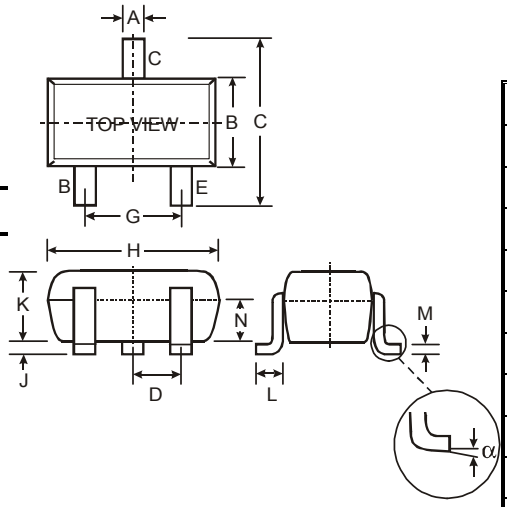
NEW PRODUCT

DDTA (R1-ONLY SERIES) E

PNP PRE-BIASED SMALL SIGNAL 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)**
- **"Green" Device (Note 3 and 4)**

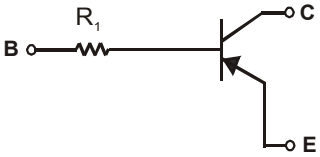


SOT-523			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

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 Information: See Diagrams & Page 4
- Ordering Information: See Page 4
- Weight: 0.002 grams (approximate)

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



SCHEMATIC DIAGRAM

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	150	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	°C

Notes:
1. Mounted on FR4 PC Board with recommended pad layout as shown on Diodes Inc., suggested pad layout document AP02001, which can be found on our website 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 UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

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NEW PRODUCT

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 = -50μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-50	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -50μA
Collector Cutoff Current	I_{CBO}	—	—	-0.5	μA	V_{CB} = -50V
Emitter Cutoff Current	I_{EBO}	—	—	-0.5	μA	V_{EB} = -4V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3	V	I_C/I_B = -10mA/-1mA DDTA113TE I_C/I_B = -5mA/-0.5mA DDTA123TE I_C/I_B = -2.5mA/-.25mA DDTA143TE I_C/I_B = -1mA/-.1mA DDTA114TE I_C/I_B = -5mA/-0.5mA DDTA124TE I_C/I_B = -2.5mA/-.25mA DDTA144TE I_C/I_B = -1mA/-0.1mA DDTA115TE I_C/I_B = -.5mA/-.05mA DDTA125TE
DC Current Transfer Ratio	h_{FE}	100	250	600	—	I_C = -1mA, V_{CE} = -5V
Gain-Bandwidth Product*	f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz

