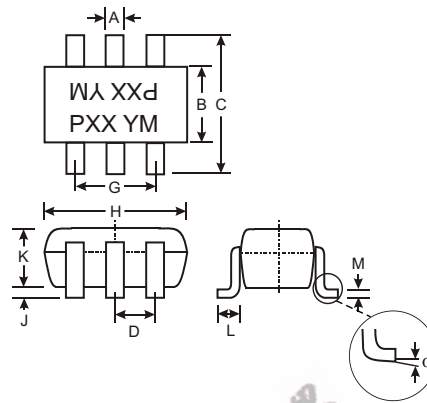


### Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors

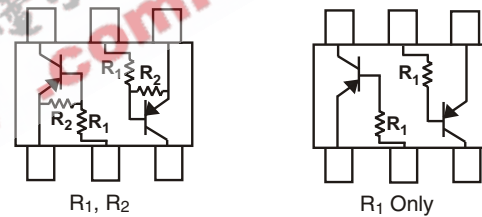
### Mechanical Data

- Case: SOT-26, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- Weight: 0.015 grams (approx.)
- Ordering Information (See Page 2)



SOT-26			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	0.95		
G	1.90		
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
$\alpha$	0°	8°	—
All Dimensions in mm			

P/N	R1	R2	MARKING
DDA124EK	22K $\Omega$	22K $\Omega$	P17
DDA144EK	47K $\Omega$	47K $\Omega$	P20
DDA114YK	10K $\Omega$	47K $\Omega$	P14
DDA123JK	2.2K $\Omega$	47K $\Omega$	P06
DDA114EK	10K $\Omega$	10K $\Omega$	P13
DDA143TK	4.7K $\Omega$	-	P07
DDA114TK	10K $\Omega$	-	P12



SCHMATIC DIAGRAM

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

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V <sub>CC</sub>	50	V
Input Voltage, (2) to (1)	V <sub>IN</sub>	+10 to -40 +10 to -40 +6 to -40 +5 to -12 +10 to -40 +5 V <sub>max</sub> +5 V <sub>max</sub>	V
Output Current	I <sub>O</sub>	-30 -30 -70 -100 -50 -100 -100	mA
Output Current	I <sub>C</sub> (Max)	-100	mA
Power Dissipation (Total)	P <sub>d</sub>	300	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	416.7	°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. 200mW per element must not be exceeded.

**Electrical Characteristics** @ T<sub>A</sub> = 25°C unless otherwise specified

Characteristic (DDA143TK & DDA114TK only)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	-50	—	—	V	I <sub>C</sub> = -50μA
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	-50	—	—	V	I <sub>C</sub> = -1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -50μA
Collector Cutoff Current	I <sub>CBO</sub>	—	—	-0.5	μA	V <sub>CB</sub> = -50V
Emitter Cutoff Current	I <sub>EBO</sub>	—	—	-0.5	μA	V <sub>EB</sub> = -4V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	—	—	-0.3	V	I <sub>C</sub> /I <sub>B</sub> = -2.5mA / - 0.25mA I <sub>C</sub> /I <sub>B</sub> = -1mA / - 0.1mA
DC Current Transfer Ratio	h <sub>FE</sub>	100	250	600	—	I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V
Input Resistor (R <sub>1</sub> ) Tolerance	ΔR <sub>1</sub>	-30	—	+30	%	—
Gain-Bandwidth Product*	f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	V <sub>I(off)</sub>	-0.5 -0.5 -0.3 — -0.5	-1.1 -1.1 — — -1.1	—	—	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	V <sub>I(on)</sub>	—	-1.9 -1.9 — -1.4 -1.9	-3.0 -3.0 — -1.1 -3.0	—	V <sub>O</sub> = -0.3, I <sub>O</sub> = -5mA V <sub>O</sub> = -0.3, I <sub>O</sub> = -2mA V <sub>O</sub> = -0.3, I <sub>O</sub> = -1mA V <sub>O</sub> = -0.3, I <sub>O</sub> = -5mA V <sub>O</sub> = -0.3, I <sub>O</sub> = -10mA
Output Voltage	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	V <sub>O(on)</sub>	—	-0.1	-0.3	V	I <sub>O</sub> /I <sub>I</sub> = -10mA / - 0.5mA I <sub>O</sub> /I <sub>I</sub> = -10mA / - 0.5mA I <sub>O</sub> /I <sub>I</sub> = -5mA / - 0.25mA I <sub>O</sub> /I <sub>I</sub> = -5mA / - 0.25mA I <sub>O</sub> /I <sub>I</sub> = -10mA / - 0.5mA
Input Current	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	I <sub>I</sub>	—	—	-0.36 -0.18 -0.88 -3.6 -0.88	mA	V <sub>I</sub> = -5V
Output Current		I <sub>O(off)</sub>	—	—	-0.5	μA	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V
DC Current Gain	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	G <sub>I</sub>	56 68 68 80 30	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
Input Resistor (R <sub>1</sub> ) Tolerance		ΔR <sub>1</sub>	-30	—	+30	%	—
Resistance Ratio Tolerance		R <sub>2</sub> /R <sub>1</sub>	-20	—	+20	%	—
Gain-Bandwidth Product*		f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHz

