PNP PRE-BIASED SMALL SIGNAL DUAL SURFACE MOUNT TRANSISTOR

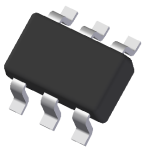
Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDC)
- Built-In Biasing Resistors
- **Available in Lead Free/RoHS Compliant Version (Note 3)**

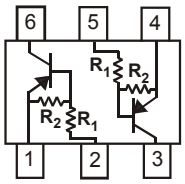
Part Number	R1	R2	Marking
DDA124EK	22KΩ	22KΩ	P17
DDA144EK	47KΩ	47KΩ	P20
DDA114YK	10KΩ	47KΩ	P14
DDA123JK	2.2KΩ	47KΩ	P06
DDA114EK	10KΩ	10KΩ	P13
DDA143TK	4.7KΩ	-	P07
DDA114TK	10KΩ	-	P12

Mechanical Data

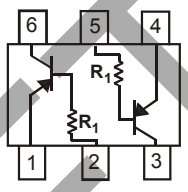
- Case: SOT-26
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish annealed over Copper leadframe). Please see Ordering Information, Note 5, on Page 5
- Marking Information: See Table and Page 5
- Ordering Information See Page 5
- Weight: 0.015 grams (approximate)



Top View



R1, R2 Device Schematic



R1 only Device Schematic

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage, (1) to (6) and (4) to (3)		V_{CC}	50	V
Input Voltage, (2) to (1) and (5) to (4)	DDA124EK	V_{IN}	+10 to -40	V
	DDA144EK		+10 to -40	
	DDA114YK		+6 to -40	
	DDA123JK		+5 to -12	
	DDA114EK		+10 to -40	
	DDA143TK		+5V max	
	DDA114TK		+5V max	
Output Current	DDA124EK	I_O	-30	mA
	DDA144EK		-30	
	DDA114YK		-70	
	DDA123JK		-100	
	DDA114EK		-50	
	DDA143TK		-100	
	DDA114TK		-100	
Output Current	All	$I_{C(MAX)}$	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Total)	P_D	300	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	416.7	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
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.
3. No purposefully added lead.

Electrical Characteristics @T_A = 25°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 = -50μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-50	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -50μA
Collector Cutoff Current	I_{CBO}	—	—	-0.5	μA	V_{CB} = -50V
Emitter Cutoff Current	I_{EBO}	—	—	-0.5	μA	V_{EB} = -4V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	—	-0.3	V	I_C/I_B = -2.5mA / -0.25mA DDA143TK I_C/I_B = -1mA / -0.1mA DDA114TK
DC Current Transfer Ratio	h_{FE}	100	250	600	—	I_C = -1mA, V_{CE} = -5V
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Gain-Bandwidth Product*	f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz

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 -0.5	-1.1 -1.1 — — -1.1	—	V	V_{CC} = -5V, I_O = -100μA
	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$V_{I(ON)}$	—	-1.9 -1.9 — — -1.9	-3.0 -3.0 -1.4 -1.1 -3.0		V_O = -0.3, I_O = -5mA V_O = -0.3, I_O = -2mA V_O = -0.3, I_O = -1mA V_O = -0.3, I_O = -5mA V_O = -0.3, I_O = -10mA
Output Voltage	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	$V_{O(ON)}$	—	-0.1	-0.3	V	I_O/I_I = -10mA / -0.5mA I_O/I_I = -10mA / -0.5mA I_O/I_I = -5mA / -0.25mA I_O/I_I = -5mA / -0.25mA I_O/I_I = -10mA / -0.5mA
Input Current	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	I_I	—	—	-0.36 -0.18 -0.88 -3.6 -0.88	mA	V_I = -5V
Output Current		$I_{O(OFF)}$	—	—	-0.5	μA	V_{CC} = 50V, V_I = 0V
DC Current Gain	DDA124EK DDA144EK DDA114YK DDA123JK DDA114EK	G_I	56 68 68 80 30	—	—	—	V_O = -5V, I_O = -5mA V_O = -5V, I_O = -5mA V_O = -5V, I_O = -10mA V_O = -5V, I_O = -10mA V_O = -5V, I_O = -5mA
Input Resistor (R_1) Tolerance		ΔR_1	-30	—	+30	%	—
Resistance Ratio Tolerance		R_2/R_1	-20	—	+20	%	—
Gain-Bandwidth Product*		f_T	—	250	—	MHz	V_{CE} = -10V, I_E = -5mA, f = 100MHz

