



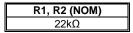
NPN PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (ADTA)
- 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
- PPAP Capable (Note 4)

Mechanical Data

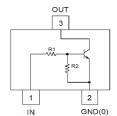
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (23)
- Weight: 0.008 grams (Approximate)



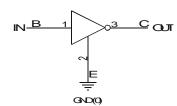




Top View



Device Schematic



Equivalent Inverter Circuit

Ordering Information (Notes 4 & 5)

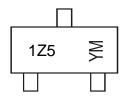
Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
ADTC124ECAQ-7	Automotive	1Z5	7	8	3,000
ADTC124ECAQ-13	Automotive	1Z5	13	8	10,000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information

SOT23



1Z5 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: D = 2016) M = Month (ex: 9 = September)

Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	D	Е	F	G	Н	- 1	J	K	L	М	N	0	Р	Q	R	S
Month	Jan	F	eb	Mar	Apr	М	ay	Jun	Jul	A	ıg	Sep	Oct	N	ov	Dec
Code	1		2	3	4	,	5	6	7	8	3	9	0	1	1	D



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

Characteristic	Symbol	Value	Unit
Supply Voltage <pin: (2)="" (3)="" to=""></pin:>	Vcc	50	V
Input Voltage <pin: (1)="" (2)="" to=""></pin:>	V _{IN}	-10 to +40	V
Output Current	lo	30	mA
Output Current	I _C (Max)	100	mA

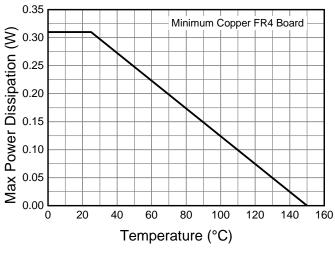
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_{D}	310	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{0JA}	403	°C/W
Operating and Storage Temperature Range	T_J , T_{STG}	-55 to +150	°C

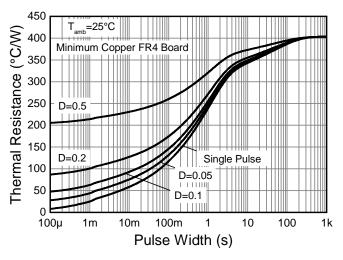
Note: 6. Mounted on FR4 PC Board with minimum recommended pad layout.



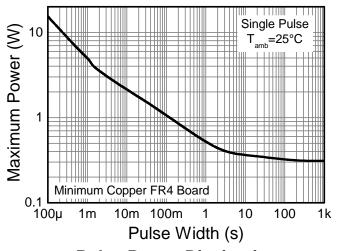
Thermal Characteristics and Derating Information



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation



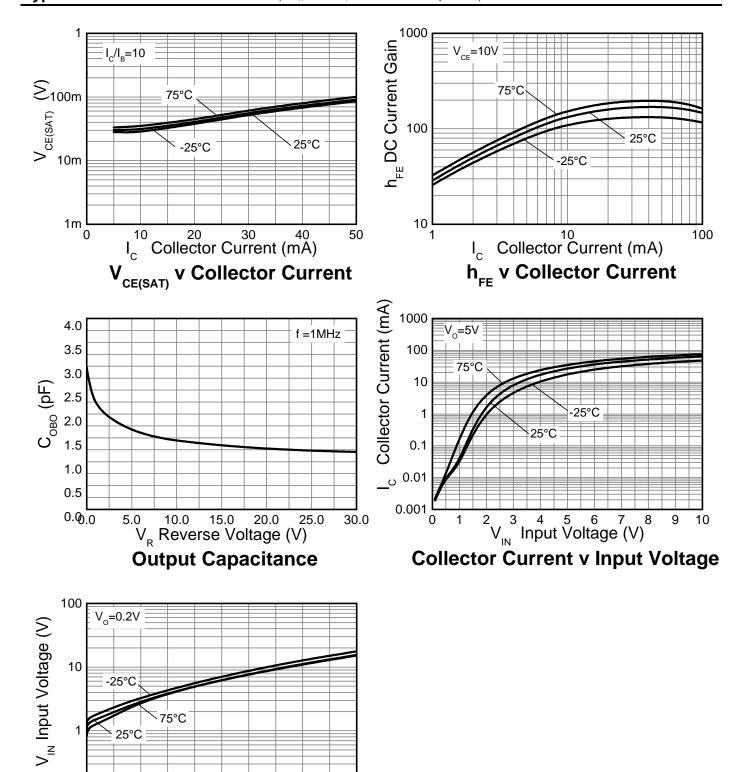
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Input Voltage	V _{I(OFF)}	0.5	1.1		V	$V_{CC} = 5V, I_{O} = 100\mu A$
Input Voltage	V _{I(ON)}		1.9	3	V	$V_O = 0.3V$, $I_O = 5mA$
Output Voltage	V _{O(ON)}	_	0.1	0.3	V	$I_{O}/I_{I} = 10\text{mA}/0.5\text{mA}$
Input Current	l _l	_	_	0.36	mA	$V_1 = 5V$
Output Current	I _{O(OFF)}		_	0.5	μΑ	$V_{CC} = 50V, V_{I} = 0V$
DC Current Gain	Gı	56	_		_	$V_{O} = 5V, I_{O} = 5mA$
Input Resistor Tolerance	ΔR_1	-30	_	+30	%	_
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-20	_	+20	%	_
Gain-Bandwidth Product (Note 7)	f _T	_	250		MHz	$V_{CE} = 10V$, $I_E = 5mA$, $f = 100MHz$

Note: 7. Transistor - For Reference Only



Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



Input Voltage v Collector Current

Collector Current (mA)

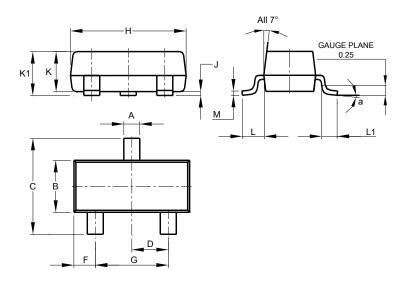
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Package Outline Dimensions

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

SOT23

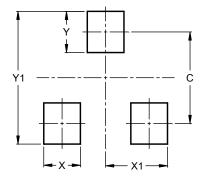


SOT23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
C	2.30	2.50	2.40				
D	0.89	1.03	0.915				
F	0.45	0.60	0.535				
G	1.78	2.05	1.83				
H	2.80	3.00	2.90				
7	0.013	0.10	0.05				
K	0.890	1.00	0.975				
K1	0.903	1.10	1.025				
L	0.45	0.61	0.55				
L1	0.25	0.55	0.40				
М	0.085	0.150	0.110				
а	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)
С	2.0
Х	0.8
X1	1.35
Υ	0.9
Y1	2.9



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