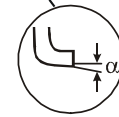
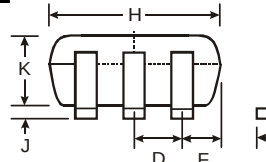
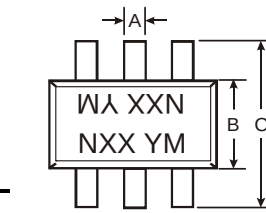


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDA)
- Built-In Biasing Resistors
- **Lead Free/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

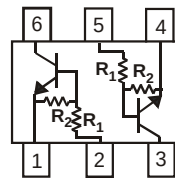
Mechanical Data

- 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 Information: See Diagrams & Page 5
- Ordering Information: See Page 5
- Weight: 0.006 grams (approximate)

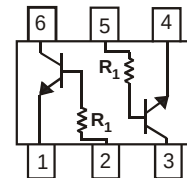


SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
α	0°	8°
All Dimensions in mm		

P/N	R1	R2	MARKING
DDC124EU	22K Ω	22K Ω	N17
DDC144EU	47K Ω	47K Ω	N20
DDC114YU	10K Ω	47K Ω	N14
DDC123JU	2.2K Ω	47K Ω	N06
DDC114EU	10K Ω	10K Ω	N13
DDC113TU	1K Ω	—	N01
DDC143TU	4.7K Ω	—	N07
DDC114TU	10K Ω	—	N12



R1, R2



R1 Only

SCHEMATIC DIAGRAM

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (6) to (1) and (3) to (4)	V _{CC}	50	V
Input Voltage, (2) to (1) and (5) to (4)	V _{IN}	-10 to +40 -10 to +40 -6 to +40 -5 to +12 -10 to +40 -5V max -5V max -5V max	V
Output Current	I _O	30 30 70 100 50 100 100 100	mA
Output Current All	I _C (Max)	100	mA
Power Dissipation (Total)	P _d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R _{θJA}	625	°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. 150mW per element must not be exceeded.
 3. No purposefully added lead.
 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic (DDC113TU & DDC143TU & DDC114TU 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 DDC143TU I _C /I _B = 1mA / 0.1mA DDC114TU I _C /I _B = 10mA / 1mA DDC113TU
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	DDC124EU	$V_{I(off)}$	0.5	1.1	—	V	$V_{CC} = 5V, I_O = 100\mu A$
	DDC144EU		0.5	1.1			
	DDC114YU		0.3	—			
	DDC123JU		0.5	—			
	DDC114EU		0.5	1.1			
	DDC124EU	$V_{I(on)}$	—	1.9	3.0	V	$V_O = 0.3, I_O = 5mA$
	DDC144EU			1.9	3.0		$V_O = 0.3, I_O = 2mA$
	DDC114YU			—	1.4		$V_O = 0.3, I_O = 1mA$
	DDC123JU			—	1.1		$V_O = 0.3, I_O = 5mA$
	DDC114EU			1.9	3.0		$V_O = 0.3, I_O = 10mA$
Output Voltage	DDC124EU	$V_{O(on)}$	—	0.1	0.3	V	$I_O/I_I = 10mA / 0.5mA$
	DDC144EU						$I_O/I_I = 10mA / 0.5mA$
	DDC114YU						$I_O/I_I = 5mA / 0.25mA$
	DDC123JU						$I_O/I_I = 5mA / 0.25mA$
	DDC114EU						$I_O/I_I = 10mA / 0.5mA$
Input Current	DDC124EU	I_I	—	—	0.36	mA	$V_I = 5V$
	DDC144EU				0.18		
	DDC114YU				0.88		
	DDC123JU				3.6		
	DDC114EU				0.88		
Output Current		$I_{O(off)}$	—	—	0.5	μA	$V_{CC} = 50V, V_I = 0V$
DC Current Gain	DDC124EU	G_I	56	—	—	—	$V_O = 5V, I_O = 5mA$
	DDC144EU		68				$V_O = 5V, I_O = 5mA$
	DDC114YU		68				$V_O = 5V, I_O = 10mA$
	DDC123JU		80				$V_O = 5V, I_O = 10mA$
	DDC114EU		30				$V_O = 5V, I_O = 5mA$
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

