

# DDTA (R2-ONLY SERIES) KA

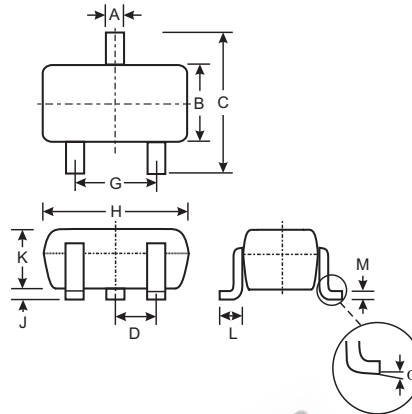
## PNP PRE-BIASED SMALL SIGNAL SC-59 SURFACE MOUNT TRANSISTOR

### Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistor, R2 only
- **Lead Free/RoHS Compliant (Note 2)**
- "Green" Device Note 3 & 4

### Mechanical Data

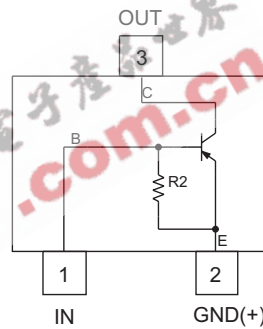
- Case: SC-59
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Copper leadframe).
- Terminal Connections: See Diagram
- Marking: Date Code and Type Code (See Table Below & Page 2)
- Ordering Information (See Page 2)
- Weight: 0.008 grams (approximate)



SC-59		
Dim	Min	Max
A	0.35	0.50
B	1.50	1.70
C	2.70	3.00
D	0.95	
G	1.90	
H	2.90	3.10
J	0.013	0.10
K	1.00	1.30
L	0.35	0.55
M	0.10	0.20
$\alpha$	0°	8°

**All Dimensions in mm**

P/N	R2 (NOM)	Type Code
DDTA114KA	10K $\Omega$	P26
DDTA124KA	22K $\Omega$	P27
DDTA144KA	47K $\Omega$	P28
DDTA115KA	100K $\Omega$	P29



Schematic and Pin Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-50	V
Collector-Emitter Voltage	V <sub>CE0</sub>	-50	V
Emitter-Base Voltage	V <sub>EB0</sub>	-5	V
Collector Current	I <sub>C (Max)</sub>	-100	mA
Power Dissipation	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R <sub>θJA</sub>	625	°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. No purposefully added lead.
  3. Diodes Inc.'s "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).
  4. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.

## Electrical Characteristics

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

Characteristic		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> = -720μA, DDTA114GKA I <sub>E</sub> = -330μA, DDTA124GKA I <sub>E</sub> = -160μA, DDTA144GKA I <sub>E</sub> = -72μA, DDTA115GKA
Collector Cutoff Current		I <sub>CBO</sub>	—	—	-0.5	μA	V <sub>CB</sub> = -50V
Emitter Cutoff Current	DDTA114KA	I <sub>EBO</sub>	-300	—	-580	μA	V <sub>EB</sub> = -4V
	DDTA124KA		-140		-260		
	DDTA144KA		-65		-130		
	DDTA115KA		-30		-58		
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	—	—	-0.3	V	I <sub>C</sub> = -10mA, I <sub>B</sub> = -0.5mA
DC Current Transfer Ratio	DDTA114GKA	h <sub>FE</sub>	30	—	—	—	I <sub>C</sub> = -5mA, V <sub>CE</sub> = -5V
	DDTA124GKA		56				
	DDTA144GKA		68				
	DDTA115GKA		82				
Bleeder Resistor (R <sub>2</sub> ) Tolerance		ΔR <sub>2</sub>	-30	—	+30	%	—
Gain-Bandwidth Product*		f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz

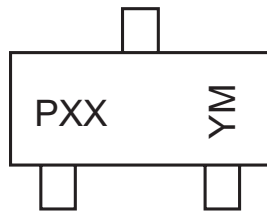
\* Transistor - For Reference Only

## Ordering Information (Note 4 & 5)

Device	Packaging	Shipping
DDTA114GKA-7-F	SC-59	3000/Tape & Reel
DDTA124GKA-7-F	SC-59	3000/Tape & Reel
DDTA144GKA-7-F	SC-59	3000/Tape & Reel
DDTA115GKA-7-F	SC-59	3000/Tape & Reel