* Transistor - For Reference Only

Typical Curves – DDA123JK One Section

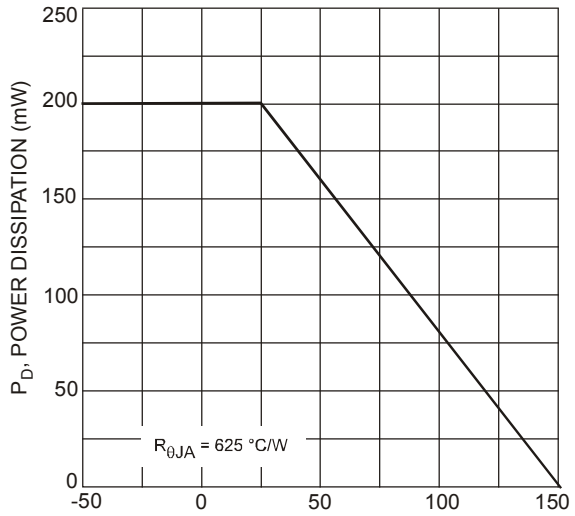


Fig. 1 Power Dissipation vs. Ambient Temperature

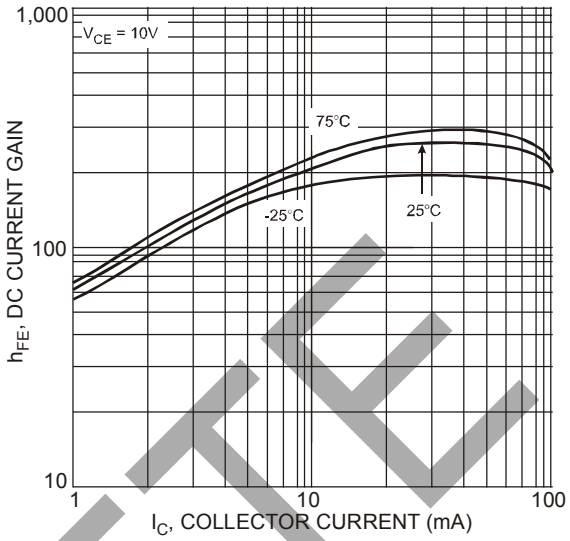


Fig. 2 Typical DC Current Gain vs. Collector Current

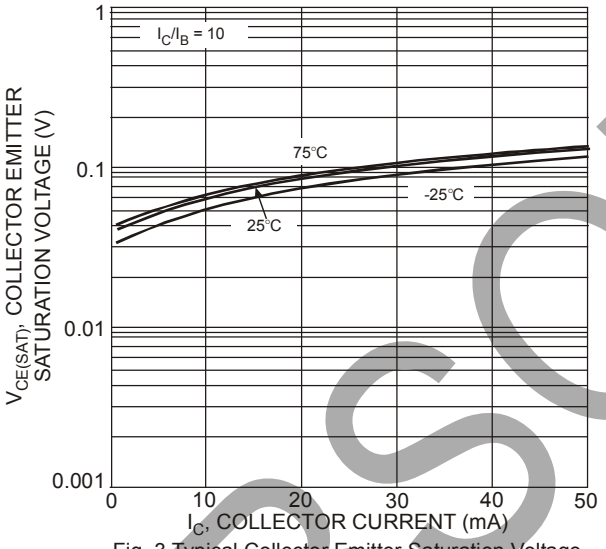


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

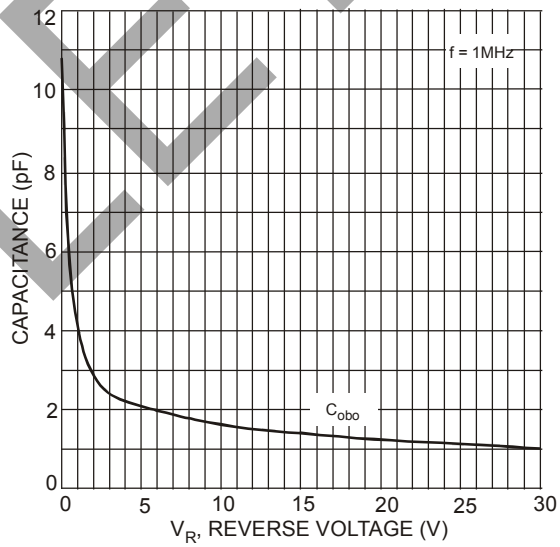


Fig. 4 Typical Capacitance Characteristics

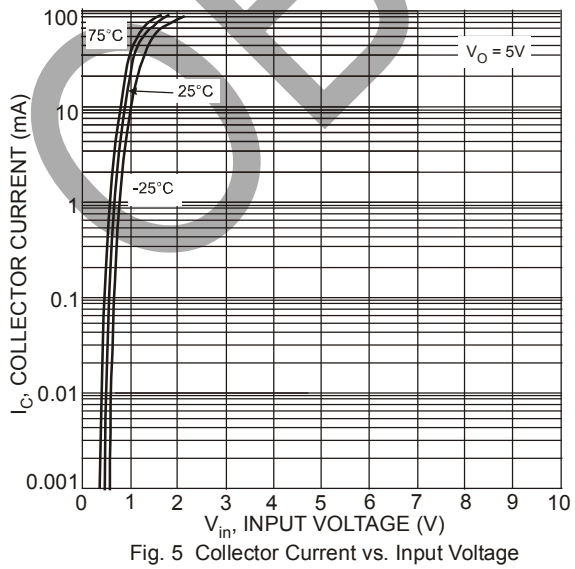


Fig. 5 Collector Current vs. Input Voltage