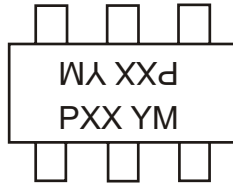
\* Transistor - For Reference Only

**Ordering Information** (Note 3)

Device	Packaging	Shipping
DDA124EK-7	SOT-26	3000/Tape & Reel
DDA144EK-7	SOT-26	3000/Tape & Reel
DDA114YK-7	SOT-26	3000/Tape & Reel
DDA123JK-7	SOT-26	3000/Tape & Reel
DDA114EK-7	SOT-26	3000/Tape & Reel
DDA143TK-7	SOT-26	3000/Tape & Reel
DDA114TK-7	SOT-26	3000/Tape & Reel

Notes: 3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



PXX = Product Type Marking Code  
 See Sheet 1 Diagrams  
 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 - DDA123JK  
ONE SECTION

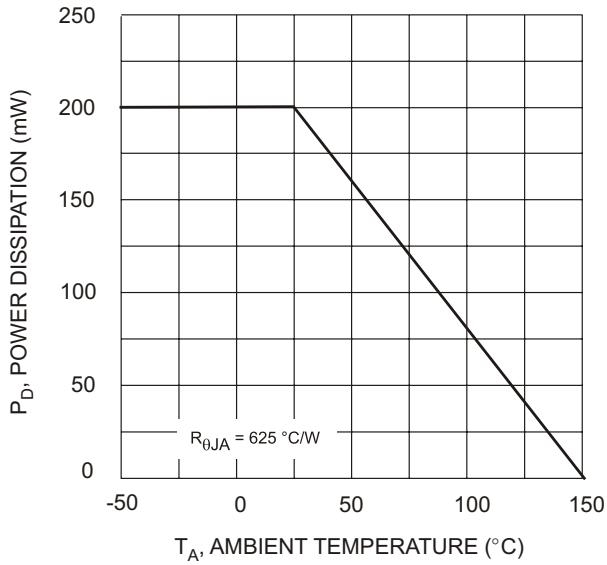


Fig. 1 Derating Curve

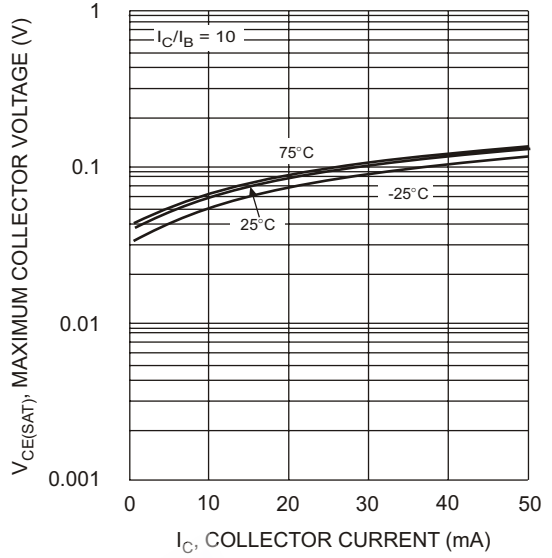


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

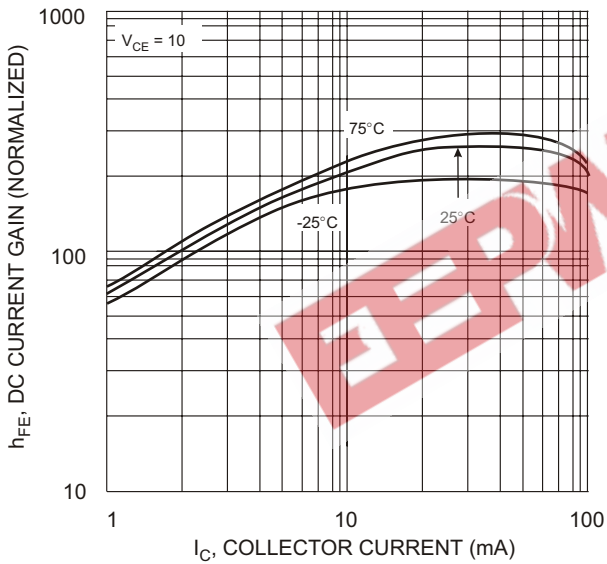