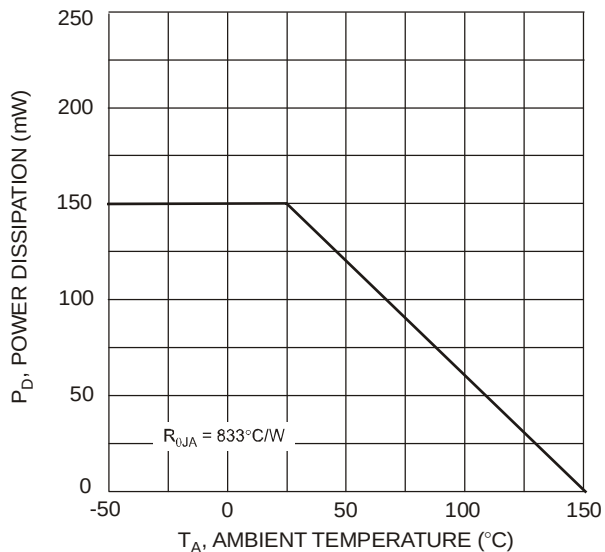


Fig. 1 Derating Curve

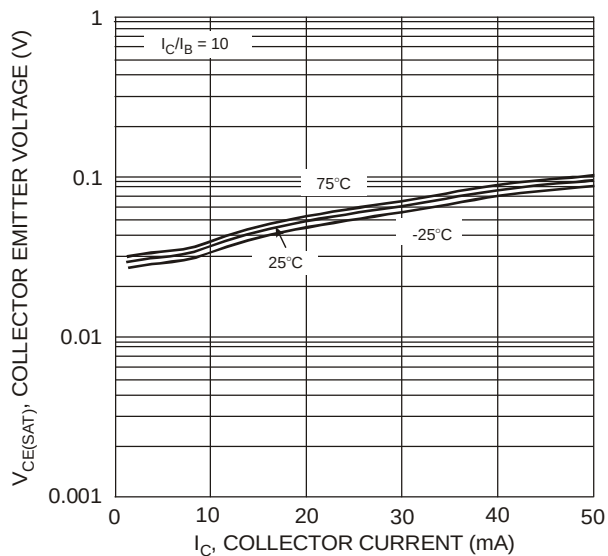


Fig. 2 $V_{CE(SAT)}$ vs. I_C

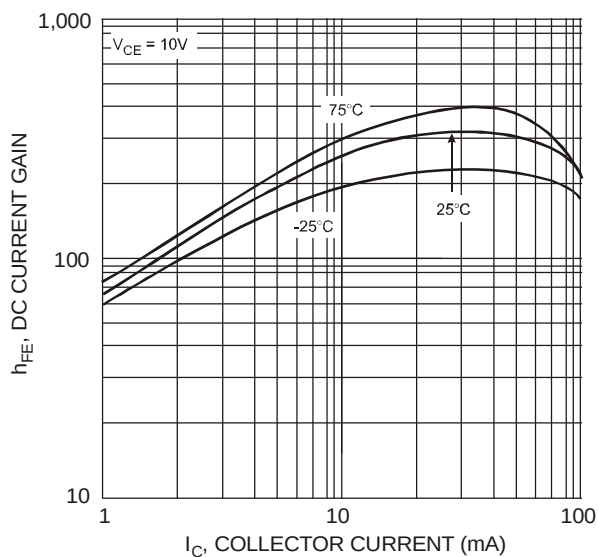


Fig. 3 DC Current Gain

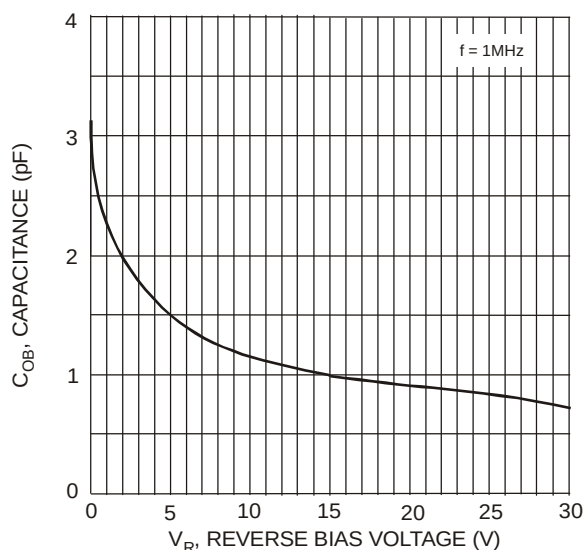


Fig. 4 Output Capacitance

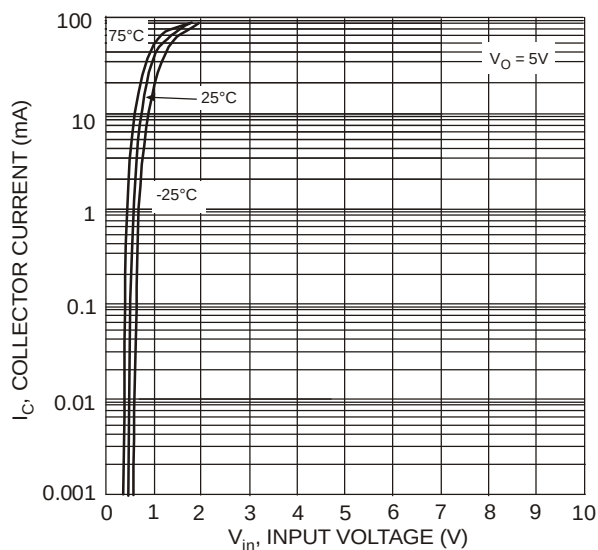


Fig. 5 Collector Current vs. Input Voltage

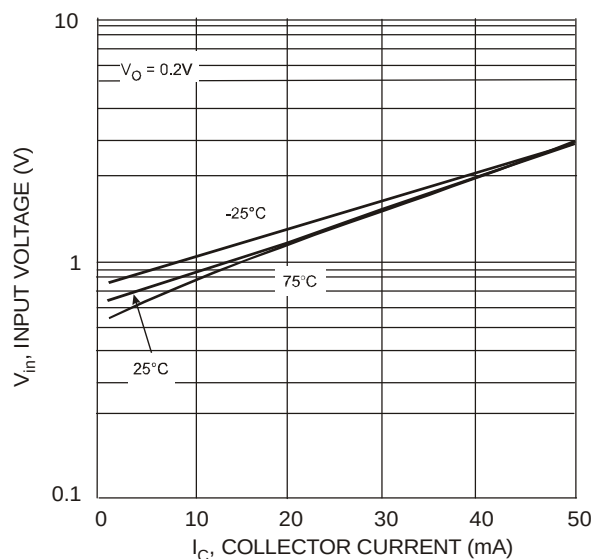


Fig. 6 Input Voltage vs. Collector Current

Typical Curves – DDC114TK One Section

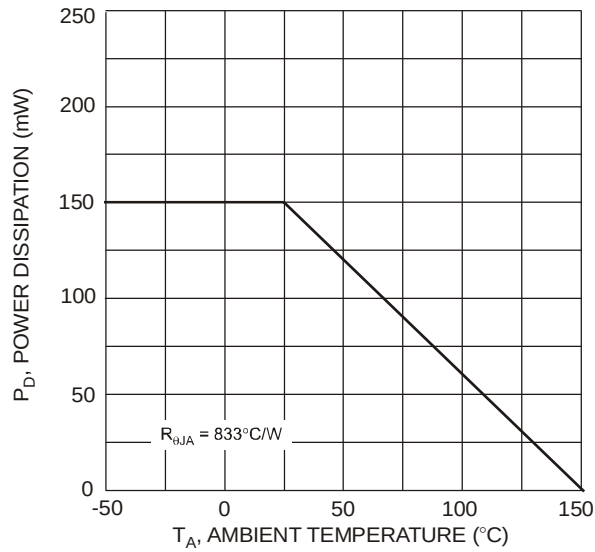


