

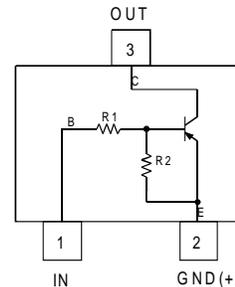
Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface-Mount Package Suited for Automated Assembly
- Complementary NPN Types: DDTC (R1≠R2 SERIES) CA
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
<https://www.diodes.com/quality/product-definitions/>

Orderable Part Number	R1	R2
DDTA113ZCA	1kΩ	10kΩ
DDTA123YCA	2.2kΩ	10kΩ
DDTA123JCA	2.2kΩ	47kΩ
DDTA143XCA	4.7kΩ	10kΩ
DDTA143FCA	4.7kΩ	22kΩ
DDTA143ZCA	4.7kΩ	47kΩ
DDTA114YCA	10kΩ	47kΩ
DDTA114WCA	10kΩ	4.7kΩ
DDTA124XCA	22kΩ	47kΩ
DDTA144VCA	47kΩ	10kΩ
DDTA144WCA	47kΩ	22kΩ



Top View



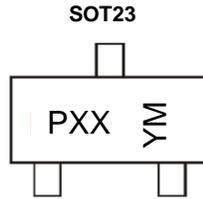
Device Schematic

Ordering Information (Note 4)

Orderable Part Number	Package	Marking Code	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DDTA113ZCA-7-F	SOT23	P02	7	8	3,000	Reel
DDTA123YCA-7-F	SOT23	P05	7	8	3,000	Reel
DDTA123JCA-7-F	SOT23	P06	7	8	3,000	Reel
DDTA143XCA-7-F	SOT23	P09	7	8	3,000	Reel
DDTA143FCA-7-F	SOT23	P10	7	8	3,000	Reel
DDTA143ZCA-7-F	SOT23	P11	7	8	3,000	Reel
DDTA114YCA-7-F	SOT23	P14	7	8	3,000	Reel
DDTA114WCA-7-F	SOT23	P15	7	8	3,000	Reel
DDTA124XCA-7-F	SOT23	P18	7	8	3,000	Reel
DDTA144VCA-7-F	SOT23	P21	7	8	3,000	Reel
DDTA144WCA-7-F	SOT23	P22	7	8	3,000	Reel

- 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 <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



PXX = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: M = 2025)
 M = Month (ex: D = December)

Date Code Key

Year	2002	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	N	-	M	N	P	R	S	T	U	V	W	X

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_{amb} = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>	V _{cc}	-50	V
Input Voltage <Pin: (1) to (2)>	V _{in}	DDTA113ZCA	+5 to -10
		DDTA123YCA	+5 to -12
		DDTA123JCA	+5 to -12
		DDTA143XCA	+7 to -20
		DDTA143FCA	+6 to -30
		DDTA143ZCA	+5 to -30
		DDTA114YCA	+6 to -40
		DDTA114WCA	+10 to -30
		DDTA124XCA	+10 to -40
		DDTA144VCA	+15 to -40
DDTA144WCA	+10 to -40		
Output Current	I _{out}	DDTA113ZCA	-100
		DDTA123YCA	-100
		DDTA123JCA	-100
		DDTA143XCA	-100
		DDTA143FCA	-100
		DDTA143ZCA	-100
		DDTA114YCA	-70
		DDTA114WCA	-100
		DDTA124XCA	-50
DDTA144VCA	-30		
DDTA144WCA	-30		
Output Current	I _c (max)	-100	mA

Thermal Characteristics (@T_{amb} = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 5, 6)	P _D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 5. Mounted on FR4 PC Board with minimum recommended pad layout.
 6. 150mW per element must not be exceeded.