Fig. 3 DC Current Gain

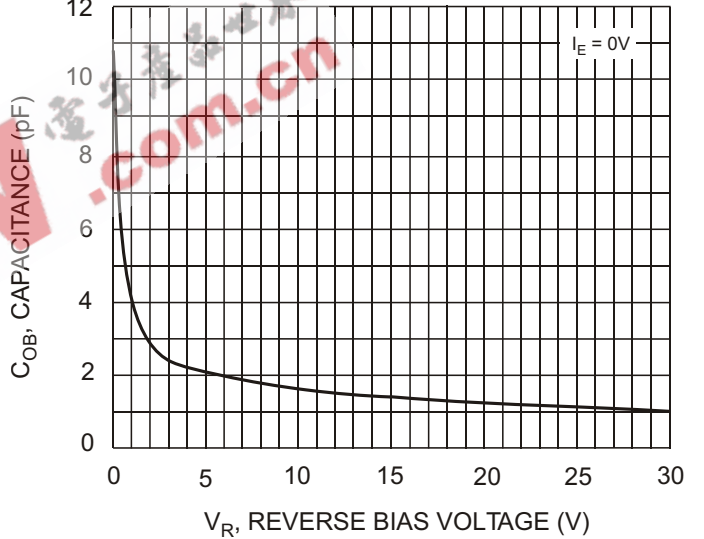


Fig. 4 Output Capacitance

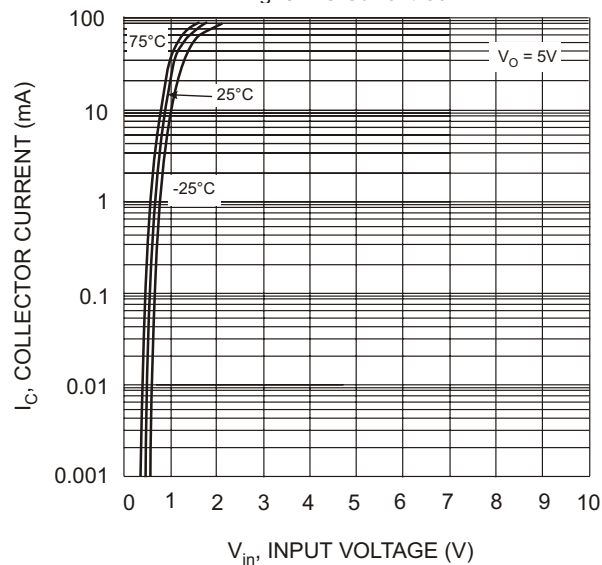


Fig. 5 Collector Current Vs. Input Voltage

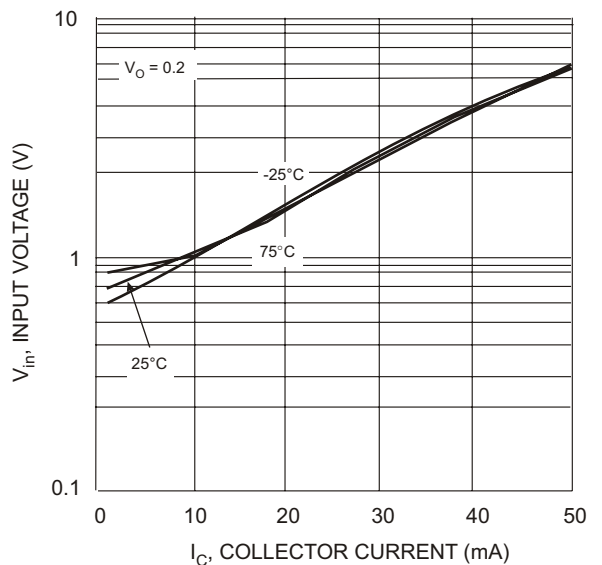


Fig. 6 Input Voltage vs. Collector Current

TYPICAL CURVES - DDA114TK  
ONE SECTION

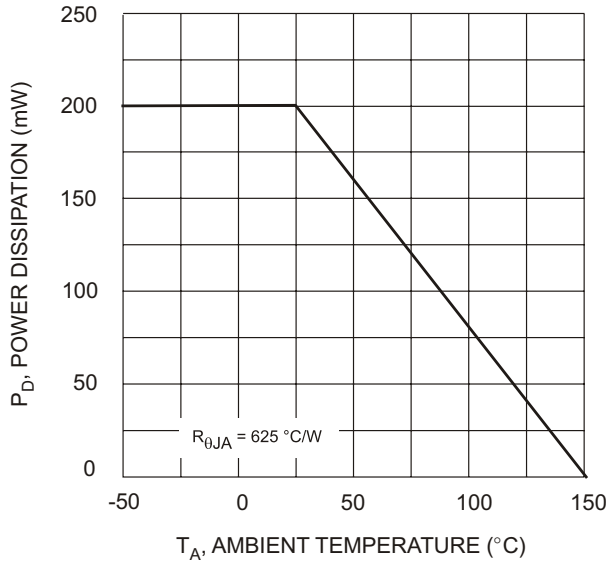


Fig. 1 Derating Curve