Fig. 1 Derating Curve

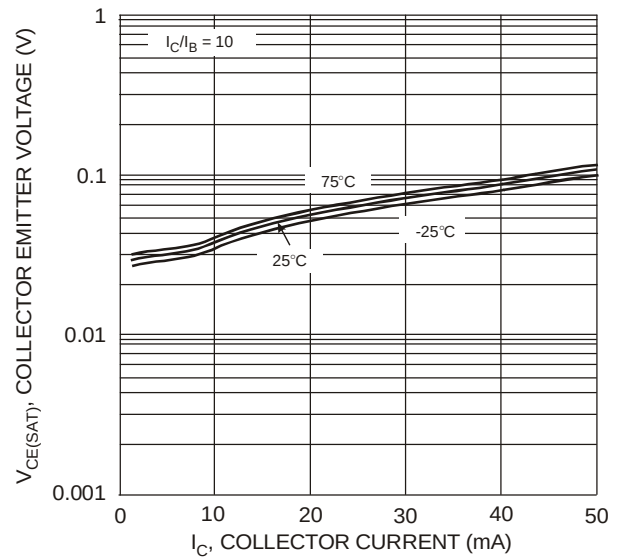


Fig. 2 $V_{CE(SAT)}$ vs. I_C

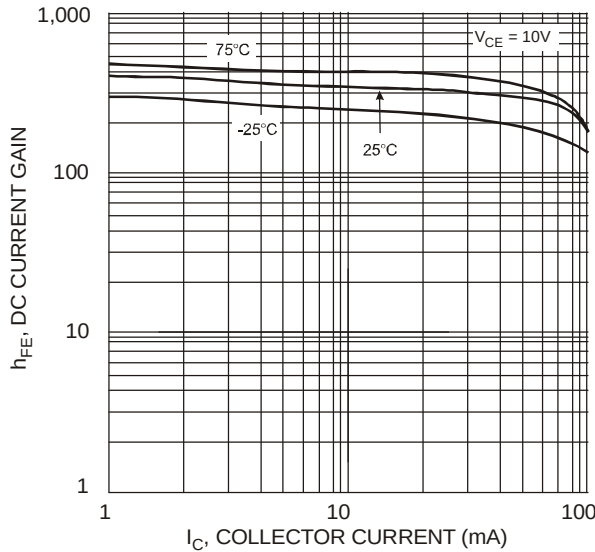


Fig. 3 DC Current Gain

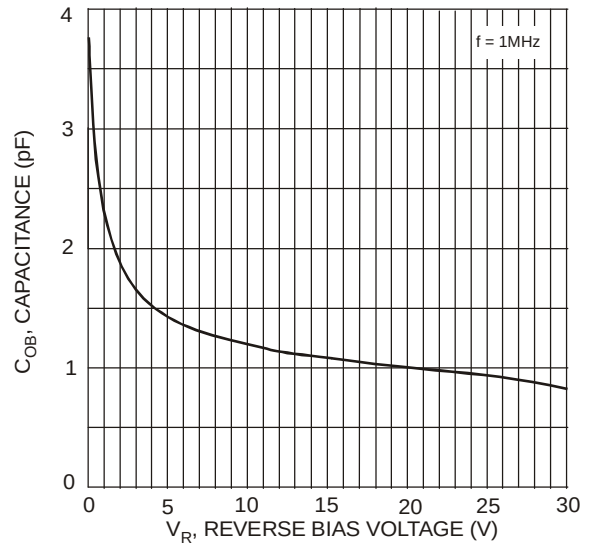


Fig. 4 Output Capacitance

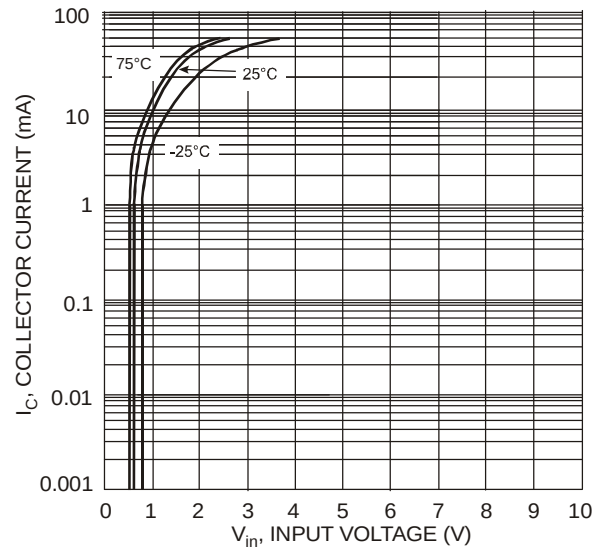


Fig. 5 Collector Current vs. Input Voltage

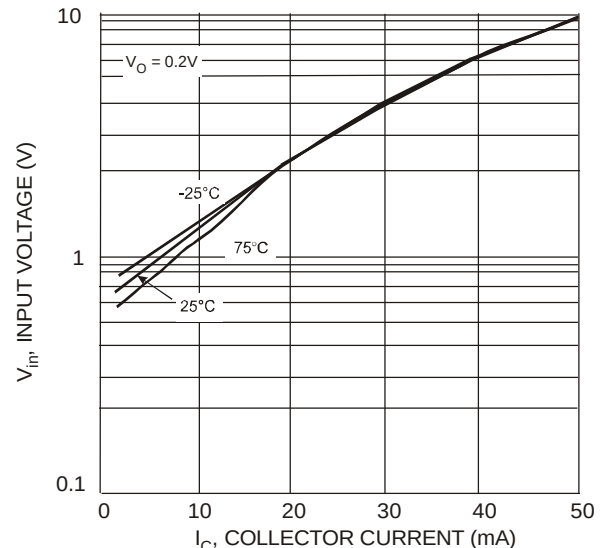


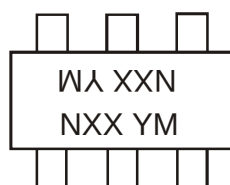
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 6)

Device	Packaging	Shipping
DDC124EU-7-F	SOT-363	3000/Tape & Reel
DDC144EU-7-F	SOT-363	3000/Tape & Reel
DDC114YU-7-F	SOT-363	3000/Tape & Reel
DDC123JU-7-F	SOT-363	3000/Tape & Reel
DDC114EU-7-F	SOT-363	3000/Tape & Reel
DDC113TU-7-F	SOT-363	3000/Tape & Reel
DDC143TU-7-F	SOT-363	3000/Tape & Reel
DDC114TU-7-F	SOT-363	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



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

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	N	P	R	S	T	U	V	W	X	Y	Z

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

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