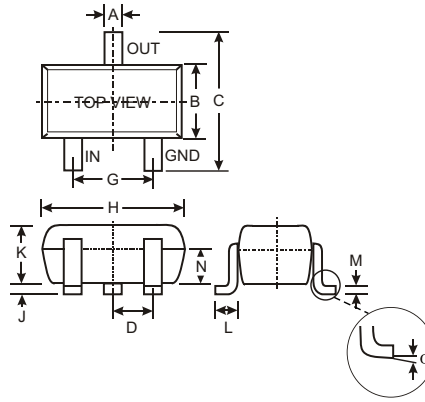


### Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2

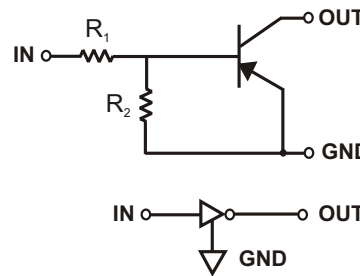
### Mechanical Data

- Case: SOT-523, 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 3)
- 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
$\alpha$	0°	8°	—
All Dimensions in mm			

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTA113ZE	1K $\Omega$	10K $\Omega$	P02
DDTA123YE	2.2K $\Omega$	10K $\Omega$	P05
DDTA123JE	2.2K $\Omega$	47K $\Omega$	P06
DDTA143XE	4.7K $\Omega$	10K $\Omega$	P09
DDTA143FE	4.7K $\Omega$	22K $\Omega$	P10
DDTA143ZE	4.7K $\Omega$	47K $\Omega$	P11
DDTA114YE	10K $\Omega$	47K $\Omega$	P14
DDTA114WE	10K $\Omega$	4.7K $\Omega$	P15
DDTA124XE	22K $\Omega$	47K $\Omega$	P18
DDTA144VE	47K $\Omega$	10K $\Omega$	P21
DDTA144WE	47K $\Omega$	22K $\Omega$	P22



SCHMATIC DIAGRAM

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

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V <sub>CC</sub>	-50	V
Input Voltage, (2) to (1)	V <sub>IN</sub>	+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 <sub>O</sub>	-100 -100 -100 -100 -100 -100 -70 -70 -100 -50 -30 -30	mA
Output 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>θJA</sub>	833	°C/W
Operating and Storage and Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-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<sub>A</sub> = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	V <sub>I(off)</sub>	-0.3 -0.3 -0.5 -0.3 -0.3 -0.5 -0.3 -0.8 -0.4 -1.0 -0.8	—	—	V	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA
	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	V <sub>I(on)</sub>	—	—	-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 <sub>O(on)</sub>	—	-0.1	-0.3	V	I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA DDTA123E I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA DDTA143E I <sub>O</sub> /I <sub>I</sub> = -5mA/-0.25mA DDTA114E I <sub>O</sub> /I <sub>I</sub> = -10mA/-0.5mA All Others
Input Current	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	I <sub>I</sub>	—	—	-7.2 -3.8 -3.6 -1.8 -1.8 -1.8 -0.88 -0.88 -0.36 -0.16 -0.16	mA	V <sub>I</sub> = -5V
Output Current		I <sub>O(off)</sub>	—	—	-0.5	μA	V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V
DC Current Gain	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	G <sub>I</sub>	-33 -33 -80 -30 -68 -80 -68 -24 -68 -33 -56	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
Input Resistor Tolerance		DR <sub>1</sub>	-30	—	+30	%	—
Resistance Ratio Tolerance		DR <sub>2</sub> /R <sub>1</sub>	-20	—	+20	%	—
Gain-Bandwidth Product*		f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz

