



NPN PRE-BIASED 500 mA SURFACE MOUNT TRANSISTOR

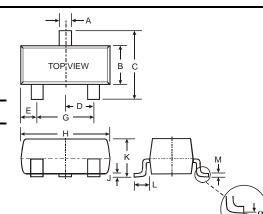
Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors
- Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 2 and 3)

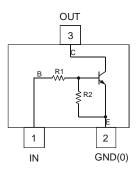
Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (approximate)

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTD122LC	0.22KΩ	10KΩ	N75
DDTD142JC	0.47KΩ	10KΩ	N76
DDTD122TC	0.22KΩ	OPEN	N77
DDTD142TC	0.47KΩ	OPEN	N78



	SOT-23										
Dim	Min	Max									
Α	0.37	0.51									
В	1.20	1.40									
С	2.30	2.50									
D	0.89	1.03									
Е	0.45	0.60									
G	1.78	2.05									
Н	2.80	3.00									
J	0.013	0.10									
К	0.903	1.10									
L	0.45	0.61									
М	0.085	0.180									
α	α 0° 8°										
All Dir	All Dimensions in mm										



Schematic and Pin Configuation

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)	DDTD122LC DDTD142JC	V _{IN}	-5 to +6 -5 to +6	V
Input Voltage, (2) to (1)	DDTD122TC DDTD142TC	V _{EBO (MAX)}	5	V
Output Current	All	Ι _C	500	mA
Power Dissipation	(Note 1)	PD	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 2)	$R_{ extsf{ heta}JA}$	625	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

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

2. No purposefully added lead. Halogen and Antimony Free.

 Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.



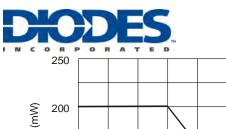
Electrical Characteristic	S @T _A = 25	R1, R2 Types					
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
Input Voltage	DDTD122LC DDTD142JC	V _{I(off)}	0.3 0.3	_	_	V	V _{CC} = 5V, I _O = 100μA
	DDTD122LC DDTD142JC	V _{I(on)}	_	_	2.0 2.0	V	$V_0 = 0.3V$, $I_0 = 20mA$ $V_0 = 0.3V$, $I_0 = 20mA$
Output Voltage		V _{O(on)}	_		0.3V	V	$I_0/I_1 = 50 \text{mA}/2.5 \text{mA}$
Input Current DDTD122LC DDTD142JC		lı	_	_	28 13	mA	V _I = 5V
Output Current		I _{O(off)}	_		0.5	μA	$V_{CC} = 50V, V_1 = 0V$
DC Current Gain DDTD122LC DDTD142JC		GI	56 56		_		$V_{O} = 5V, I_{O} = 50mA$
Gain-Bandwidth Product*	f⊤		200		MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz	

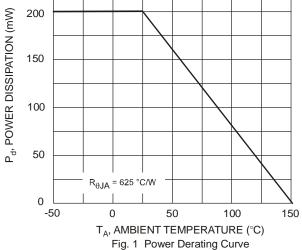
* Transistor - For Reference Only

Electrical Characteristics @T_A = 25°C unless otherwise specified R1-Only, R2-Only Types

Characteristic	Symbol	Min	Тур	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 DDTD122TC DDTD142TC		BV _{EBO}	5			V	I _E = 50μA I _E = 50μA
Collector Cutoff Current		I _{CBO}	_	_	0.5	μA	V _{CB} = 50V
Emitter Cutoff Current DDTD122TC DDTD142TC		I _{EBO}			0.5 0.5	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 DDTD122TC DDTD142TC		hFE	100 100	250 250	600 600		I _C = 5mA, V _{CE} = 5V
Gain-Bandwidth Product*	f _T	_	200	_	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz	

* Transistor - For Reference Only



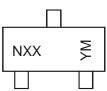


Ordering Information (Note 4)

Device	Packaging	Shipping
DDTD122LC-7-F	SOT-23	3000/Tape & Reel
DDTD142JC-7-F	SOT-23	3000/Tape & Reel
DDTD122TC-7-F	SOT-23	3000/Tape & Reel
DDTD142TC-7-F	SOT-23	3000/Tape & Reel

Notes: 4. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



NXX = Product Type Marking Code, See Table on Page 1 YM = Date Code Marking Y = Year ex: T = 2006 M = Month ex: 9 = September

Date Code Key												
Year	2002	2003	2004	2005	200	6 20	07	2008	2009	2010	2011	2012
Code	Ν	Р	R	S	Т	l	J	V	W	Х	Y	Z
	-											
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	j Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D

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