THE DATASHEET OF

DDTA144WE-7-F

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**

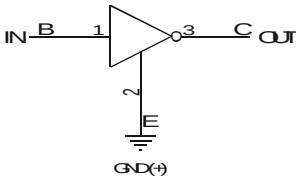
Mechanical Data

- 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 e3
- Weight: 0.002 grams (Approximate)

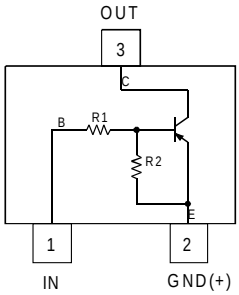
Part Number	R1 (NOM)	R2 (NOM)
DDTA113ZE	1kΩ	10kΩ
DDTA123YE	2.2kΩ	10kΩ
DDTA123JE	2.2kΩ	47kΩ
DDTA143XE	4.7kΩ	10kΩ
DDTA143FE	4.7kΩ	22kΩ
DDTA143ZE	4.7kΩ	47kΩ
DDTA114YE	10kΩ	47kΩ
DDTA114WE	10kΩ	4.7kΩ
DDTA124XE	22kΩ	47kΩ
DDTA144VE	47kΩ	10kΩ
DDTA144WE	47kΩ	22kΩ

SOT523

Top View



Device Schematic



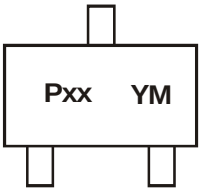
Package Pin Out Configuration

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.
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	2022	2023	2024	2025	2026	2027	2028
Code	F	G	H	I	J	K	L	M	N	O	P

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

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	V_{IN}	+5 to -10	V
	DDTA123YE		+5 to -12	
	DDTA123JE		+5 to -12	
	DDTA143XE		+7 to -20	
	DDTA143FE		+6 to -30	
	DDTA143ZE		+5 to -30	
	DDTA114YE		+6 to -40	
	DDTA114WE		+10 to -30	
	DDTA124XE		+10 to -40	
	DDTA144VE		+15 to -40	
	DDTA144WE		+10 to -40	
Output Current	DDTA113ZE	I_O	-100	mA
	DDTA123YE		-100	
	DDTA123JE		-100	
	DDTA143XE		-100	
	DDTA143FE		-100	
	DDTA143ZE		-100	
	DDTA114YE		-70	
	DDTA114WE		-100	
	DDTA124XE		-50	
	DDTA144VE		-30	
	DDTA144WE		-30	
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)	$R_{\theta JA}$	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)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTA113ZE	$V_{I(OFF)}$	-0.3	—	—	V	V_{CC} = -5V, I_O = -100µA
	DDTA123YE		-0.3				
	DDTA123JE		-0.5				
	DDTA143XE		-0.3				
	DDTA143FE		-0.3				
	DDTA143ZE		-0.5				
	DDTA114YE		-0.3				
	DDTA114WE		-0.8				
	DDTA124XE		-0.4				
	DDTA144VE		-1.0				
	DDTA144WE		-0.8				
	DDTA113ZE	$V_{I(ON)}$	—	—	-3.0		V_O = -0.3V, I_O = -20mA
	DDTA123YE				-3.0		V_O = -0.3V, I_O = -20mA
	DDTA123JE				-1.1		V_O = -0.3V, I_O = -5mA
	DDTA143XE				-2.5		V_O = -0.3V, I_O = -20mA
	DDTA143FE				-1.3		V_O = -0.3V, I_O = -3mA
	DDTA143ZE				-1.3		V_O = -0.3V, I_O = -5mA
	DDTA114YE				-1.4		V_O = -0.3V, I_O = -1mA
	DDTA114WE				-3.0		V_O = -0.3V, I_O = -2mA
	DDTA124XE				-2.5		V_O = -0.3V, I_O = -2mA
	DDTA144VE				-5.0		V_O = -0.3V, I_O = -2mA
	DDTA144WE				-4.0		V_O = -0.3V, I_O = -2mA
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	I_I	—	—	-7.2	mA	V_I = -5V
	DDTA123YE				-3.8		
	DDTA123JE				-3.6		
	DDTA143XE				-1.8		
	DDTA143FE				-1.8		
	DDTA143ZE				-1.8		
	DDTA114YE				-0.88		
	DDTA114WE				-0.88		
	DDTA124XE				-0.36		
	DDTA144VE				-0.16		
	DDTA144WE				-0.16		
Output Current		$I_{O(OFF)}$	—	—	-0.5	µA	V_{CC} = -50V, V_I = 0V
DC Current Gain	DDTA113ZE	G_I	33	—	—	—	V_O = -5V, I_O = -10mA
	DDTA123YE		33				
	DDTA123JE		80				
	DDTA143XE		30				
	DDTA143FE		68				
	DDTA143ZE		80				
	DDTA114YE		68				
	DDTA114WE		24				
	DDTA124XE		68				
	DDTA144VE		33				
	DDTA144WE		56				
Input Resistor Tolerance		ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance		$\Delta R_2/R_1$	-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

