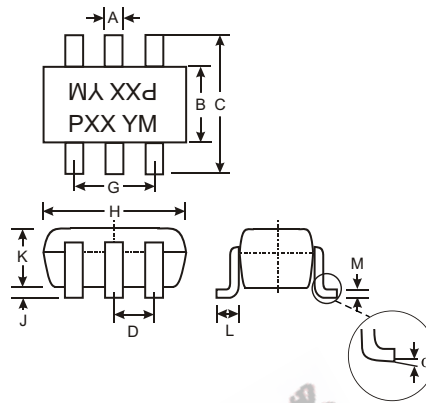


### Features

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

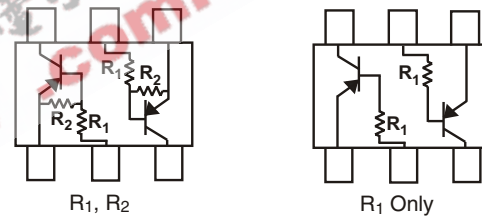
### Mechanical Data

- 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
α	0°	8°	—
All Dimensions in mm			

P/N	R1	R2	MARKING
DDA124EK	22KΩ	22KΩ	P17
DDA144EK	47KΩ	47KΩ	P20
DDA114YK	10KΩ	47KΩ	P14
DDA123JK	2.2KΩ	47KΩ	P06
DDA114EK	10KΩ	10KΩ	P13
DDA143TK	4.7KΩ	-	P07
DDA114TK	10KΩ	-	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>	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK DDA143TK DDA114TK +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>	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK DDA143TK DDA114TK -30 -30 -70 -100 -50 -100 -100	mA
Output Current	I <sub>C</sub> (Max)	All -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** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic (DDA143TK & DDA114TK only)	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	$I_E = -50\mu\text{A}$
Collector Cutoff Current	$I_{CBO}$	—	—	-0.5	$\mu\text{A}$	$V_{CB} = -50\text{V}$
Emitter Cutoff Current	$I_{EBO}$	—	—	-0.5	$\mu\text{A}$	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.3	V	$I_C/I_B = -2.5\text{mA} / -0.25\text{mA}$ DDA143TK $I_C/I_B = -1\text{mA} / -0.1\text{mA}$ DDA114TK
DC Current Transfer Ratio	$h_{FE}$	100	250	600	—	$I_C = -1\text{mA}, V_{CE} = -5\text{V}$
Input Resistor ( $R_1$ ) Tolerance	$\Delta R_1$	-30	—	+30	%	—
Gain-Bandwidth Product*	$f_T$	—	250	—	MHz	$V_{CE} = -10\text{V}, I_E = 5\text{mA}, f = 100\text{MHz}$

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$V_{I(off)}$	-0.5 -0.5 -0.3 — -0.5	-1.1 -1.1 — — -1.1	—	—	$V_{CC} = -5\text{V}, I_O = -100\mu\text{A}$
	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$V_{I(on)}$	—	-1.9 -1.9 — -1.4 -1.9	-3.0 -3.0 — -1.1 -3.0	—	$V_O = -0.3, I_O = -5\text{mA}$ $V_O = -0.3, I_O = -2\text{mA}$ $V_O = -0.3, I_O = -1\text{mA}$ $V_O = -0.3, I_O = -5\text{mA}$ $V_O = -0.3, I_O = -10\text{mA}$
Output Voltage	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$V_{O(on)}$	—	-0.1	-0.3	V	$I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -5\text{mA} / -0.25\text{mA}$ $I_O/I_I = -10\text{mA} / -0.5\text{mA}$
Input Current	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$I_I$	—	—	-0.36 -0.18 -0.88 -3.6 -0.88	mA	$V_I = -5\text{V}$
Output Current		$I_{O(off)}$	—	—	-0.5	$\mu\text{A}$	$V_{CC} = 50\text{V}, V_I = 0\text{V}$
DC Current Gain	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$G_I$	56 68 68 80 30	—	—	—	$V_O = -5\text{V}, I_O = -5\text{mA}$ $V_O = -5\text{V}, I_O = -5\text{mA}$ $V_O = -5\text{V}, I_O = -10\text{mA}$ $V_O = -5\text{V}, I_O = -10\text{mA}$ $V_O = -5\text{V}, I_O = -5\text{mA}$
Input Resistor ( $R_1$ ) Tolerance		$\Delta R_1$	-30	—	+30	%	—
Resistance Ratio Tolerance		$R_2/R_1$	-20	—	+20	%	—
Gain-Bandwidth Product*		$f_T$	—	250	—	MHz	$V_{CE} = -10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$