Electrical Characteristics (@T_{amb} = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DDTA113ZCA	-0.3	—	—	V	V _{CC} = -5V, I _{out} = -100μA	
	DDTA123YCA	-0.3					
	DDTA123JCA	-0.5					
	DDTA143XCA	-0.3					
	DDTA143FCA	-0.3					
	DDTA143ZCA	-0.5					
	DDTA114YCA	-0.3					
	DDTA114WCA	-0.8					
	DDTA124XCA	-0.4					
	DDTA144VCA	-1.0					
	DDTA144WCA	-0.8					
	DDTA113ZCA	—	—	-3.0	V	V _{out} = -0.3V, I _{out} = -20mA	
	DDTA123YCA			-3.0		V _{out} = -0.3V, I _{out} = -20mA	
	DDTA123JCA			-1.1		V _{out} = -0.3V, I _{out} = -5mA	
	DDTA143XCA			-2.5		V _{out} = -0.3V, I _{out} = -20mA	
	DDTA143FCA			-1.3		V _{out} = -0.3V, I _{out} = -3mA	
	DDTA143ZCA			-1.3		V _{out} = -0.3V, I _{out} = -5mA	
	DDTA114YCA			-1.4		V _{out} = -0.3V, I _{out} = -1mA	
	DDTA114WCA			-3.0		V _{out} = -0.3V, I _{out} = -2mA	
	DDTA124XCA			-2.5		V _{out} = -0.3V, I _{out} = -2mA	
	DDTA144VCA			-5.0		V _{out} = -0.3V, I _{out} = -2mA	
	DDTA144WCA			-4.0		V _{out} = -0.3V, I _{out} = -2mA	
Output Voltage	V _{out(on)}	—	-0.1	-0.3	V	I _{out} /I _{in} = -5mA/-0.25mA DDTA123JCA I _{out} /I _{in} = -5mA/-0.25mA DDTA143ZCA I _{out} /I _{in} = -5mA/-0.25mA DDTA114YCA I _{out} /I _{in} = -10mA/-0.5mA All Others	
Input Current	DDTA113ZCA	—	—	-7.2	mA	V _{in} = -5V	
	DDTA123YCA			-3.8			
	DDTA123JCA			3.6			
	DDTA143XCA			-1.8			
	DDTA143FCA			-1.8			
	DDTA143ZCA			-1.8			
	DDTA114YCA			-0.88			
	DDTA114WCA			-0.88			
	DDTA124XCA			-0.36			
	DDTA144VCA			-0.16			
	DDTA144WCA			-0.16			
Output Current	I _{out(off)}	—	—	-0.5	μA	V _{CC} = -50V, V _{in} = 0	
DC Current Gain	DDTA113ZCA	G _I	—	—	—	V _{out} = -5V, I _{out} = -10mA	
	DDTA123YCA						33
	DDTA123JCA						80
	DDTA143XCA						30
	DDTA143FCA						68
	DDTA143ZCA						80
	DDTA114YCA						68
	DDTA114WCA						24
	DDTA124XCA						68
	DDTA144VCA						33
	DDTA144WCA						56
Input Resistor (R ₁) Tolerance	ΔR ₁	-30	—	+30	%	—	
Resistance Ratio Tolerance	ΔR ₂ /R ₁	-20	—	+20	%	—	
Gain-Bandwidth Product	f _T	—	250	—	MHz	V _{CE} = -10V, I _E = -5mA, f = 100MHz	

Typical Curve – Total Device Power Dissipation

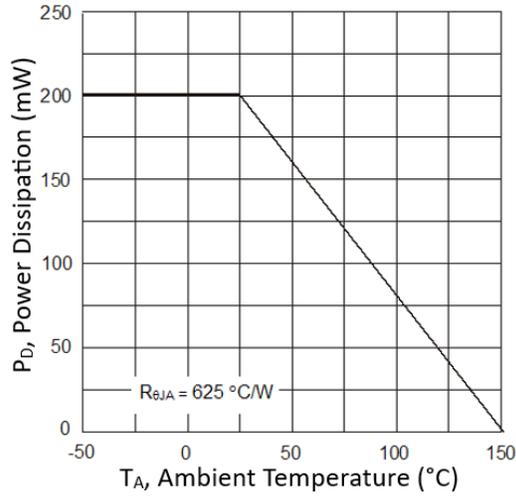


Figure 1 Derating Curve

Typical Curves – DDTA123JCA (@ $T_A = +25^{\circ}C$, unless otherwise specified.)

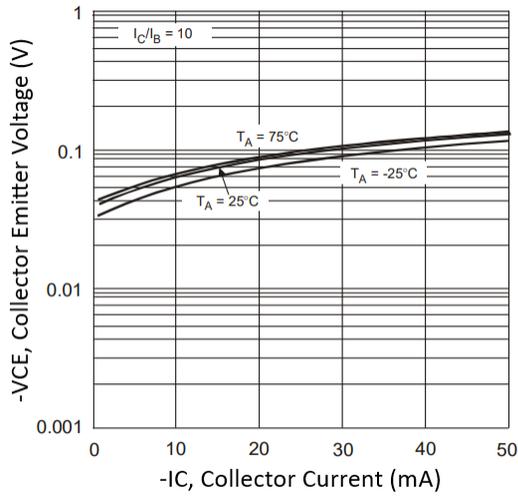


Figure 2 $V_{CE(sat)}$ vs I_C

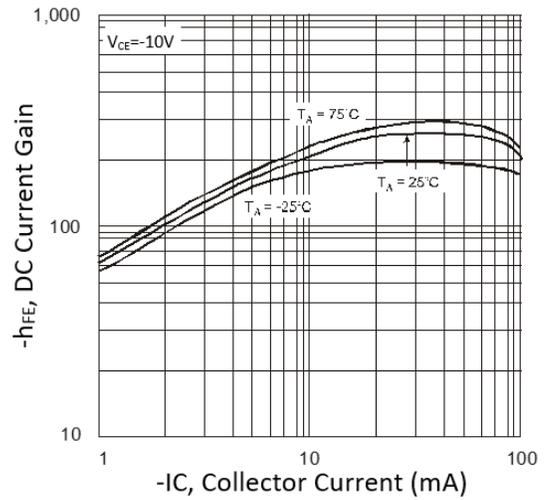


Figure 3 DC Current Gain

Typical Curves – DDTA123JCA (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.) (continued)

