

DDTC (R1≠R2 SERIES) E

NPN PRE-BIASED SMALL SIGNAL SOT-523
SURFACE MOUNT TRANSISTOR

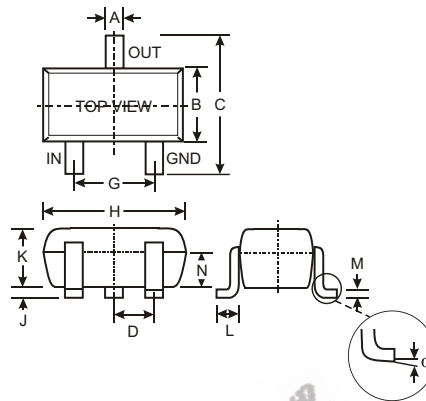
NEW PRODUCT

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1≠R2

Mechanical Data

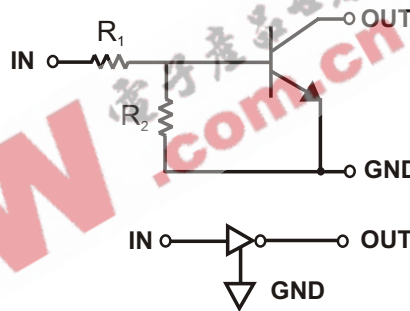
- Case: SOT-523, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 3)
- Weight: 0.002 grams (approx.)
- Ordering Information (See Page 2)



SOT-523			
Dim	Min	Max	Typ
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—

All Dimensions in mm

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTC113ZE	1KΩ	10KΩ	N02
DDTC123YE	2.2KΩ	10KΩ	N05
DDTC123JE	2.2KΩ	47KΩ	N06
DDTC143XE	4.7KΩ	10KΩ	N09
DDTC143FE	4.7KΩ	22KΩ	N10
DDTC143ZE	4.7KΩ	47KΩ	N11
DDTC114YE	10KΩ	47KΩ	N14
DDTC114WE	10KΩ	4.7KΩ	N15
DDTC124XE	22KΩ	47KΩ	N18
DDTC144VE	47KΩ	10KΩ	N21
DDTC144WE	47KΩ	22KΩ	N22



SCHMATIC DIAGRAM

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V _{CC}	50	V
Input Voltage, (2) to (1)	V _{IN}	DDTC113ZE -5 to +10 DDTC123YE -5 to +12 DDTC123JE -5 to +12 DDTC143XE -7 to +20 DDTC143FE -6 to +30 DDTC143ZE -5 to +30 DDTC114YE -6 to +40 DDTC114WE -10 to +30 DDTC124XE -10 to +40 DDTC144VE -15 to +40 DDTC144WE -10 to +40	V
Output Current	I _O	DDTC113ZE 100 DDTC123YE 100 DDTC123JE 100 DDTC143XE 100 DDTC143FE 100 DDTC143ZE 100 DDTC114YE 70 DDTC114WE 100 DDTC124XE 50 DDTC144VE 30 DDTC144WE 30	mA
Output Current	I _C (Max)	100	mA
Power Dissipation	P _d	150	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R _{θJA}	833	°C/W
Operating and Storage and Temperature Range	T _j , T _{STG}	-55 to +150	°C

Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DDTC113ZE DDTC123YE DDTC123JE DDTC143XE DDTC143FE DDTC143ZE DDTC114YE DDTC114WE DDTC124XE DDTC144VE DDTC144WE	V _{I(off)}	0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.8 0.4 1.0 0.8	—	—	—	V	V _{CC} = 5V, I _O = 100μA
	DDTC113ZE DDTC123YE DDTC123JE DDTC143XE DDTC143FE DDTC143ZE DDTC114YE DDTC114WE DDTC124XE DDTC144VE DDTC144WE	V _{I(on)}	—	—	3.0 3.0 1.1 2.5 1.3 1.3 1.4 3.0 2.5 5.0 4.0	—	V	V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 5mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 3mA V _O = 0.3V, I _O = 5mA V _O = 0.3V, I _O = 1mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 2mA
Output Voltage		V _{O(on)}	—	0.1	0.3	V	I _O /I _I = 5mA/0.25mA DDCT123JE I _O /I _I = 5mA/0.25mA DDCT143ZE I _O /I _I = 5mA/0.25mA DDCT114YE I _O /I _I = 10mA/0.5mA All Others	
Input Current	DDTC113ZE DDTC123YE DDTC123JE DDTC143XE DDTC143FE DDTC143ZE DDTC114YE DDTC114WE DDTC124XE DDTC144VE DDTC144WE	I _I	—	—	7.2 3.8 3.6 1.8 1.8 1.8 0.88 0.88 0.36 0.16 0.16	mA	V _I = 5V	
Output Current		I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V	
DC Current Gain	DDTC113ZE DDTC123YE DDTC123JE DDTC143XE DDTC143FE DDTC143ZE DDTC114YE DDTC114WE DDTC124XE DDTC144VE DDTC144WE	G _I	33 33 80 30 68 80 68 24 68 33 56	—	—	—	V _O = 5V, I _O = 10mA	
Input Resistor 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	

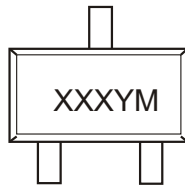
* Transistor - For Reference Only

Ordering Information (Note 2)

Device	Packaging	Shipping
DDTC113ZE-7	SOT-523	3000/Tape & Reel
DDTC123YE-7	SOT-523	3000/Tape & Reel
DDTC123JE-7	SOT-523	3000/Tape & Reel
DDTC143XE-7	SOT-523	3000/Tape & Reel
DDTC143FE-7	SOT-523	3000/Tape & Reel
DDTC143ZE-7	SOT-523	3000/Tape & Reel
DDTC114YE-7	SOT-523	3000/Tape & Reel
DDTC114WE-7	SOT-523	3000/Tape & Reel
DDTC124XE-7	SOT-523	3000/Tape & Reel
DDTC144VE-7	SOT-523	3000/Tape & Reel
DDTC144WE-7	SOT-523	3000/Tape & Reel

Notes: 2. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



XXX = Product Type Marking Code (See Page 1, e.g. N02 = DDTC113ZE)
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009
Code	N	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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TYPICAL CURVES - DDTC123JE