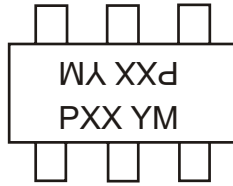
\* Transistor - For Reference Only

**Ordering Information** (Note 3)

Device	Packaging	Shipping
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

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TYPICAL CURVES - DDA123JK  
ONE SECTION

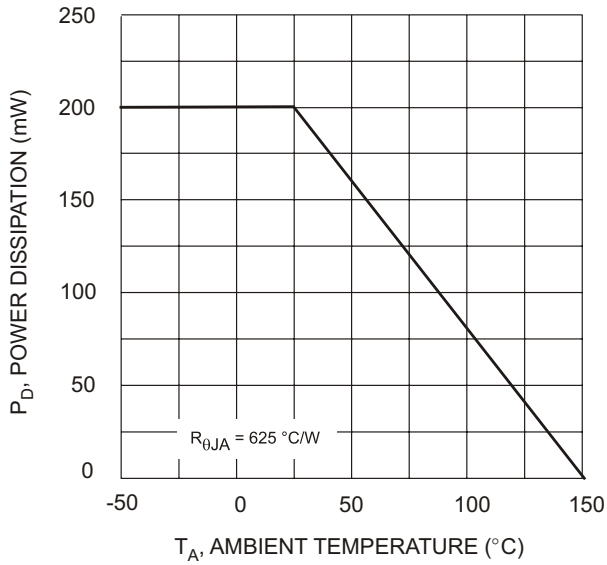