* Transistor - For Reference Only

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Typical Curves – DDTA114TE

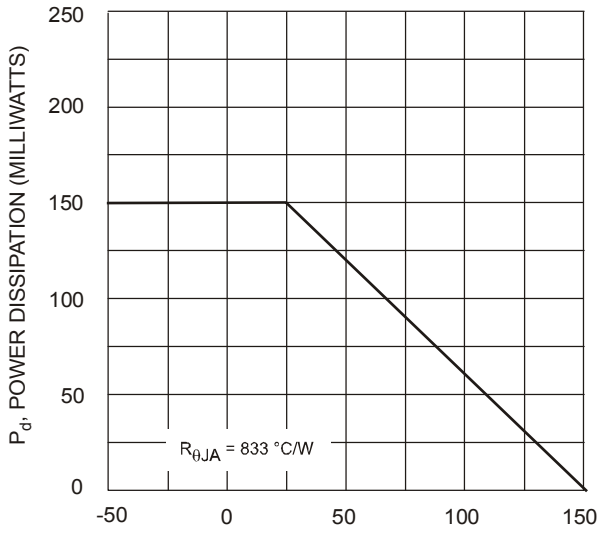

Fig. 1 Derating Curve

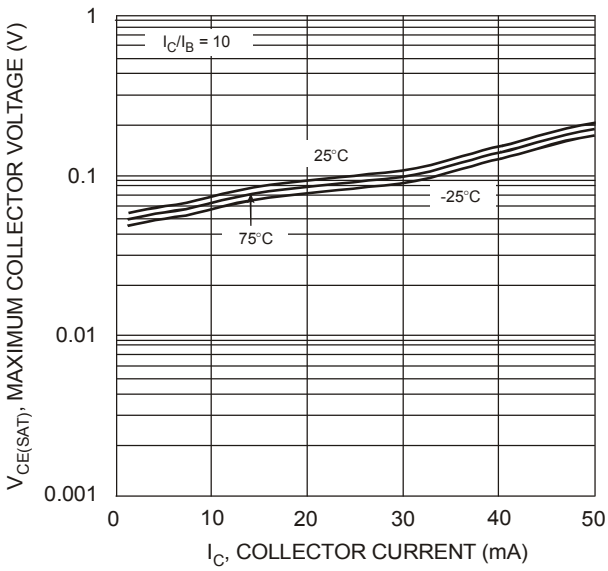

Fig. 2 $V_{CE(SAT)}$ vs. I_C

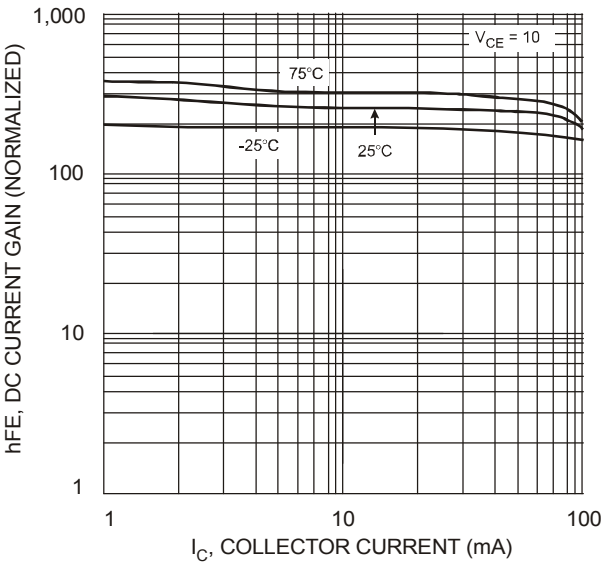

Fig. 3 DC Current Gain

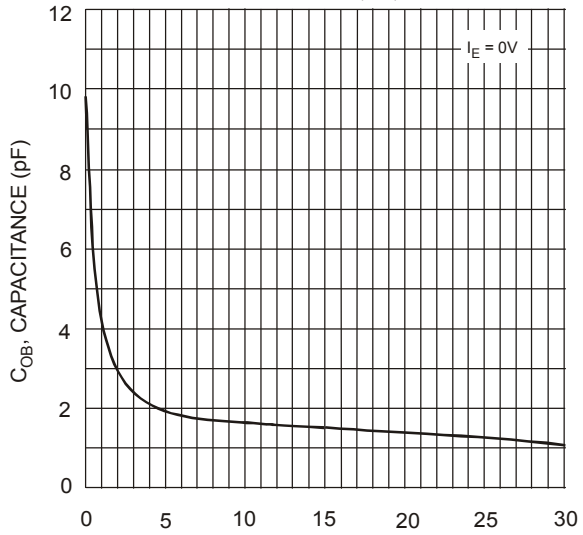

Fig. 4 Output Capacitance

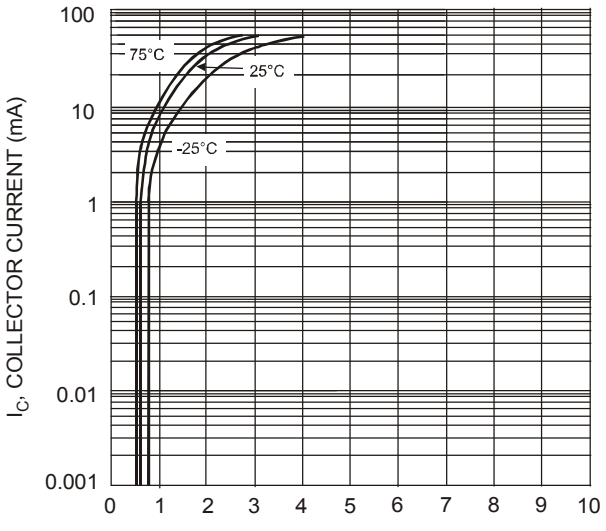

Fig. 5 Collector Current vs. Input Voltage

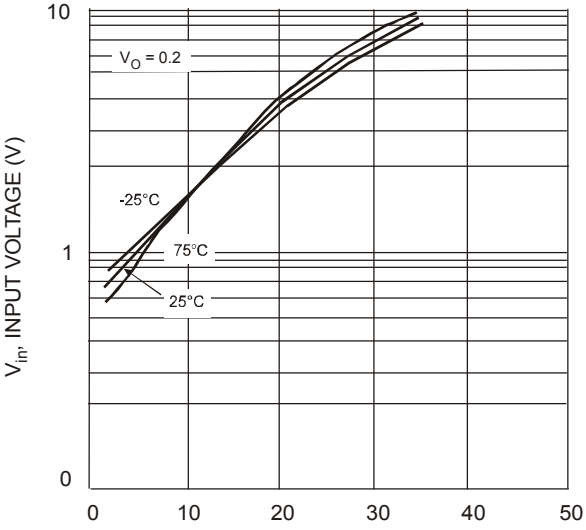

Fig. 6 Input Voltage vs. Collector Current

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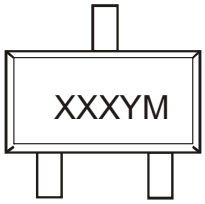
Ordering Information (Note 5)

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: 5. 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: T = 2006
M = Month ex: 9 = September

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

Month	Jan	Feb	Mar	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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