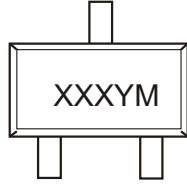
\* Transistor - For Reference Only

## Ordering Information (Note 2)

Device	Packaging	Shipping
DDTA113ZE-7	SOT-523	3000/Tape & Reel
DDTA123YE-7	SOT-523	3000/Tape & Reel
DDTA123JE-7	SOT-523	3000/Tape & Reel
DDTA143XE-7	SOT-523	3000/Tape & Reel
DDTA143FE-7	SOT-523	3000/Tape & Reel
DDTA143ZE-7	SOT-523	3000/Tape & Reel
DDTA114YE-7	SOT-523	3000/Tape & Reel
DDTA114WE-7	SOT-523	3000/Tape & Reel
DDTA124XE-7	SOT-523	3000/Tape & Reel
DDTA144VE-7	SOT-523	3000/Tape & Reel
DDTA144WE-7	SOT-523	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 Page 1, e.g. P02 = DDTA113ZE)  
 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 - DDTA123JE

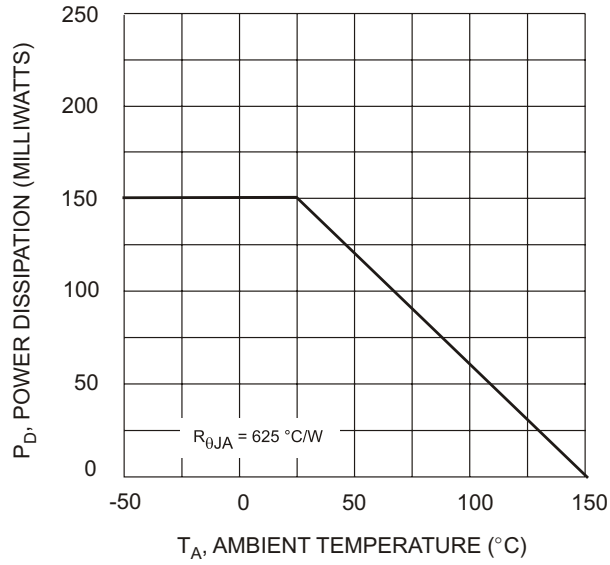


Fig. 1 Derating Curve

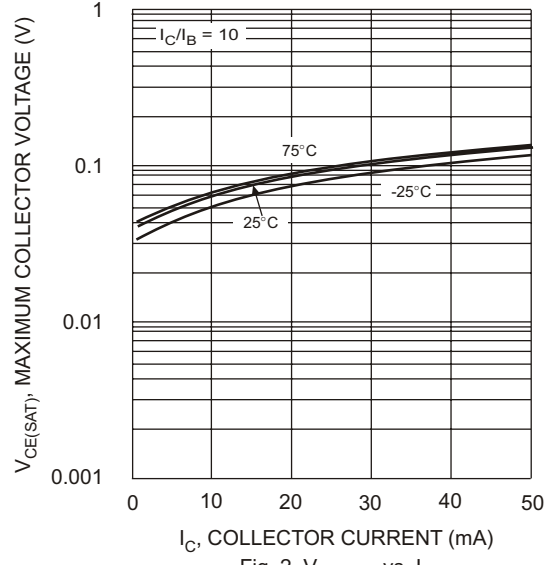


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

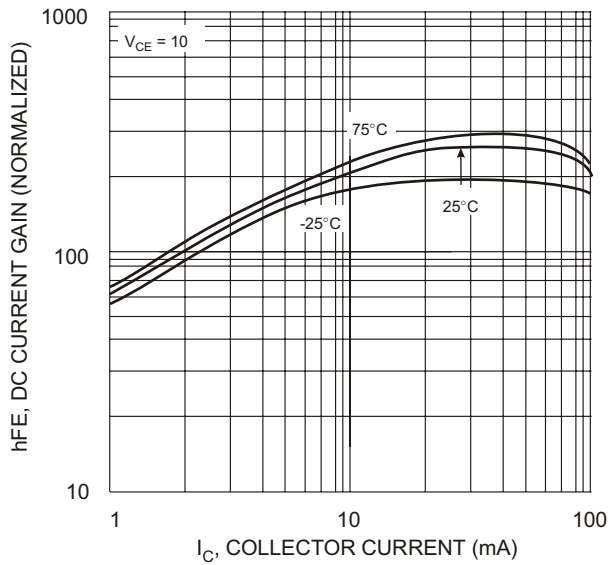


Fig. 3 DC CURRENT GAIN

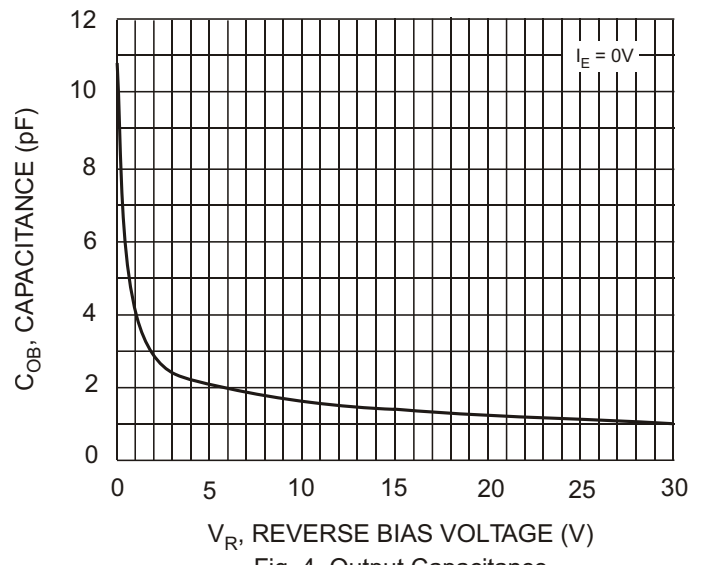


Fig. 4 Output Capacitance

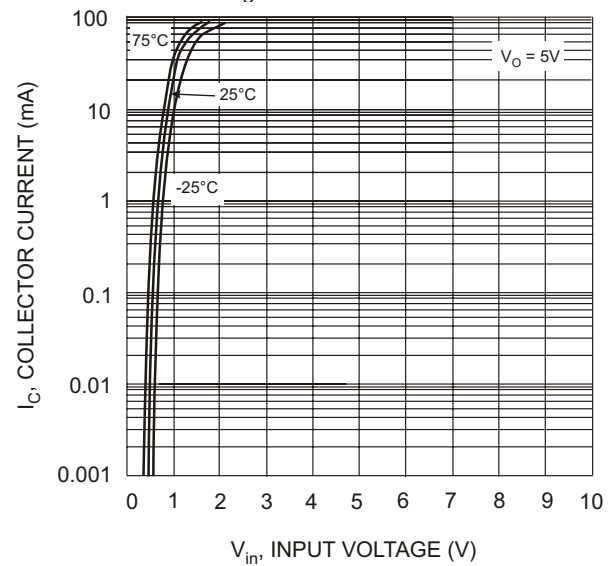


Fig. 5 Collector Current Vs. Input Voltage

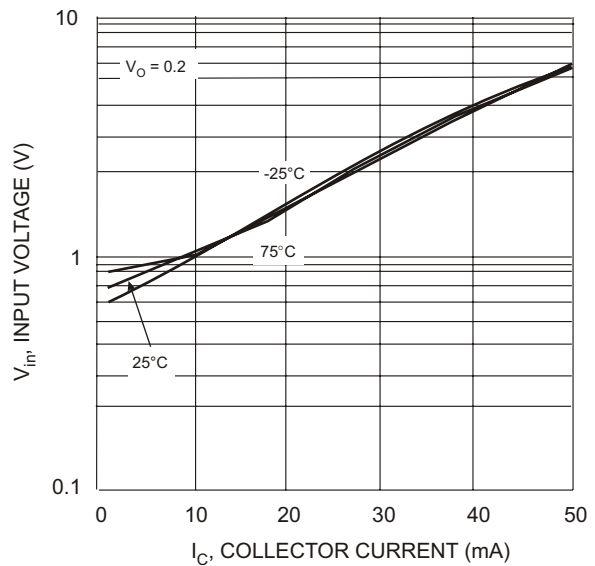


Fig. 6 Input Voltage vs. Collector Current