Fig. 1 Derating Curve

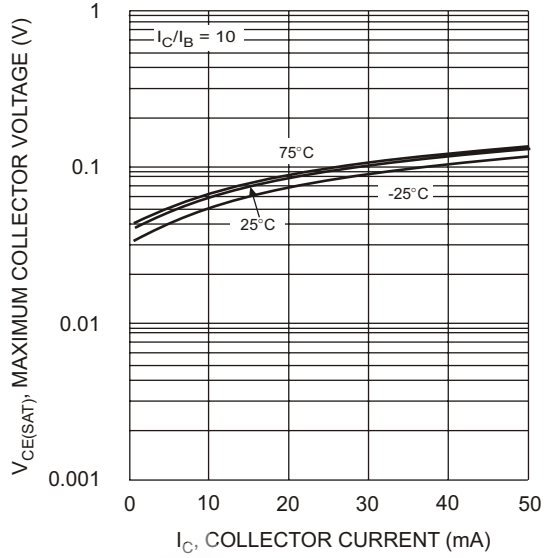


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

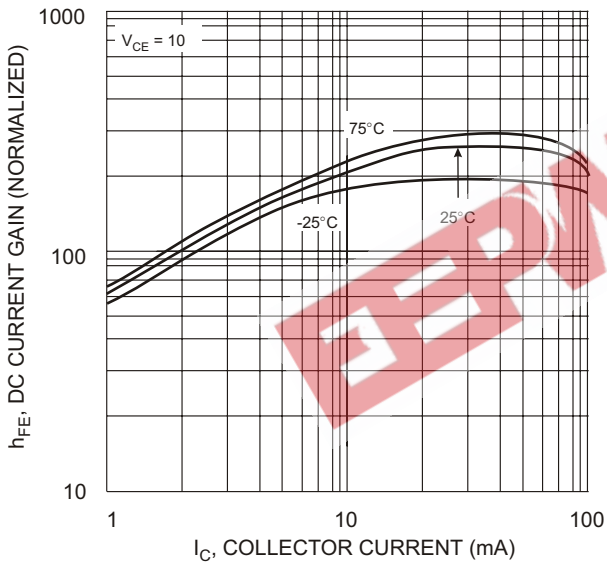


Fig. 3 DC Current Gain

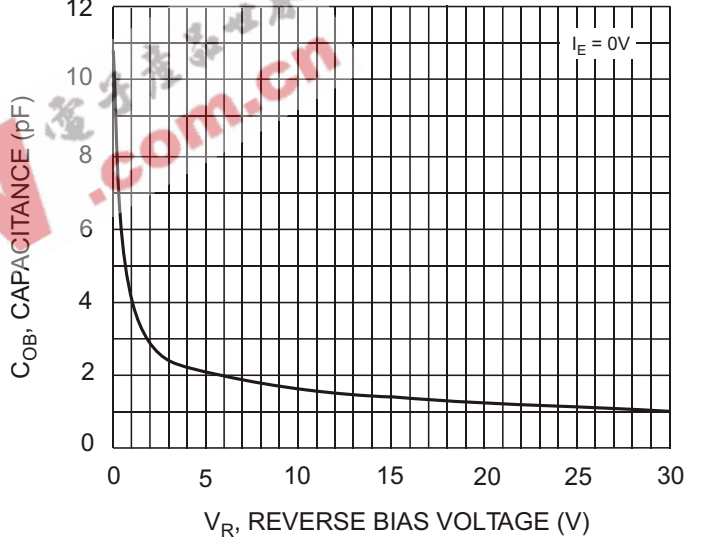


Fig. 4 Output Capacitance

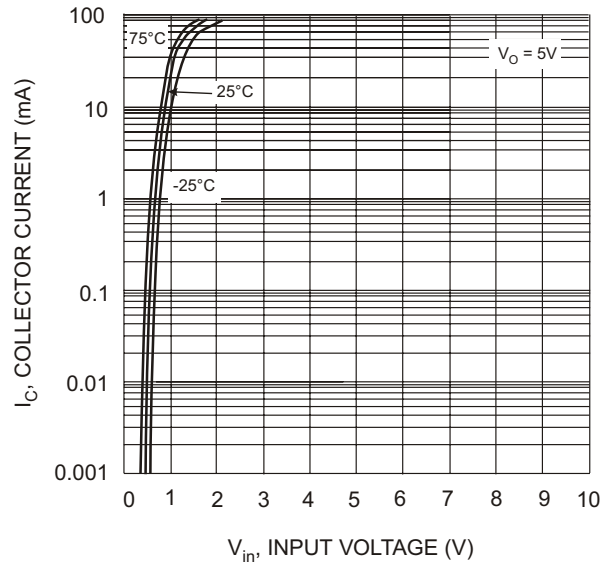