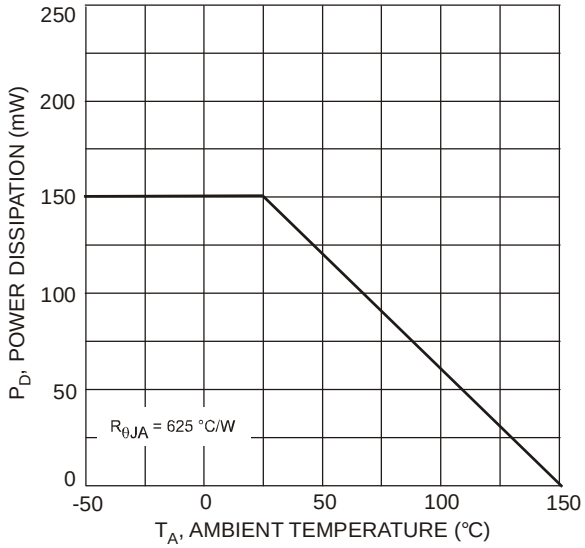


Fig. 1 Power Dissipation vs. Ambient Temperature

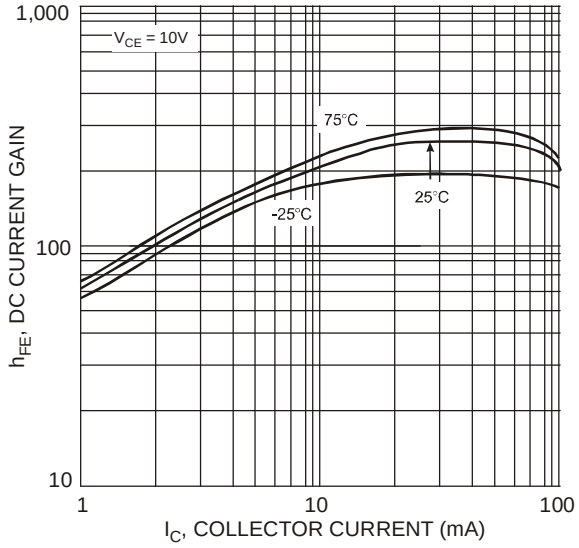


Fig. 2 Typical DC Current Gain vs. Collector Current

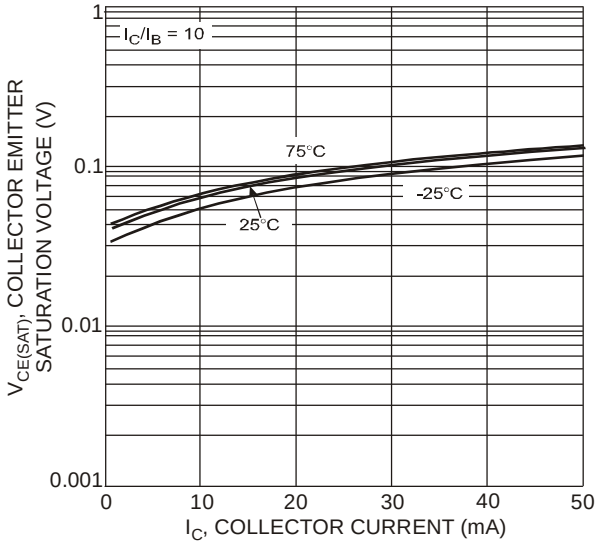


Fig. 3 Collector Emitter Saturation Voltage vs. Collector Current

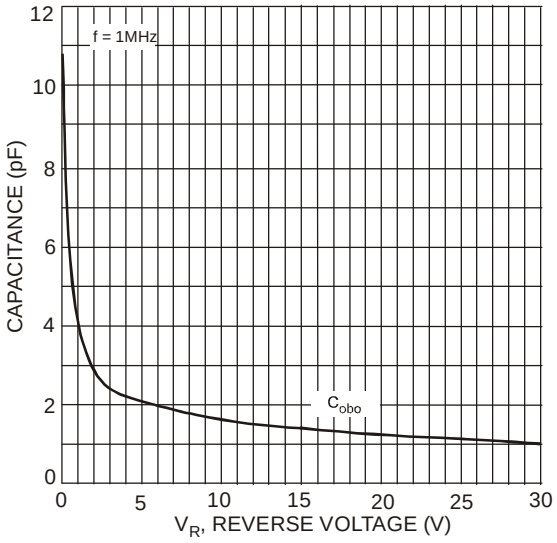


Fig. 4 Typical Capacitance Characteristics

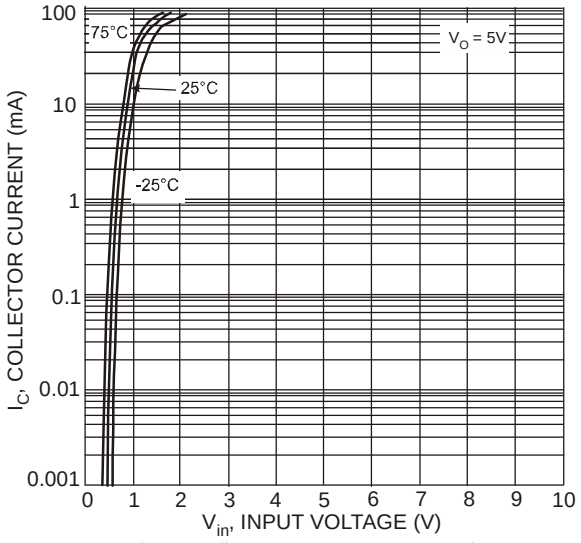


Fig. 5 Collector Current vs. Input Voltage

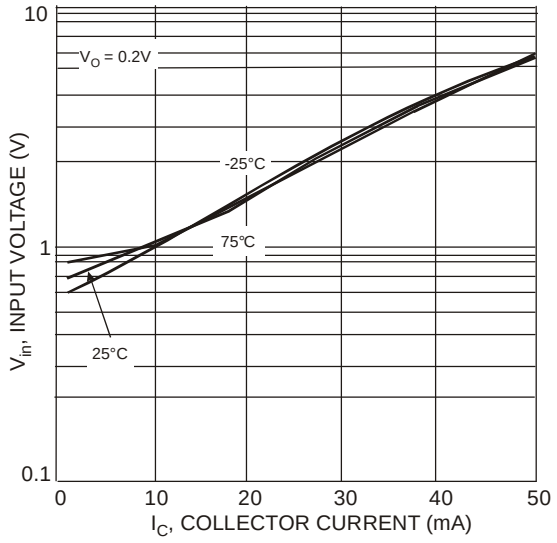
