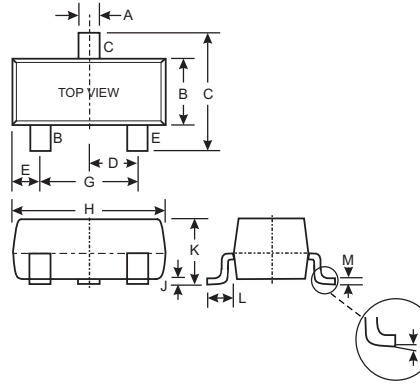


### Features

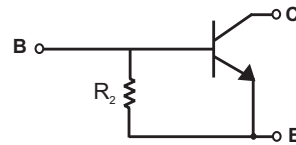
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistor, R2 only
- **Lead Free/RoHS Compliant (Note 2)**

### Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking: Date Code and Marking Code (See Table Below & Page 2)
- Ordering Information (See Page 2)
- Weight: 0.008 grams (approximate)



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
$\alpha$	0°	8°
All Dimensions in mm		



SCHEMATIC DIAGRAM

P/N	R2 (NOM)	MARKING
DDTC114GCA	10K $\Omega$	N26
DDTC124GCA	22K $\Omega$	N27
DDTC144GCA	47K $\Omega$	N28
DDTC115GCA	100K $\Omega$	N29

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	50	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current	I <sub>C</sub> (Max)	100	mA
Power Dissipation	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	625	°C/W
Operating and Storage and Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

- Note: 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

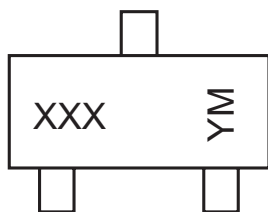
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		$BV_{CBO}$	50	—	—	V	$I_C = 50\mu\text{A}$
Collector-Emitter Breakdown Voltage		$BV_{CEO}$	50	—	—	V	$I_C = 1\text{mA}$
Emitter-Base Breakdown Voltage		$BV_{EBO}$	5	—	—	V	$I_E = 720\mu\text{A}$ , DDTC114GCA $I_E = 330\mu\text{A}$ , DDTC124GCA $I_E = 160\mu\text{A}$ , DDTC144GCA $I_E = 72\mu\text{A}$ , DDTC115GCA
Collector Cutoff Current		$I_{CBO}$	—	—	0.5	$\mu\text{A}$	$V_{CB} = 50\text{V}$
Emitter Cutoff Current	DDTC114GCA	$I_{EBO}$	300	—	580	$\mu\text{A}$	$V_{EB} = 4\text{V}$
	DDTC124GCA		140		260		
	DDTC144GCA		65		130		
	DDTC115GCA		30		58		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	0.3	V	$I_C = 10\text{mA}$ , $I_B = 0.5\text{mA}$
DC Current Transfer Ratio	DDTC114GCA	$h_{FE}$	30	—	—	—	$I_C = 5\text{mA}$ , $V_{CE} = 5\text{V}$
	DDTC124GCA		56				
	DDTC144GCA		68				
	DDTC115GCA		82				
Bleeder Resistor ( $R_2$ ) Tolerance		$\Delta R_2$	-30	—	+30	%	—
Gain-Bandwidth Product*		$f_T$	—	250	—	MHz	$V_{CE} = 10\text{V}$ , $I_E = -5\text{mA}$ , $f = 100\text{MHz}$

\* Transistor - For Reference Only

**Ordering Information** (Note 3)

Device	Packaging	Shipping
DDTC114GCA-7-F	SOT-23	3000/Tape & Reel
DDTC124GCA-7-F	SOT-23	3000/Tape & Reel
DDTC144GCA-7-F	SOT-23	3000/Tape & Reel
DDTC115GCA-7-F	SOT-23	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 Table on Page 1  
 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

