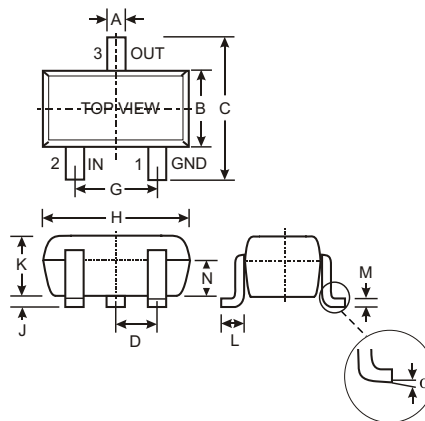


Features

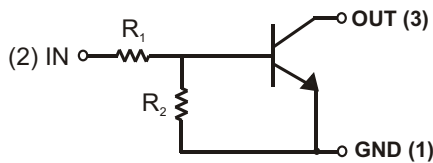
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors
- Lead Free Device

Mechanical Data

- Case: SOT-523, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Finish - Matte Tin (Note 1)
Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- 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
DDTC122LE	0.22K Ω	10K Ω	N81
DDTC142JE	0.47K Ω	10K Ω	N82
DDTC122TE	0.22K Ω	OPEN	N83
DDTC142TE	0.47K Ω	OPEN	N84

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

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

- Note: 1. If lead-bearing terminal plating is required, please contact your Diodes Inc. sales representative for availability and minimum order details.
 2. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

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

R1, R2 Types

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTC122LE DDTC142JE	$V_{I(off)}$	0.3 0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu A$
	DDTC122LE DDTC142JE	$V_{I(on)}$	—	—	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	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	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

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	DDTC122TE DDTC142TE	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	DDTC122TE DDTC142TE	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	DDTC122TE DDTC142TE	h_{FE}	100 100	250 250	600 600	—	$I_C = 1mA, V_{CE} = 5V$
Gain-Bandwidth Product*		f_T	—	200	—	MHz	$V_{CE} = 10V, I_E = -5mA,$ $f = 100MHz$

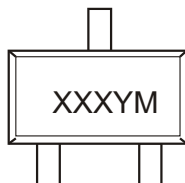
* Transistor - For Reference Only

Ordering Information (Note 3)

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

Notes: 1. If lead-bearing terminal plating is required, please contact your Diodes Inc. sales representative for availability and minimum order details.

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: P = 2003
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

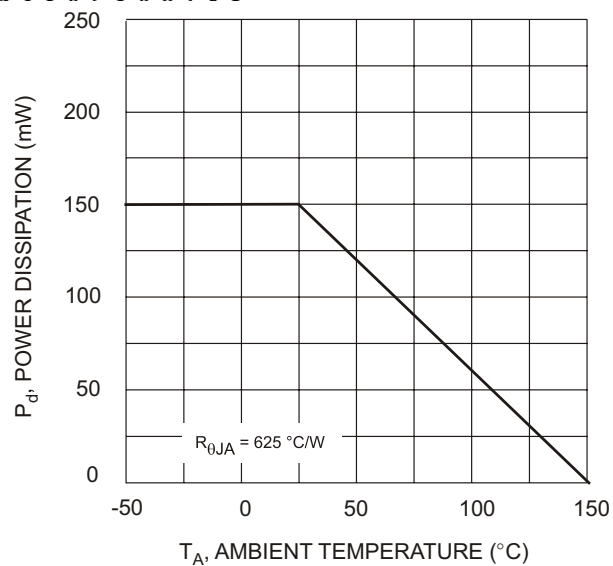


Fig. 1 Power Derating Curve