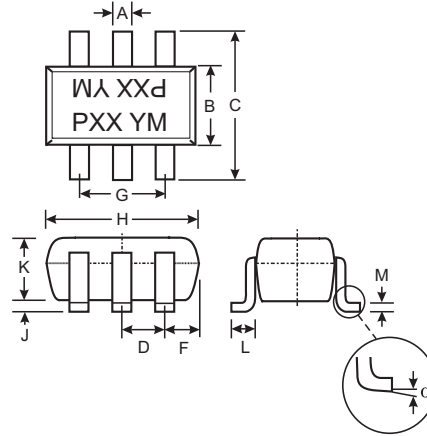


### Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Lead Free/RoHS Compliant (Note 3)

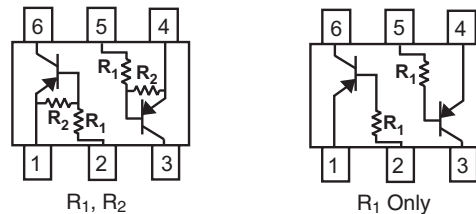
### Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 3)
- Ordering Information (See Page 3)
- Weight: 0.006 grams (approx.)



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
$\alpha$	0°	8°
All Dimensions in mm		

P/N	R1	R2	MARKING
DDA124EU	22K $\Omega$	22K $\Omega$	P17
DDA144EU	47K $\Omega$	47K $\Omega$	P20
DDA114YU	10K $\Omega$	47K $\Omega$	P14
DDA123JU	2.2K $\Omega$	47K $\Omega$	P06
DDA114EU	10K $\Omega$	10K $\Omega$	P13
DDA113TU	1K $\Omega$	—	P01
DDA143TU	4.7K $\Omega$	—	P07
DDA114TU	10K $\Omega$	—	P12



SCHEMATIC DIAGRAM

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

Characteristic	Symbol	Value	Unit
Supply Voltage, (1) to (6) and (4) to (3)	V <sub>CC</sub>	50	V
Input Voltage, (1) to (2) and (4) to (5)	V <sub>IN</sub>	DDA124EU: +10 to -40 DDA144EU: +10 to -40 DDA114YU: +6 to -40 DDA123JU: +5 to -12 DDA114EU: +10 to -40 DDA113TU: +5 V <sub>max</sub> DDA143TU: +5 V <sub>max</sub> DDA114TU: +5 V <sub>max</sub>	V
Output Current	I <sub>O</sub>	DDA124EU: -30 DDA144EU: -30 DDA114YU: -70 DDA123JU: -100 DDA114EU: -50 DDA113TU: -100 DDA143TU: -100 DDA114TU: -100	mA
Output Current	I <sub>C</sub> (Max)	All: -100	mA
Power Dissipation (Total)	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	625	°C/W

- Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.  
 2. 150mW per element must not be exceeded.  
 3. No purposefully added lead.

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

Characteristic (DDA113TU & DDA143TU & DDA114TU 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 DDA143TU I <sub>C</sub> /I <sub>B</sub> = -1mA / -0.1mA DDA114TU I <sub>C</sub> /I <sub>B</sub> = -10mA / -1mA DDA113TU
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	V <sub>I(off)</sub>	DDA124EU	-0.5	-1.1	—	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
		DDA144EU	-0.5	-1.1			
	V <sub>I(on)</sub>	DDA114YU	-0.3	—	—	V	V <sub>O</sub> = -0.3, I <sub>O</sub> = -5mA
		DDA123JU	-0.5	—			
	V <sub>O(on)</sub>	DDA114EU	-0.5	-1.1	—	V	V <sub>O</sub> = -0.3, I <sub>O</sub> = -2mA
		DDA124EU	—	-1.9			
	I <sub>I</sub>	DDA144EU	—	-1.9	—	mA	V <sub>O</sub> = -0.3, I <sub>O</sub> = -1mA
		DDA114YU	—	-1.4			
	I <sub>O(off)</sub>	DDA123JU	—	-1.1	—	μA	V <sub>O</sub> = -0.3, I <sub>O</sub> = -5mA
		DDA114EU	—	-1.9			
	I <sub>I</sub>	DDA124EU	—	-0.36	—	mA	V <sub>I</sub> = -5V
		DDA144EU	—	-0.18			
	I <sub>O</sub>	DDA114YU	—	-0.88	—	μA	V <sub>CC</sub> = -50V, V <sub>I</sub> = -0V
		DDA123JU	—	-3.6			
	G <sub>I</sub>	DDA114EU	—	-0.88	—	μA	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
		DDA124EU	—	-0.88			
Output Current	I <sub>O(off)</sub>	DDA144EU	—	—	—	μA	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
		DDA114YU	—	—			
DC Current Gain	G <sub>I</sub>	DDA123JU	56	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
		DDA114EU	68	—			
	ΔR <sub>1</sub>	DDA124EU	68	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -10mA
		DDA144EU	80	—			
	R <sub>2</sub> /R <sub>1</sub>	DDA114YU	30	—	—	—	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA
		DDA123JU	—	—			
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	