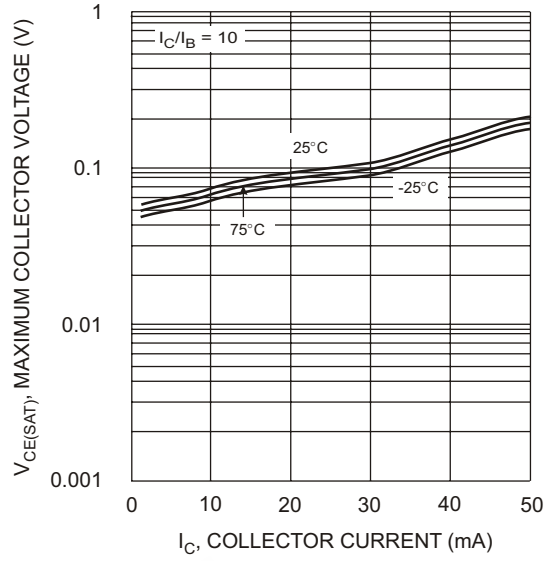


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

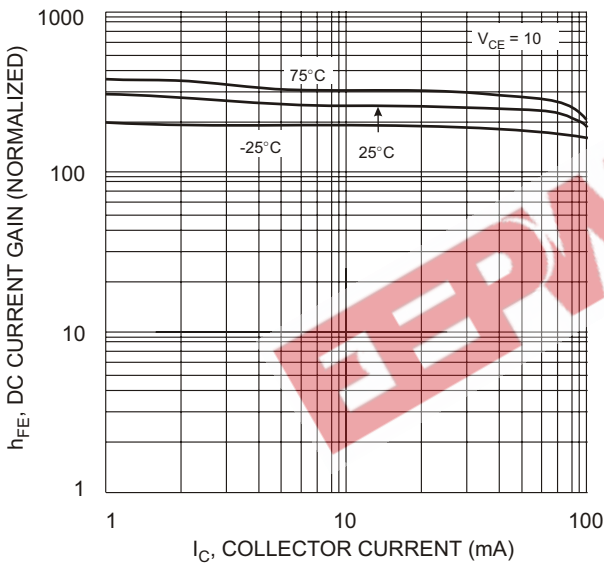


Fig. 3 DC Current Gain

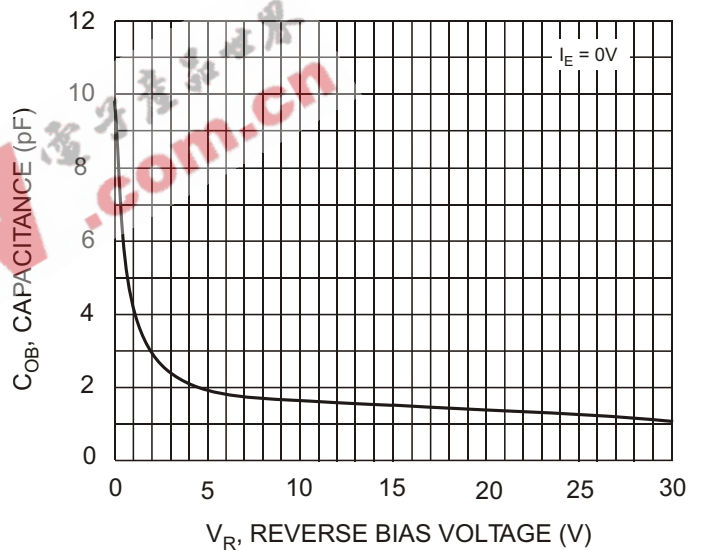


Fig. 4 Output Capacitance

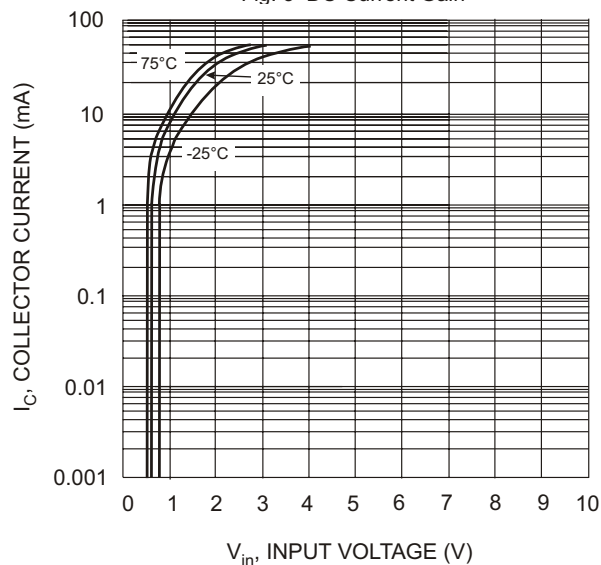


Fig. 5 Collector Current Vs. Input Voltage

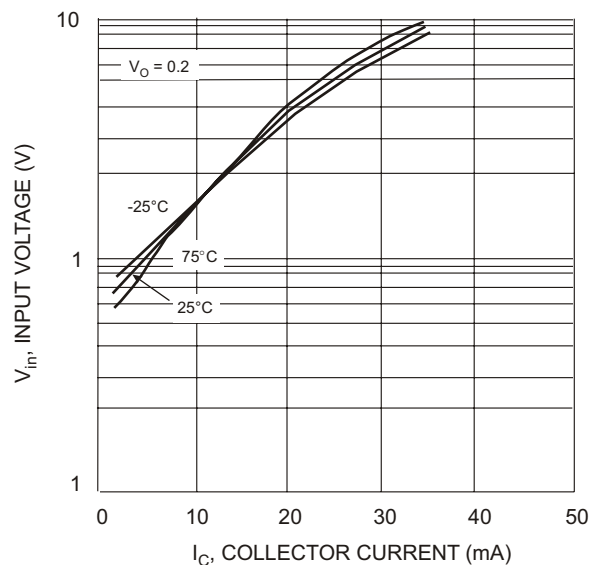


Fig. 6 Input Voltage vs. Collector Current