**TYPICAL CURVES - DDTC114GCA**

NEW PRODUCT

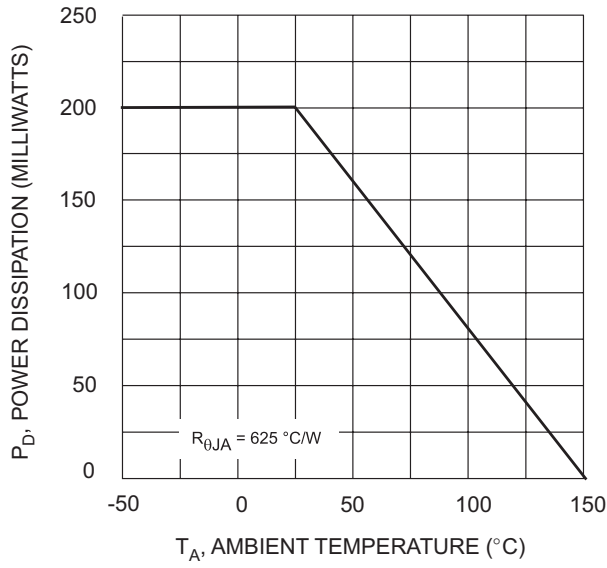


Fig. 1 Derating Curve

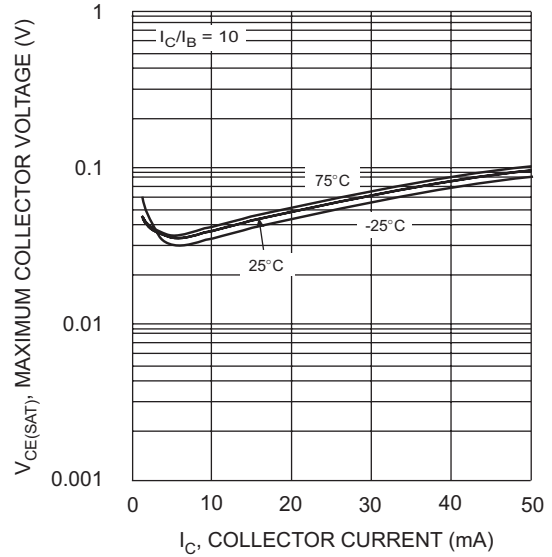


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

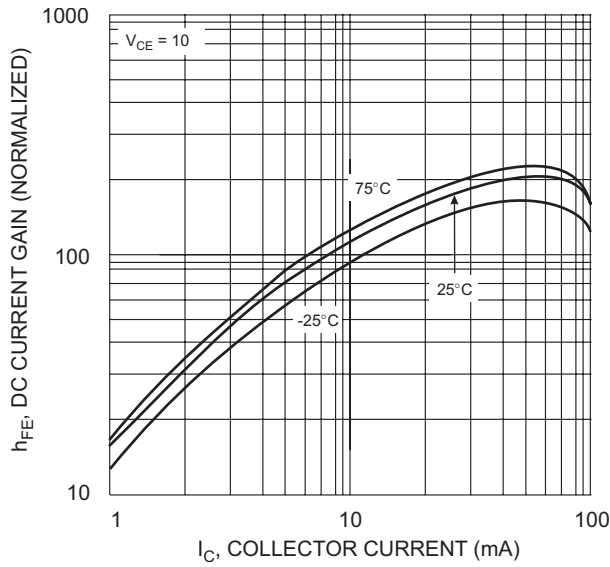


Fig. 3 DC CURRENT GAIN

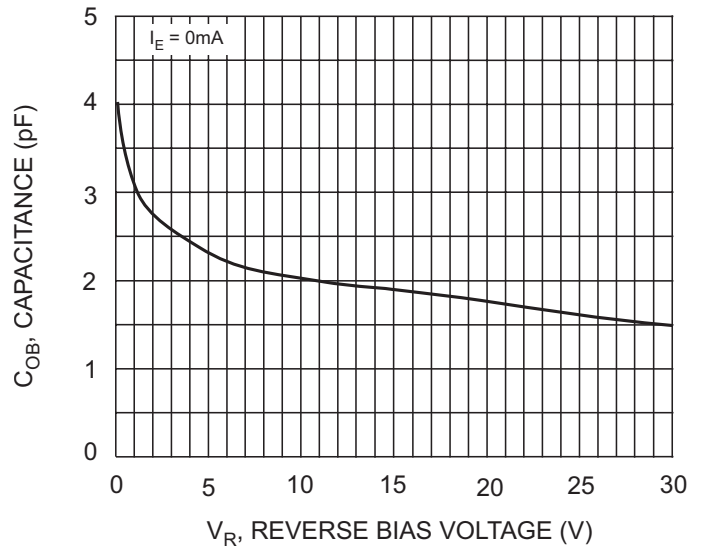


Fig. 4 Output Capacitance

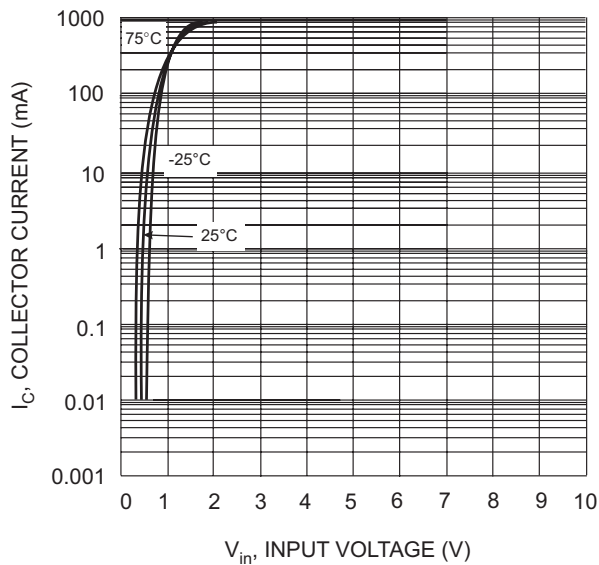


Fig. 5 Collector Current Vs. Input Voltage

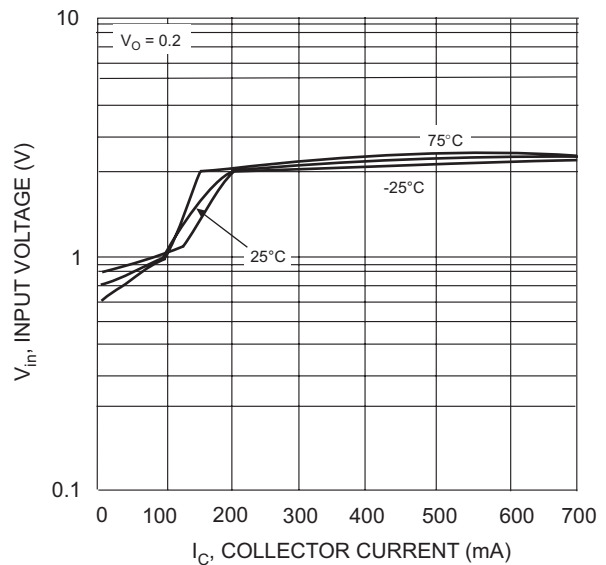


Fig. 6 Input Voltage vs. Collector Current

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