



PNP PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR

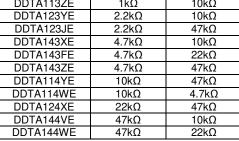
Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Part Number	R1 (NOM)	R2 (NOM)
DDTA113ZE	1kΩ	10kΩ
DDTA123YE	2.2kΩ	10kΩ
DDTA123JE	2.2kΩ	47kΩ
DDTA143XE	4.7kΩ	10kΩ
DDTA143FE	4.7kΩ	22kΩ
DDTA143ZE	4.7kΩ	47kΩ
DDTA114YE	10kΩ	47kΩ
DDTA114WE	10kΩ	4.7kΩ
DDTA124XE	22kΩ	47kΩ
DDTA144VE	47kΩ	10kΩ
DDTA144WE	47kΩ	22kΩ

Mechanical Data

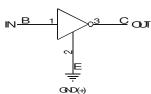
- Case: SOT523
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.002 grams (Approximate)



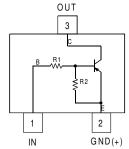




Top View



Device Schematic



Package Pin Out Configuration

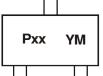
Ordering Information (Note 4)

Part Number	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTA113ZE-7-F	AEC-Q101	P02	7	8	3,000
DDTA123YE-7-F	AEC-Q101	P05	7	8	3,000
DDTA123JE-7-F	AEC-Q101	P06	7	8	3,000
DDTA143XE-7-F	AEC-Q101	P09	7	8	3,000
DDTA143FE-7-F	AEC-Q101	P10	7	8	3,000
DDTA143ZE-7-F	AEC-Q101	P11	7	8	3,000
DDTA114YE-7-F	AEC-Q101	P14	7	8	3,000
DDTA114WE-7-F	AEC-Q101	P15	7	8	3,000
DDTA124XE-7-F	AEC-Q101	P18	7	8	3,000
DDTA144VE-7-F	AEC-Q101	P21	7	8	3,000
DDTA144WE-7-F	AEC-Q101	P22	7	8	3,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.</p>
 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



Pxx = Product Type Marking Code (See Ordering Information) YM = Date Code Marking Y or \overline{Y} = Year (ex: F = 2018)

M = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	202	2 20	23	2024	2025	2026	2027	2028
Code	F	G	Н	- 1	J		K	L	М	N	0	Р
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



Absolute Maximum Ratings (@T_A = 25°C unless otherwise specified)

Characteristic		Symbol	Value	Unit
Supply Voltage, (2) to (3)		V _{CC}	-50	V
Input Voltage, (1) to (2)	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	V _{IN}	+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	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA114YE DDTA114WE DDTA12XE DDTA12XE DDTA144VE DDTA144VE DDTA144WE	Io	-100 -100 -100 -100 -100 -100 -70 -100 -50 -30	mA
Output Current	All	I _{C(MAX)}	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_{D}	150	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{ heta JA}$	833	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Note: 5. Mounted on FR4 PC Board with minimum recommended pad layout.



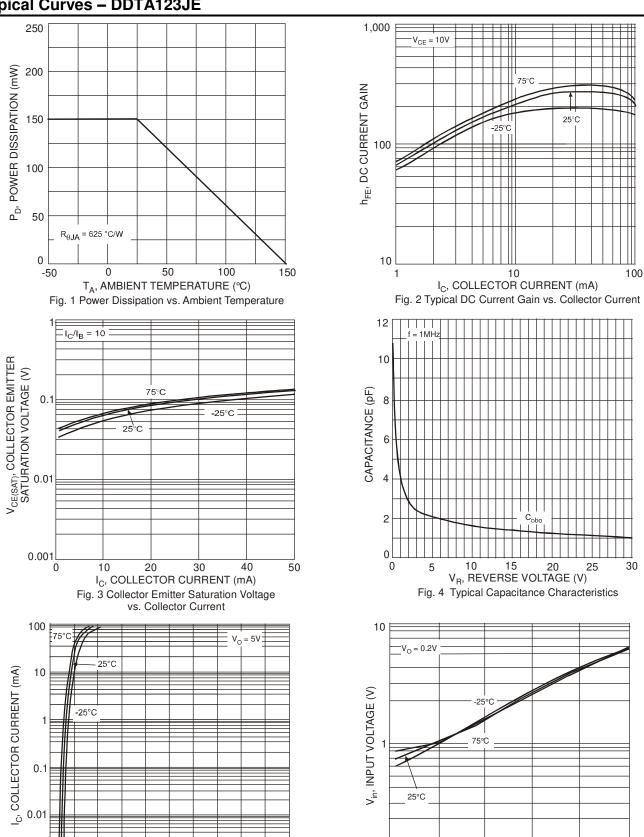
Electrical Characteristics (@T_A = 25°C unless otherwise specified)

