

Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly
- **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](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

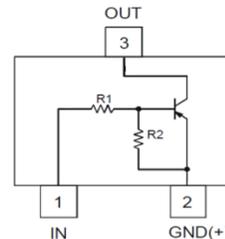
- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (Approximate)

Part Number	R1(NOM)	R2(NOM)
DDTB113EC	1kΩ	1kΩ
DDTB123EC	2.2kΩ	2.2kΩ
DDTB143EC	4.7kΩ	4.7kΩ
DDTB114EC	10kΩ	10kΩ
DDTB122JC	0.22kΩ	4.7kΩ
DDTB113ZC	1kΩ	10kΩ
DDTB123YC	2.2kΩ	10kΩ
DDTB133HC	3.3kΩ	10kΩ
DDTB123TC	2.2kΩ	Open
DDTB143TC	4.7kΩ	Open
DDTB114TC	10kΩ	Open
DDTB114GC	0	10kΩ

SOT23



Top View



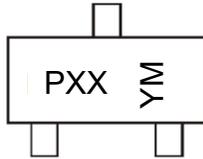
Device Schematic

Ordering Information (Note 4)

Part Number	Status	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DDTB113EC-7-F	Obsolete	P60	7	8	3,000	Reel
DDTB123EC-7-F	Obsolete	P61	7	8	3,000	Reel
DDTB143EC-7-F	Obsolete	P62	7	8	3,000	Reel
DDTB114EC-7-F	Active	P63	7	8	3,000	Reel
DDTB122JC-7-F	Obsolete	P64	7	8	3,000	Reel
DDTB113ZC-7-F	Active	P65	7	8	3,000	Reel
DDTB123YC-7-F	Active	P66	7	8	3,000	Reel
DDTB133HC-7-F	Obsolete	P67	7	8	3,000	Reel
DDTB123TC-7-F	Obsolete	P69	7	8	3,000	Reel
DDTB143TC-7-F	Obsolete	P70	7	8	3,000	Reel
DDTB114TC-7-F	Obsolete	P71	7	8	3,000	Reel
DDTB114GC-7-F	Obsolete	P72	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 Y = Year (ex: 2 = 2022)
 M = Month (ex: 9 = September)

Date Code Key

Year	2010	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	X	...	J	K	L	M	N	P	R	S	T	U

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, (3) to (2)	V _{CC}	-50	V
Input Voltage, (1) to (2)	V _{IN}	+10 to -10	V
		+10 to -12	
		+10 to -30	
		+10 to -40	
		+5 to -5	
		+5 to -10	
		+5 to -12	
		+6 to -20	
Input Voltage, (1) to (2)	V _{EBO (MAX)}	-5	V
Output Current	I _C	-500	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	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

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

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.) **R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTB113EC DDTB123EC DDTB143EC DDTB114EC DDTB122JC DDTB113ZC DDTB123YC DDTB133HC	V _{I(off)}	-0.5 -0.5 -0.5 -0.5 -0.3 -0.3 -0.3	—	—	V	V _{CC} = -5V, I _O = -100μA
	DDTB113EC DDTB123EC DDTB143EC DDTB114EC DDTB122JC DDTB113ZC DDTB123YC DDTB133HC	V _{I(on)}	—	—	-3.0 -3.0 -3.0 -3.0 -3.0 -2.0 -2.0 -2.0	V	V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -10mA V _O = -0.3V, I _O = -30mA V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -20mA V _O = -0.3V, I _O = -20mA
Output Voltage		V _{O(on)}	—	—	-0.3	V	I _O /I _I = -50mA/-2.5mA
Input Current	DDTB113EC DDTB123EC DDTB143EC DDTB114EC DDTB122JC DDTB113ZC DDTB123YC DDTB133HC	I _I	—	—	-7.2 -3.8 -1.8 -0.88 -28 -7.2 -3.6 -2.4	mA	V _I = -5V
Output Current		I _{O(off)}	—	—	-0.5	μA	V _{CC} = -50V, V _I = 0V
DC Current Gain	DDTB113EC DDTB123EC DDTB143EC DDTB114EC DDTB122JC DDTB113ZC DDTB123YC DDTB133HC	G _I	33 39 47 56 47 56 56 56	—	—	—	V _O = -5V, I _O = -50mA
Gain-Bandwidth Product (Note 6)		f _T	—	200	—	MHz	V _{CE} = -10V, I _E = -5mA, f = 100MHz