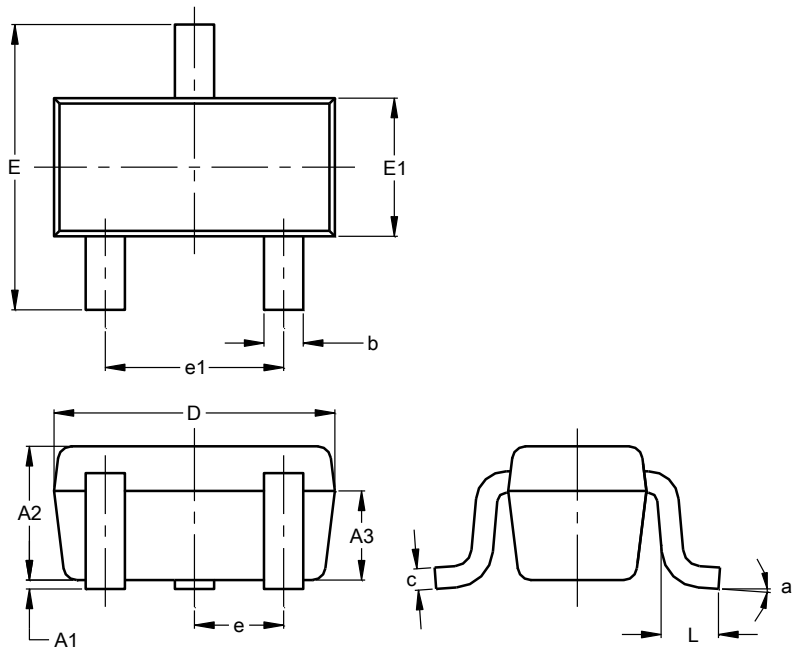


Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions

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

SOT523

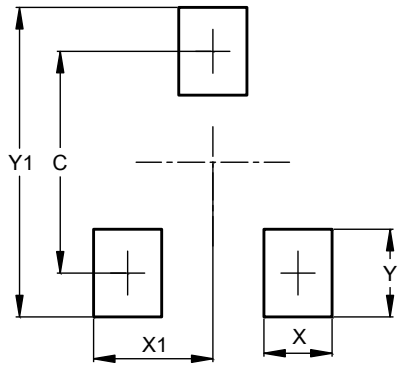


SOT523			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

Suggested Pad Layout

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

SOT523



Dimensions	Value
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80

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