Chara	octeristic	Symbol	Min	Тур	Max	Unit	Test Condition
	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	VI(OFF)	-0.3 -0.3 -0.5 -0.3 -0.5 -0.3 -0.8 -0.4 -1.0 -0.8	_	—	V	$V_{CC} = -5V$, $I_{O} = -100\mu A$
Input Voltage	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA124XE DDTA144VE DDTA144WE DDTA144WE	V _{I(ON)}	—	_	-3.0 -3.0 -1.1 -2.5 -1.3 -1.4 -3.0 -2.5 -5.0 -4.0		$\begin{array}{l} V_O = -0.3V, \ I_O = -20mA \\ V_O = -0.3V, \ I_O = -20mA \\ V_O = -0.3V, \ I_O = -5mA \\ V_O = -0.3V, \ I_O = -20mA \\ V_O = -0.3V, \ I_O = -3mA \\ V_O = -0.3V, \ I_O = -5mA \\ V_O = -0.3V, \ I_O = -1mA \\ V_O = -0.3V, \ I_O = -2mA \\ \end{array}$
Output Voltage		V _{O(ON)}	_	-0.1	-0.3	V	I _O /I _I = -5mA/-0.25mA DDTA123E I _O /I _I = -5mA/-0.25mA DDTA143E I _O /I _I = -5mA/-0.25mA DDTA114E I _O /I _I = -10mA/-0.5mA All Others
Input Current	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE DDTA144WE	l _l	_	_	-7.2 -3.8 -3.6 -1.8 -1.8 -0.88 -0.88 -0.36 -0.16	mA	V _I = -5V
Output Current	•	I _{O(OFF)}	_	_	-0.5	μΑ	$V_{CC} = -50V, V_I = 0V$
DC Current Gain	DDTA113ZE DDTA123YE DDTA123JE DDTA143XE DDTA143FE DDTA143ZE DDTA114YE DDTA114WE DDTA124XE DDTA144VE DDTA144WE	Gı	33 33 80 30 68 80 68 24 68 33 56	_	_		V _O = -5V, I _O = -10mA
Input Resistor Tolerance		ΔR_1	-30	_	+30	%	
Resistance Ratio Tolerand		$\Delta R_2/R_1$	-20	_	+20	%	_
Gain-Bandwidth Product (Note 6)		f _T	_	250	_	MHz	$V_{CE} = -10V$, $I_{E} = 5mA$, $f = 100MHz$

Note: 6. Transistor – For Reference Only



Typical Curves - DDTA123JE



3 4 5 6 7 V_{in}, INPUT VOLTAGE (V)

Fig. 5 Collector Current vs. Input Voltage

0.001

0

0.1

0

50

40

I_C, COLLECTOR CURRENT (mA)

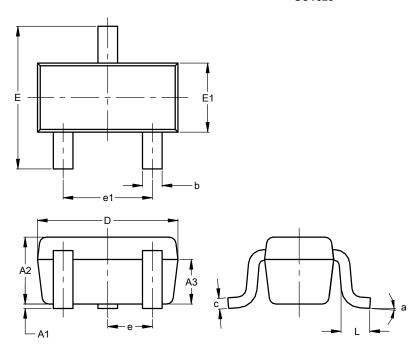
Fig. 6 Input Voltage vs. Collector Current



Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT523

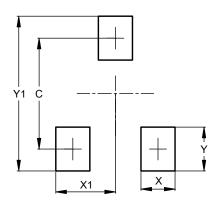


SOT523						
Dim	Min	Max	Тур			
A1	0.00	0.10	0.05			
A2	0.60	0.80	0.75			
A3	0.45	0.65	0.50			
b	0.15	0.30	0.22			
С	0.10	0.20	0.12			
D	1.50	1.70	1.60			
Е	1.45	1.75	1.60			
E1	0.75	0.85	0.80			
е		0.50 BS	С			
e1	0.90	1.10	1.00			
L	0.20	0.40	0.33			
а	0°		8°			
A	All Dimensions in mm					

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT523



Dimensions	Value
С	1.29
Х	0.40
X1	0.70
Υ	0.51
Y1	1.80



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