Fig. 5 Collector Current Vs. Input Voltage

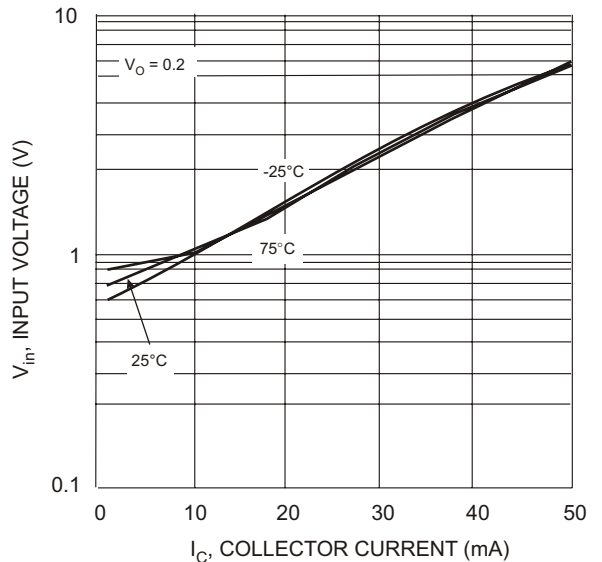


Fig. 6 Input Voltage vs. Collector Current

TYPICAL CURVES - DDA114TK  
ONE SECTION

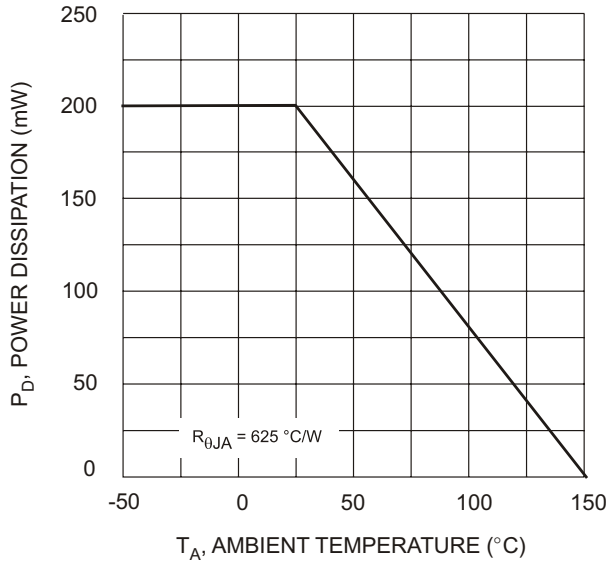


Fig. 1 Derating Curve

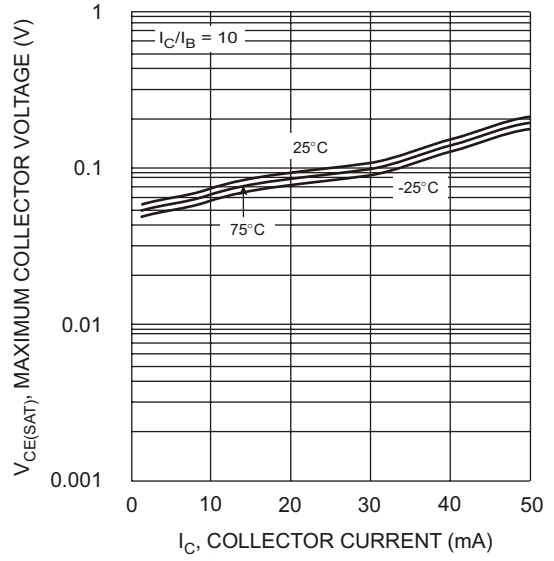


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