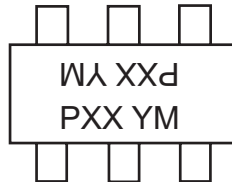
\* Transistor - For Reference Only

**Ordering Information** (Note 4)

Device	Packaging	Shipping
DDA124EU-7-F	SOT-363	3000/Tape & Reel
DDA144EU-7-F	SOT-363	3000/Tape & Reel
DDA114YU-7-F	SOT-363	3000/Tape & Reel
DDA123JU-7-F	SOT-363	3000/Tape & Reel
DDA114EU-7-F	SOT-363	3000/Tape & Reel
DDA113TU-7-F	SOT-363	3000/Tape & Reel
DDA143TU-7-F	SOT-363	3000/Tape & Reel
DDA114TU-7-F	SOT-363	3000/Tape & Reel

Notes: 4. 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: T = 2006  
M = Month ex: 9 = September

Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011
Code	R	S	T	U	V	W	X	Y

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

**TYPICAL CURVES - DDA123JU**  
**ONE SECTION**

**NEW PRODUCT**

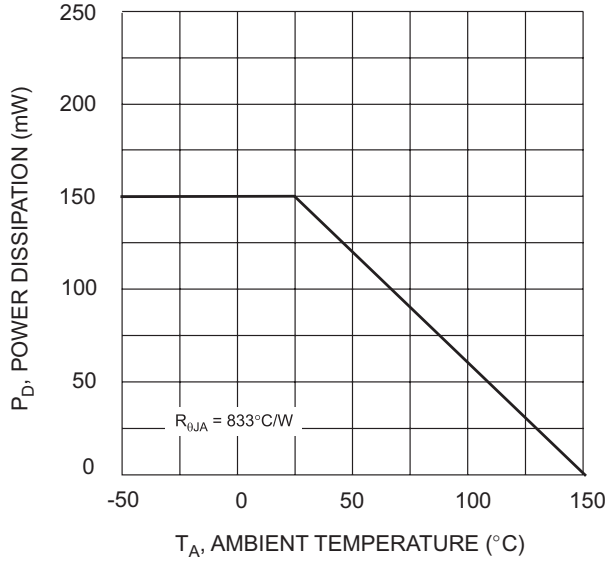


Fig. 1 Derating Curve

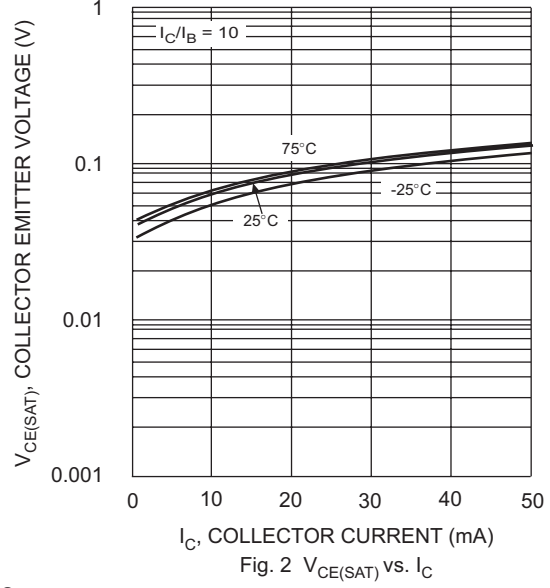


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