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.) **R1-Only, R2-Only Types**

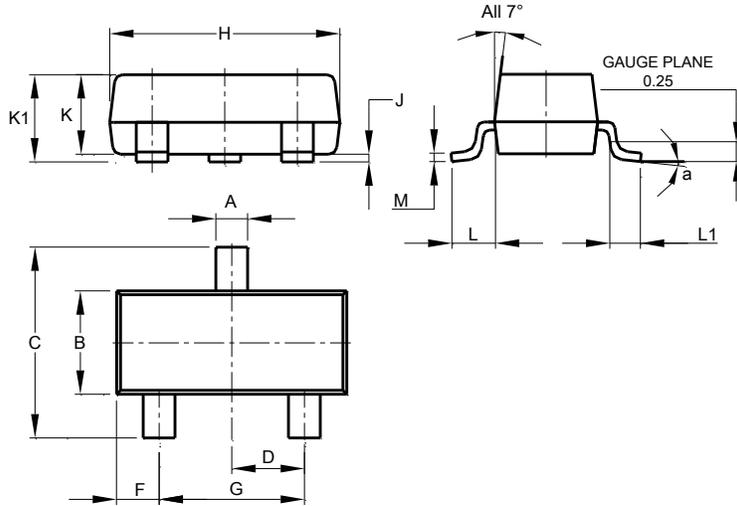
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV _{CBO}	-50	—	—	V	I _C = -50μA
Collector-Emitter Breakdown Voltage		BV _{CEO}	-40	—	—	V	I _C = -1mA
Emitter-Base Breakdown Voltage	DDTB123TC DDTB143TC DDTB114TC DDTB114GC	BV _{EBO}	-5	—	—	V	I _E = -50μA I _E = -50μA I _E = -50μA I _E = -720μA
Collector Cutoff Current		I _{CBO}	—	—	-0.5	μA	V _{CB} = -50V
Emitter Cutoff Current	DDTB123TC DDTB143TC DDTB114TC DDTB114GC	I _{EBO}	— — — -300	—	-0.5 -0.5 -0.5 -580	μA	V _{EB} = -4V
Collector-Emitter Saturation Voltage		V _{CE(sat)}	—	—	-0.3	V	I _C = -50mA, I _B = -2.5mA
DC Current Transfer Ratio	DDTB123TC DDTB143TC DDTB114TC DDTB114GC	h _{FE}	100 100 100 56	250 250 250 —	600 600 600 —	—	I _C = -5mA, V _{CE} = -5V
Gain-Bandwidth Product (Note 6)		f _T	—	200	—	MHz	V _{CE} = -10V, I _E = -5mA, f = 100MHz

Note: 6. Transistor - For Reference Only.

Package Outline Dimensions

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

SOT23

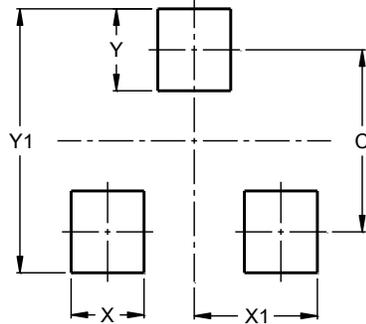


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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

IMPORTANT NOTICE

1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.
4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.
5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (<https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/>) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.
9. This Notice may be periodically updated with the most recent version available at <https://www.diodes.com/about/company/terms-and-conditions/important-notice>

The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.
All other trademarks are the property of their respective owners.
© 2025 Diodes Incorporated. All Rights Reserved.

www.diodes.com