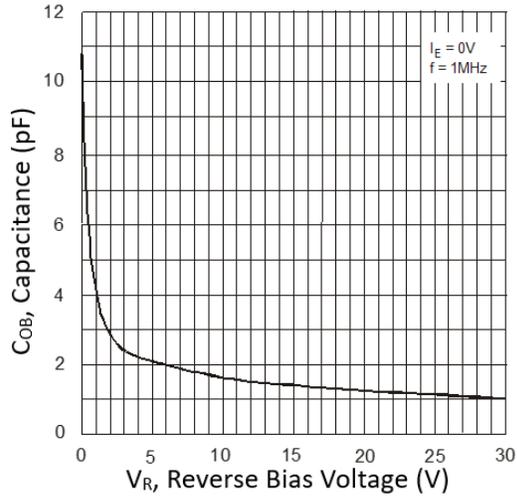


Figure 4 Output Capacitance

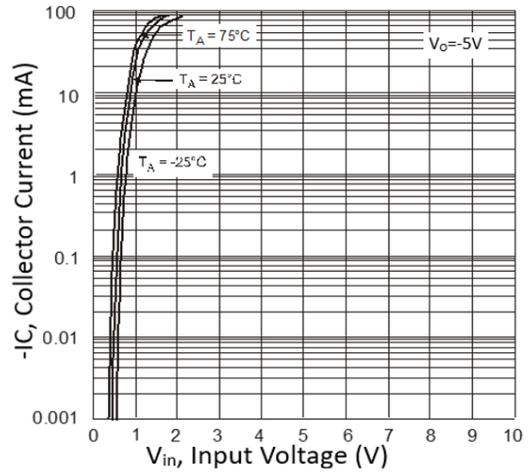


Figure 5 Collector Current vs Input Voltage

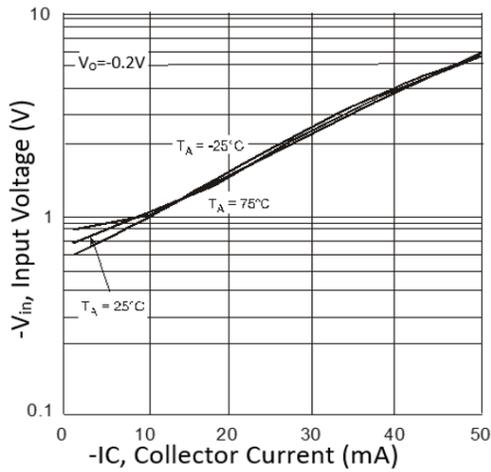
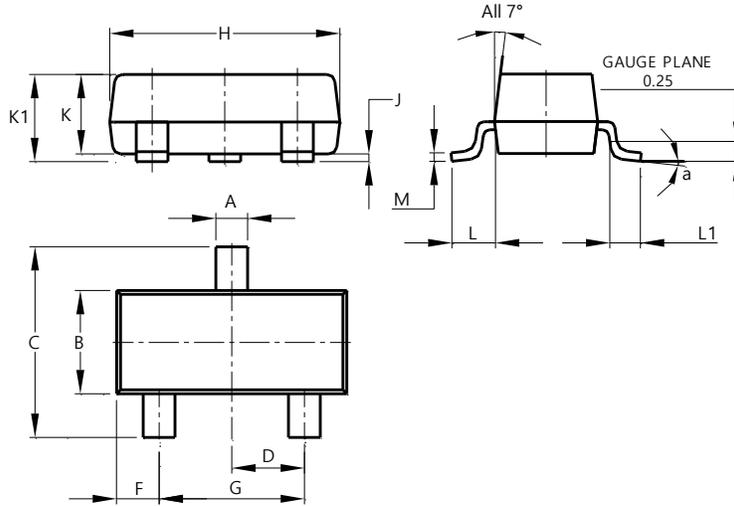


Figure 6 Input Voltage vs Collector Current

Package Outline Dimensions

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

SOT23

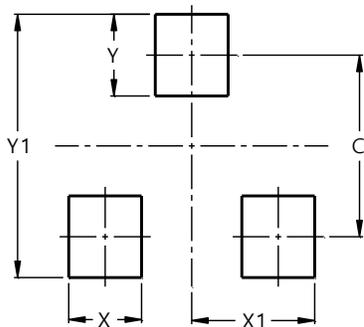


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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