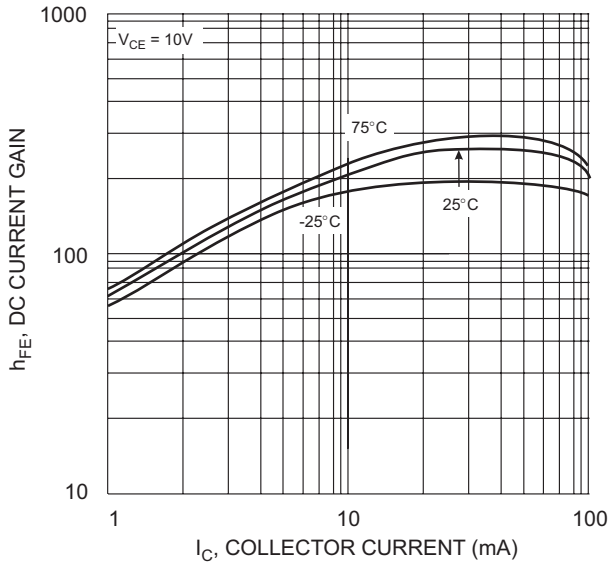


Fig. 3 DC Current Gain

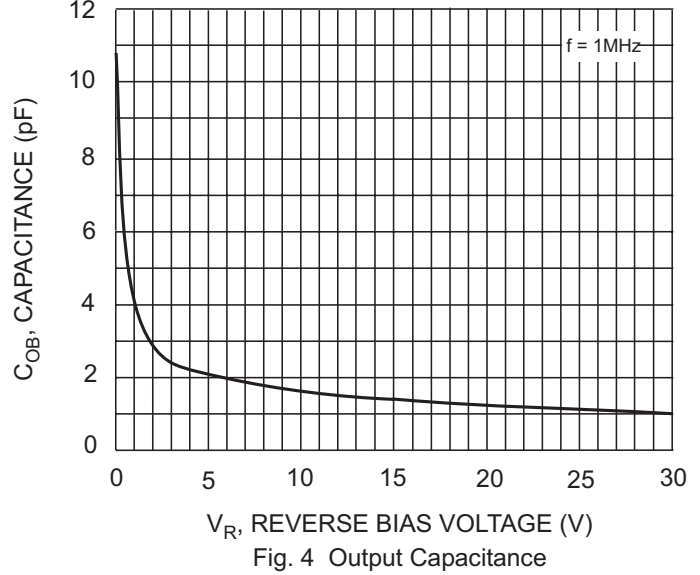


Fig. 4 Output Capacitance

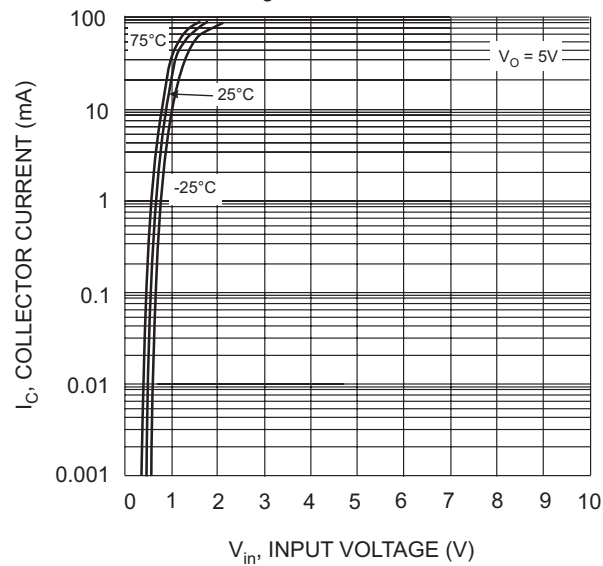


Fig. 5 Collector Current Vs. Input Voltage

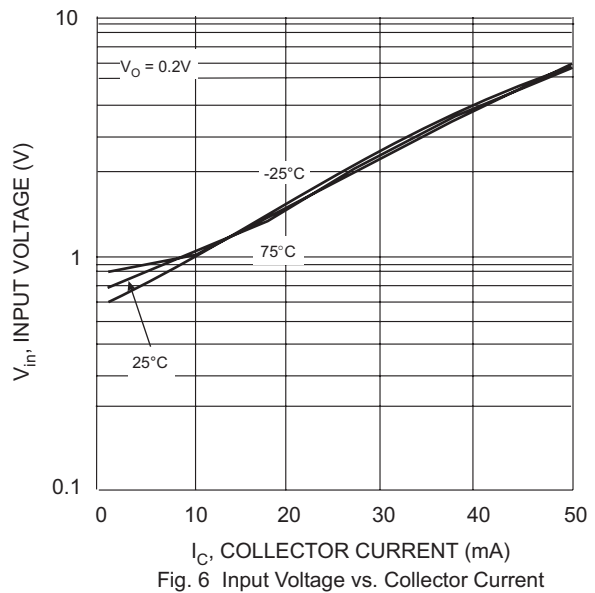


Fig. 6 Input Voltage vs. Collector Current

**TYPICAL CURVES - DDA114TU**  
**ONE SECTION**

**NEW PRODUCT**

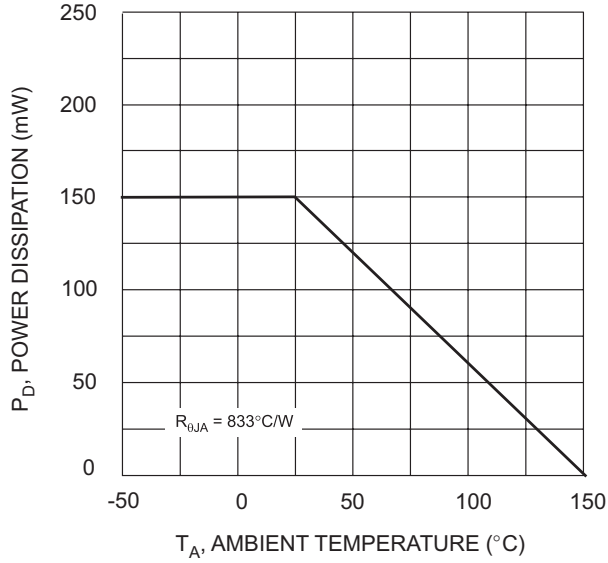


Fig. 1 Derating Curve

