



DDTC (LO-R1)

NPN PRE-BIASED 100 mA SURFACE MOUNT TRANSISTOR

Features

- Epitaxial Planar Die Construction •
- Complementary PNP Types Available (DDTA) •
- **Built-In Biasing Resistors**
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3 and 4)

Mechanical Data

- Case: SOT-523 •
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe)
- Terminal Connections: See Diagram
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.002 grams (approximate)

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTC122LE	0.22KΩ	10KΩ	N81
DDTC142JE	0.47KΩ	10KΩ	N82
DDTC122TE	0.22KΩ	OPEN	N83
DDTC142TE	0.47KΩ	OPEN	N84



	SOT	-523	
Dim	Min	Max	Тур
Α	0.15	0.30	0.22
В	0.75	0.85	0.80
С	1.45	1.75	1.60
D			0.50
G	0.90	1.10	1.00
н	1.50	1.70	1.60
J	0.00	0.10	0.05
к	0.60	0.80	0.75
L	0.10	0.30	0.22
М	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	_
	imens	ions in	mm



Schematic and Pin Diagram

Maximum Ratings $@T_A = 25^{\circ}C$ unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage, (3) to (2)		V _{CC}	50	V
Input Voltage, (1) to (2)	DDTC122LE DDTC142JE	V _{IN}	-5 to +6 -5 to +6	V
Input Voltage, (2) to (1)	DDTC122TE DDTC142TE	VEBO (MAX)	5	V
Output Current	All	Ι _C	100	mA
Power Dissipation	(Note 1)	Pd	150	mW
Thermal Resistance, Junction to Ambient Air	(Note 1)	$R_{ heta JA}$	625	°C/W
Operating and Storage Temperature Range		T _j , T _{STG}	-55 to +150	°C

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

2. No purposefully added lead.

3.

Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date 4. Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.



Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
have the large	DDTC122LE DDTC142JE	V _{l(off)}	0.3 0.3			V	V _{CC} = 5V, I _O = 100µA
Input Voltage	DDTC122LE DDTC142JE	V _{l(on)}	_	_	2.0 2.0		$V_0 = 0.3V$, $I_0 = 20mA$ $V_0 = 0.3V$, $I_0 = 20mA$
Output Voltage	V _{O(on)}	_		0.3V	V	I _O /I _I = 5mA/0.25mA	
Input Current DDTC122LE DDTC142JE		I _I			28 13	mA	V _I = 5V
Output Current		I _{O(off)}	_	_	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain DDTC122LE DDTC142JE		GI	56 56	_	_		V _O = 5V, I _O = 10mA
Gain-Bandwidth Product*		f _T	_	200	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

R1, R2 Types

* Transistor - For Reference Only

Electrical Characteristic	CS @T _A = 25°C	unless otherwis	d	R1-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	BV _{EBO}	5	_	_	V	I _E = 50μA I _E = 50μA	
Collector Cutoff Current	I _{CBO}	_	_	0.5	μA	V _{CB} = 50V	
Emitter Cutoff Current	I _{EBO}		_	0.5 0.5	μA	V _{EB} = 4V	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	_	_	0.3	V	I _C = 5mA, I _B = 0.25mA	
DC Current Transfer Ratio	h _{FE}	100 100	250 250	600 600		I _C = 1mA, V _{CE} = 5V	
Gain-Bandwidth Product*		f⊤		200	_	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz

* Transistor - For Reference Only





Ordering Information (Note 5)

Device	Packaging	Shipping
DDTC122LE-7-F	SOT-523	3000/Tape & Reel
DDTC142JE-7-F	SOT-523	3000/Tape & Reel
DDTC122TE-7-F	SOT-523	3000/Tape & Reel
DDTC142TE-7-F	SOT-523	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



Nxx = Product Type Marking Code (See Page 1) YM = Date Code Marking Y = Year ex: T = 2006 M = Month ex: 9 = September

ſ	Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
	Code	Ν	Р	R	S	Т	U	V	W	Х	Y	Z

Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	Ν	D

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