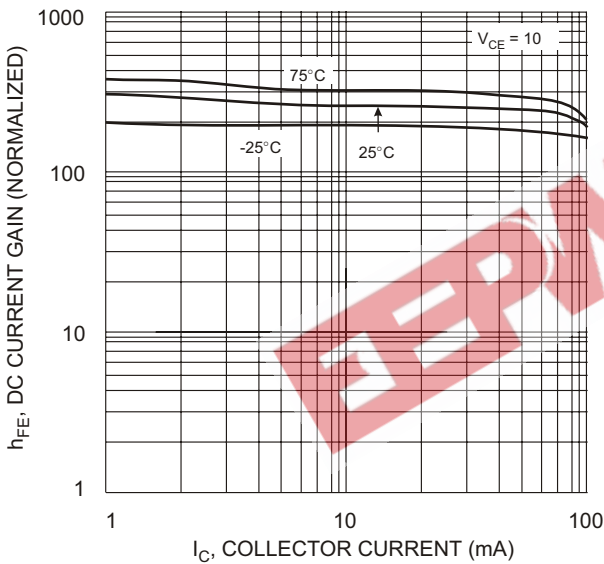


Fig. 3 DC Current Gain

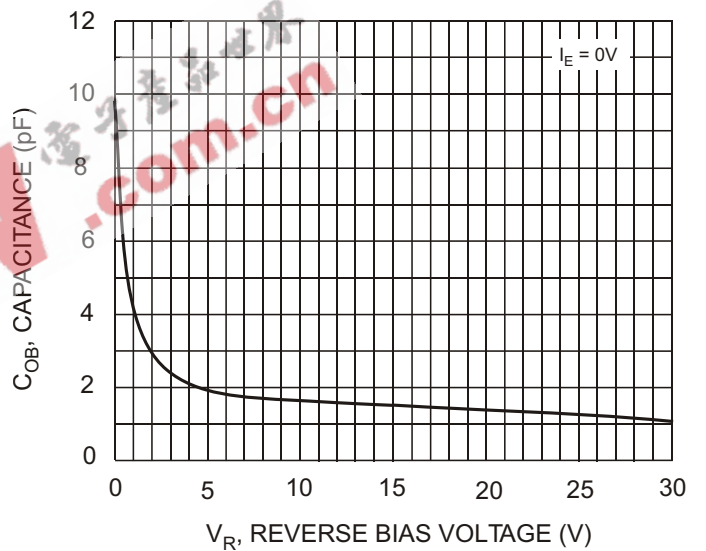


Fig. 4 Output Capacitance

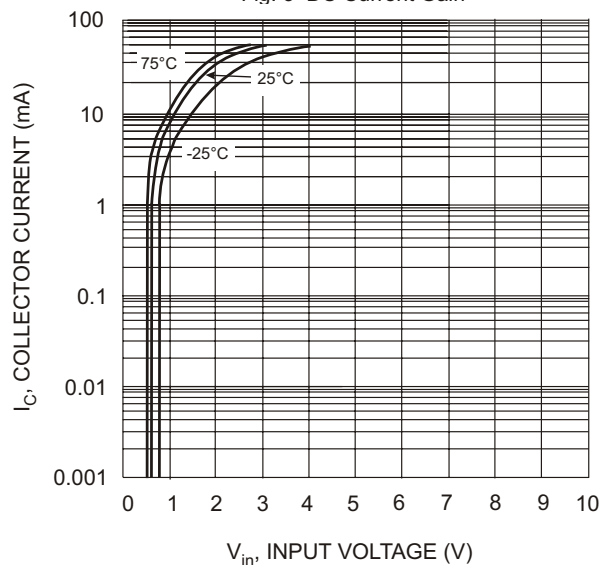


Fig. 5 Collector Current Vs. Input Voltage

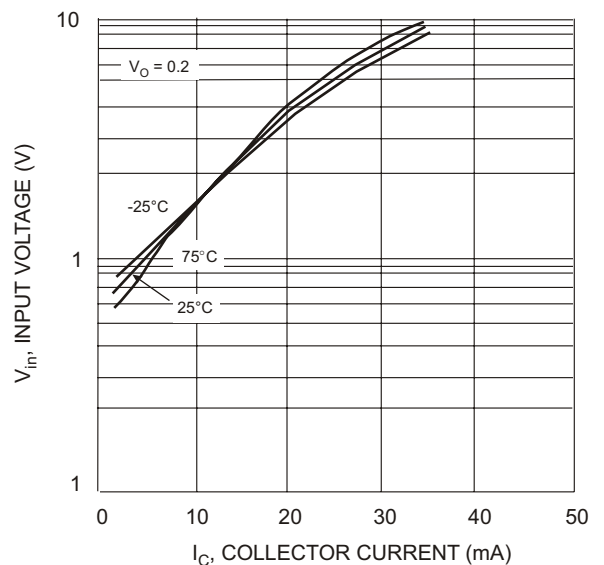


Fig. 6 Input Voltage vs. Collector Current