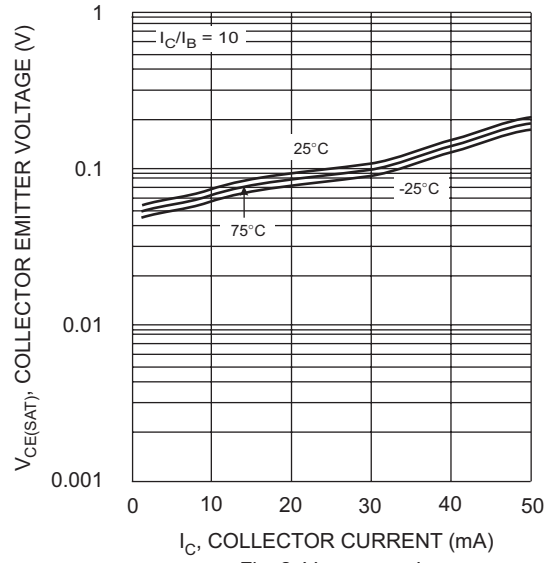


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

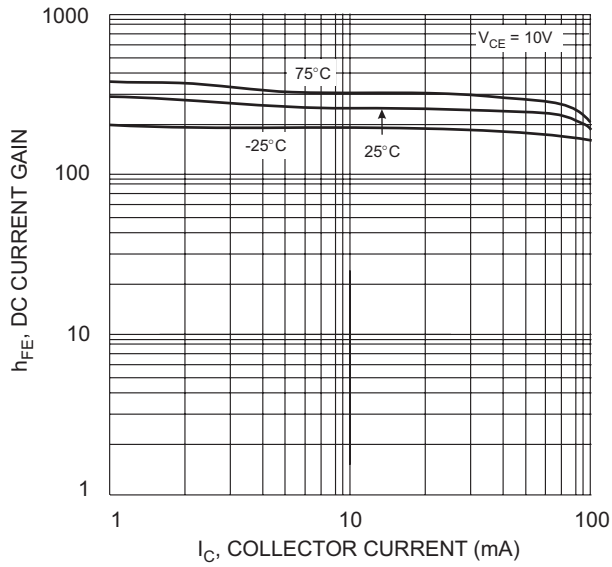


Fig. 3 DC Current Gain

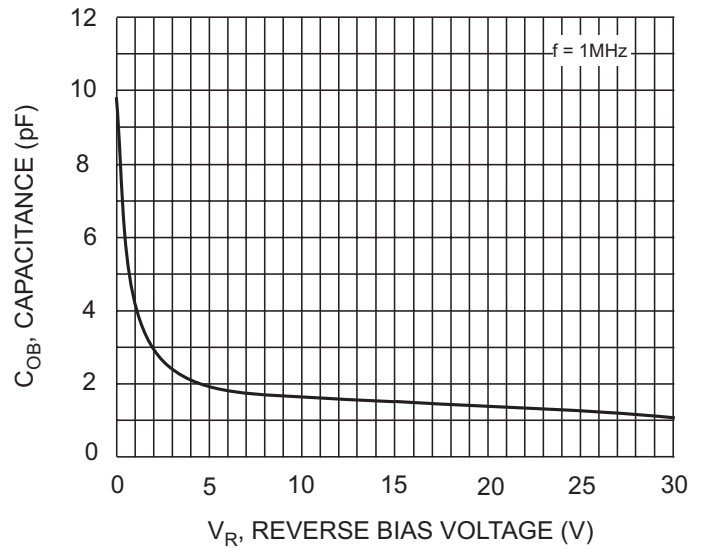


Fig. 4 Output Capacitance

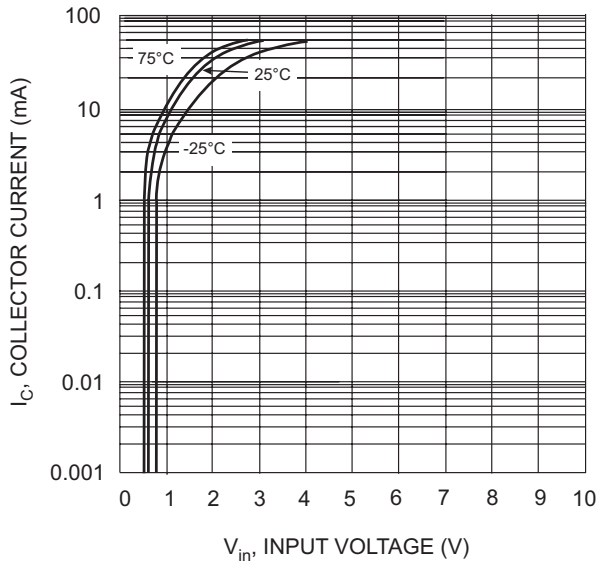


Fig. 5 Collector Current Vs. Input Voltage

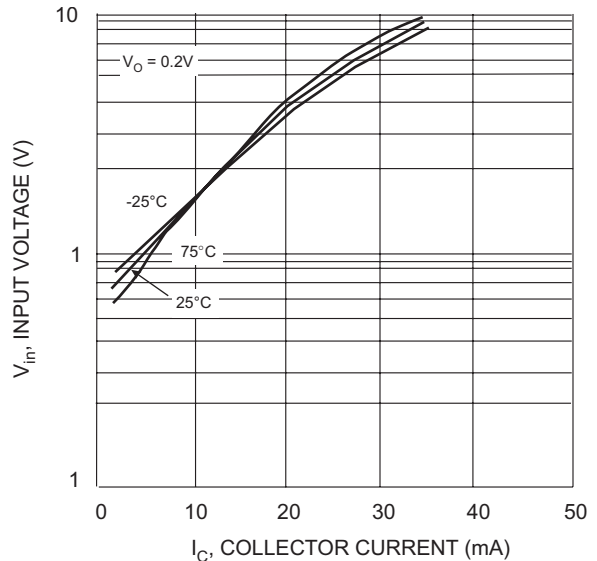


Fig. 6 Input Voltage vs. Collector Current

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