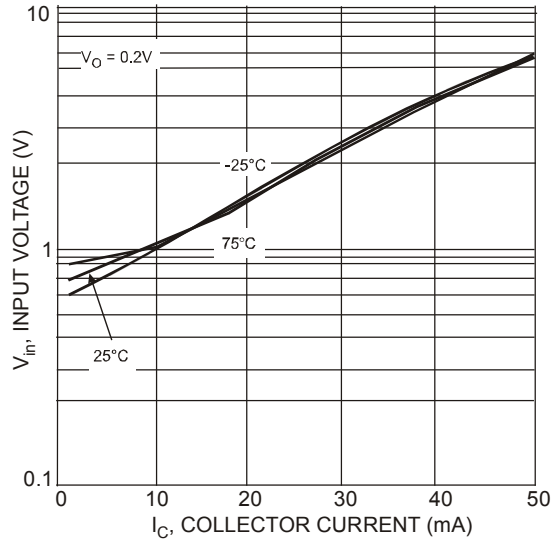


Fig. 6 Input Voltage vs. Collector Current

Typical Curves – DDA1414TK One Section

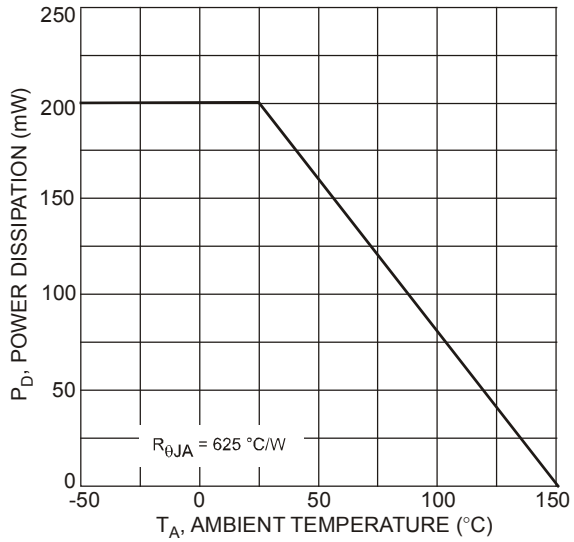


Fig. 1 Power Dissipation vs. Ambient Temperature

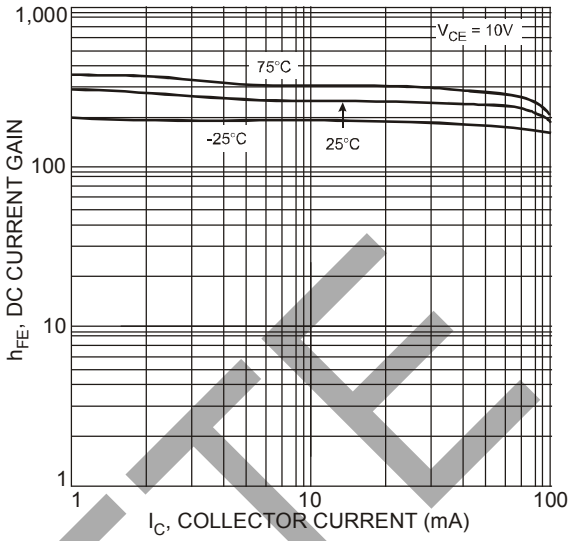


Fig. 2 Typical DC Current Gain vs. Collector Current

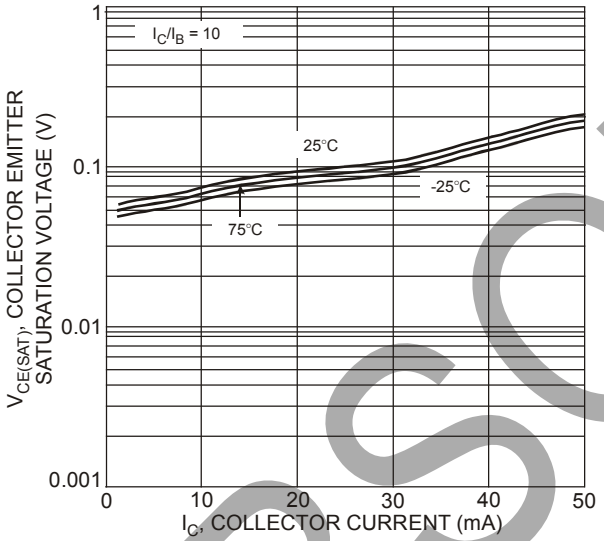


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

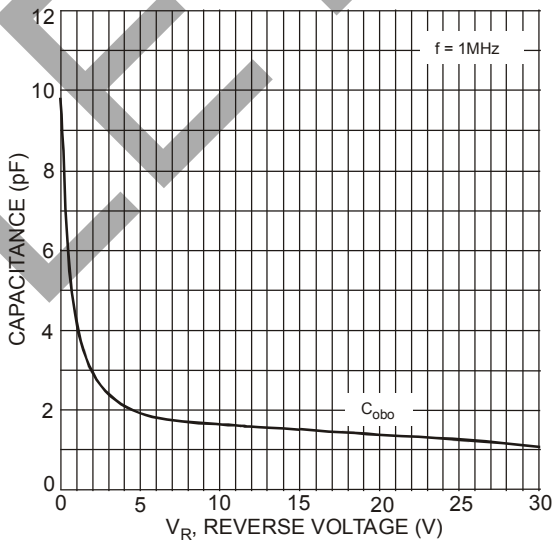


Fig. 4 Typical Capacitance Characteristics

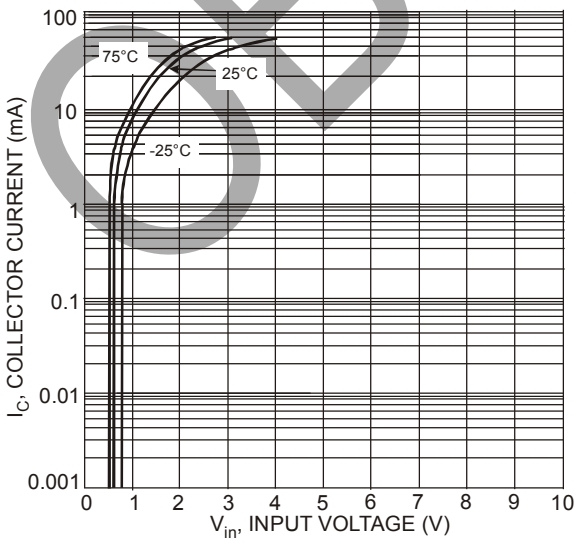


