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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

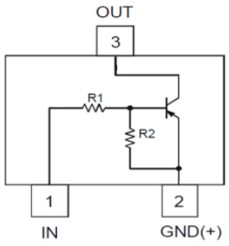
Mechanical Data

- 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 (e3)
- 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



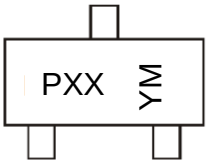
Device Schematic

Ordering Information (Note 4)

Part Number	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
						Qty.	Carrier
DDTB113EC-7-F	Obsolete	Standard	P60	7	8	3,000	Reel
DDTB123EC-7-F	Obsolete	Standard	P61	7	8	3,000	Reel
DDTB143EC-7-F	Obsolete	Standard	P62	7	8	3,000	Reel
DDTB114EC-7-F	Active	Standard	P63	7	8	3,000	Reel
DDTB122JC-7-F	Obsolete	Standard	P64	7	8	3,000	Reel
DDTB113ZC-7-F	Active	Standard	P65	7	8	3,000	Reel
DDTB123YC-7-F	Active	Standard	P66	7	8	3,000	Reel
DDTB133HC-7-F	Obsolete	Standard	P67	7	8	3,000	Reel
DDTB123TC-7-F	Obsolete	Standard	P69	7	8	3,000	Reel
DDTB143TC-7-F	Obsolete	Standard	P70	7	8	3,000	Reel
DDTB114TC-7-F	Obsolete	Standard	P71	7	8	3,000	Reel
DDTB114GC-7-F	Obsolete	Standard	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 = Year (ex: I = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year	2010	…	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	X	…	I	J	K	L	M	N	O	P	R	S

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)	DDTB113EC DDTB123EC DDTB143EC DDTB114EC DDTB122JC DDTB113ZC DDTB123YC DDTB133HC	V_{IN}	+10 to -10 +10 to -12 +10 to -30 +10 to -40 +5 to -5 +5 to -10 +5 to -12 +6 to -20	V
Input Voltage, (1) to (2)	DDTB123TC DDTB143TC DDTB114TC DDTB114GC	$V_{EBO(MAX)}$	-5	V
Output Current	All	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)	$R_{\theta JA}$	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 -0.5 -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

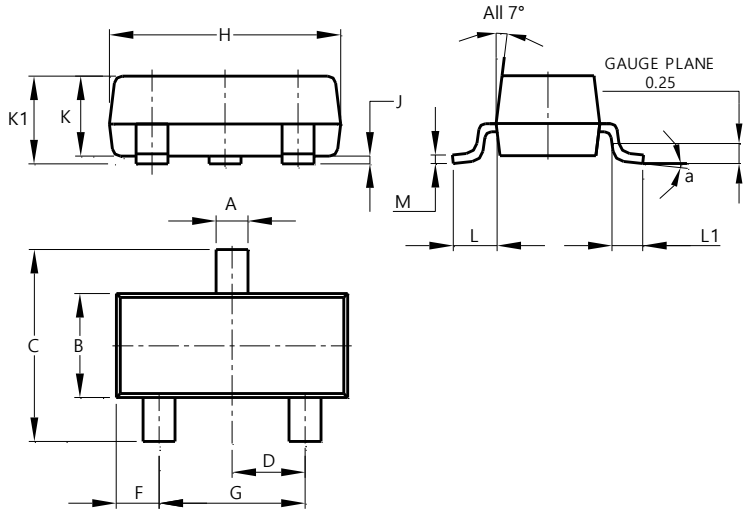
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV_{CBO}	-50	—	—	V	I_C = -50µA
Collector-Emitter Breakdown Voltage		BV_{CEO}	-40	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	DDTB123TC DDTB143TC DDTB114TC DDTB114GC	BV_{EBO}	-5	—	—	V	I_E = -50µA I_E = -50µA I_E = -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

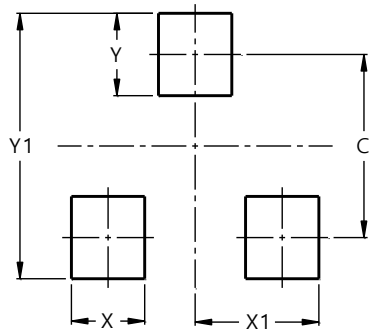


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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

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