

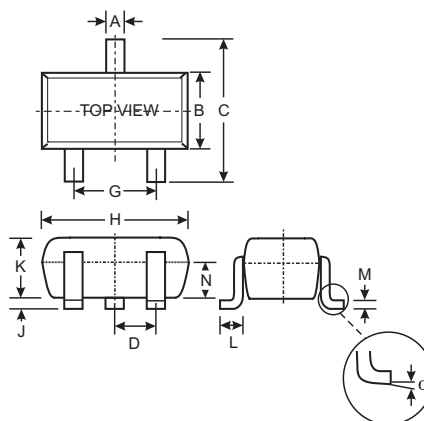
Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors
- Lead Free/RoHS Compliant (Note 2)

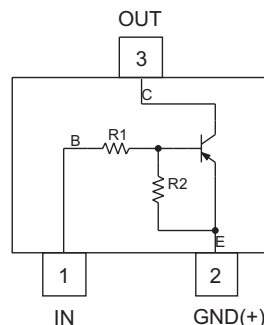
Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminals: Finish — Matte Tin Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking: Date Code and Type Code, See Page 2
- Weight: 0.002 grams (approximate)
- Ordering Information (See Page 2)

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTA122LE	0.22K Ω	10K Ω	P81
DDTA142JE	0.47K Ω	10K Ω	P82
DDTA122TE	0.22K Ω	OPEN	P83
DDTA142TE	0.47K Ω	OPEN	P84



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			



Schematic and Pin Configuration

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

Characteristic	Symbol	Value	Unit
Supply Voltage, (2) to (3)	V_{CC}	-50	V
Input Voltage, (1) to (2)	V_{IN}	+5 to -6 +5 to -6	V
Input Voltage, (2) to (1)	$V_{EBO} \text{ (MAX)}$	-5	V
Output Current	I_C	-100	mA
Power Dissipation (Note 1)	P_d	150	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage and Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

R1, R2 Types

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTA122LE DDTA142JE	$V_{I(off)}$	-0.3 -0.3	—	V	$V_{CC} = -5V, I_O = -100\mu A$
	DDTA122LE DDTA142JE	$V_{I(on)}$	—	-2.0 -2.0	V	$V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$
Output Voltage		$V_{O(on)}$	—	-0.3V	V	$I_O/I_I = -5mA/-0.25mA$
Input Current	DDTA122LE DDTA142JE	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	DDTA122LE DDTA142JE	G_I	56 56	—	—	$V_O = -5V, I_O = -10mA$
Gain-Bandwidth Product*		f_T	—	200	MHz	$V_{CE} = -10V, I_E = -5mA,$ $f = 100MHz$

* Transistor - For Reference Only

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

R1-Only Types

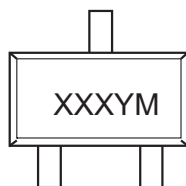
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -50\mu A$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-40	—	—	V	$I_C = -1mA$
Emitter-Base Breakdown Voltage	DDTA122TE DDTA142TE	BV_{EBO}	-5	—	V	$I_E = -50\mu A$ $I_E = -50\mu A$
Collector Cutoff Current	I_{CBO}	—	—	-0.5	μA	$V_{CB} = -50V$
Emitter Cutoff Current	DDTA122TE DDTA142TE	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	DDTA122TE DDTA142TE	h_{FE}	100 100	250 250	—	$I_C = -1mA, V_{CE} = -5V$
Gain-Bandwidth Product*		f_T	—	200	MHz	$V_{CE} = -10V, I_E = 5mA,$ $f = 100MHz$

* Transistor - For Reference Only

Ordering Information (Note 3)

Device	Packaging	Shipping
DDTA122LE-7-F	SOT-523	3000/Tape & Reel
DDTA142JE-7-F	SOT-523	3000/Tape & Reel
DDTA122TE-7-F	SOT-523	3000/Tape & Reel
DDTA142TE-7-F	SOT-523	3000/Tape & Reel

 Notes: 3. 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)
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

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

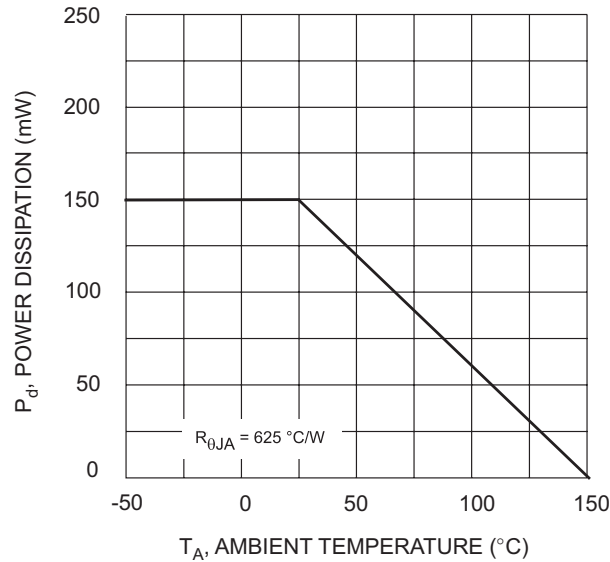


Fig. 1 Power Derating Curve

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