Fig. 5 Collector Current vs. Input Voltage

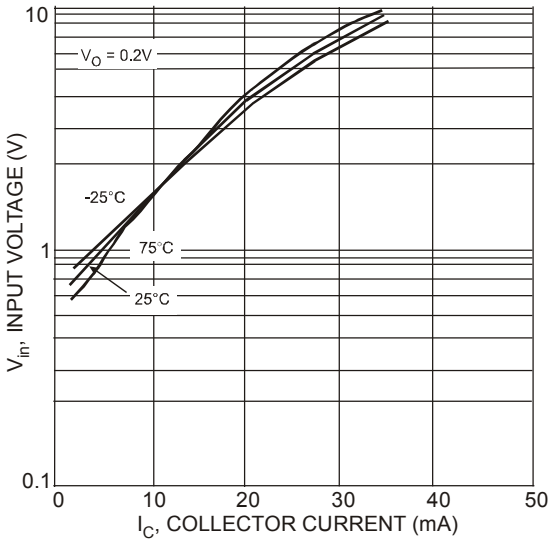


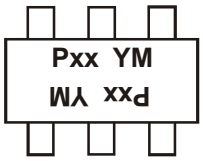
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Notes 4 & 5)

Part Number	Case	Packaging
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: 4. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
5. For Lead Free/RoHS Compliant version part numbers, please add "-F" suffix to the part numbers above. Example: DDA114TK-7-F.

Marking Information



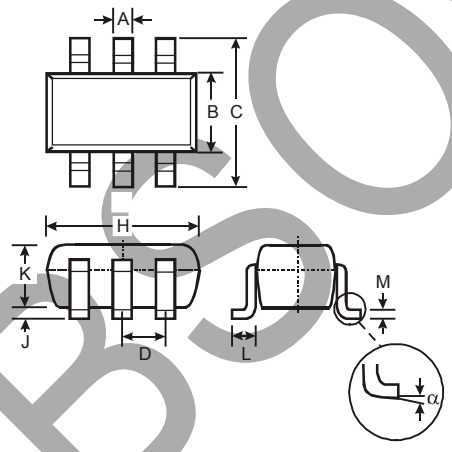
Pxx = Product Type Marking Code (See Page 1)
YM = Date Code Marking
Y = Year (ex: T = 2006)
M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	T	U	V	W	X	Y	Z	A	B	C

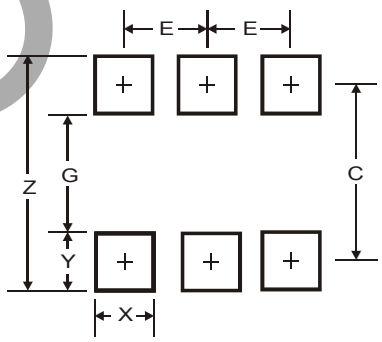
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



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
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			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	3.20
G	1.60
X	0.55
Y	0.80
C	2.40
E	0.95

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