- Notes: 4. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.  
5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



PXX = Product Type Marking Code, See Table on Page 1  
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

**TYPICAL CURVES - DDTA114KA**

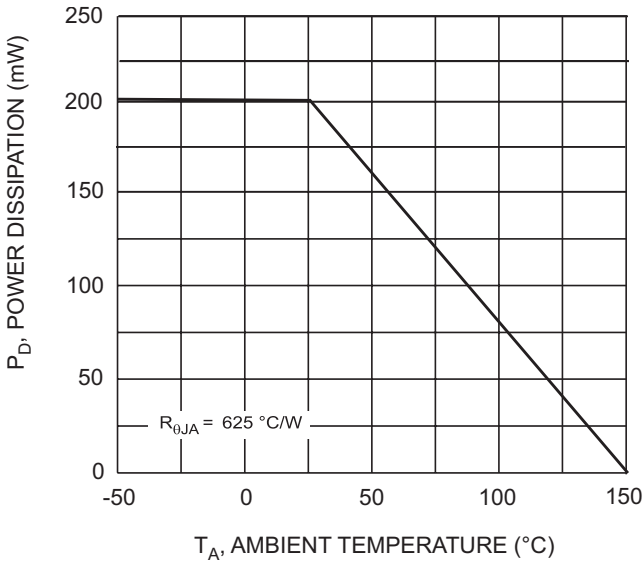


Fig. 1, Derating Curve

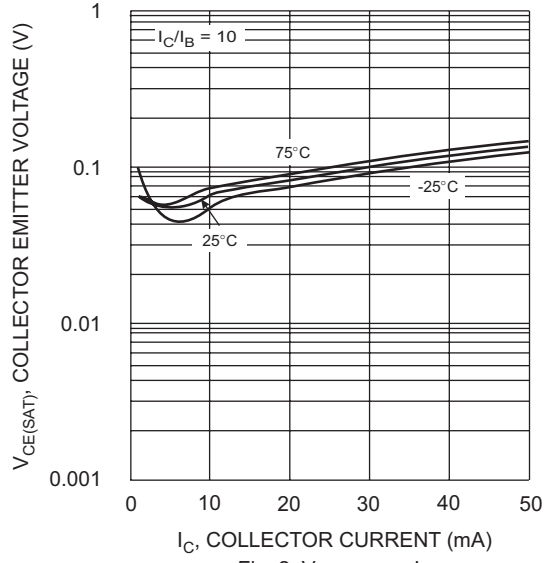


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

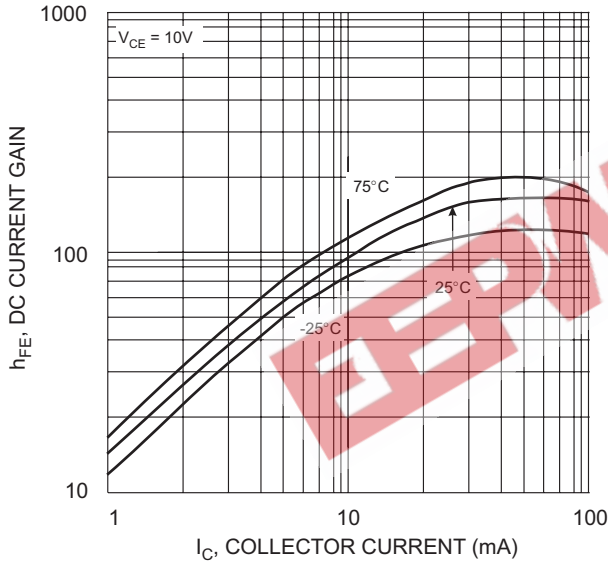


Fig. 3 DC CURRENT GAIN

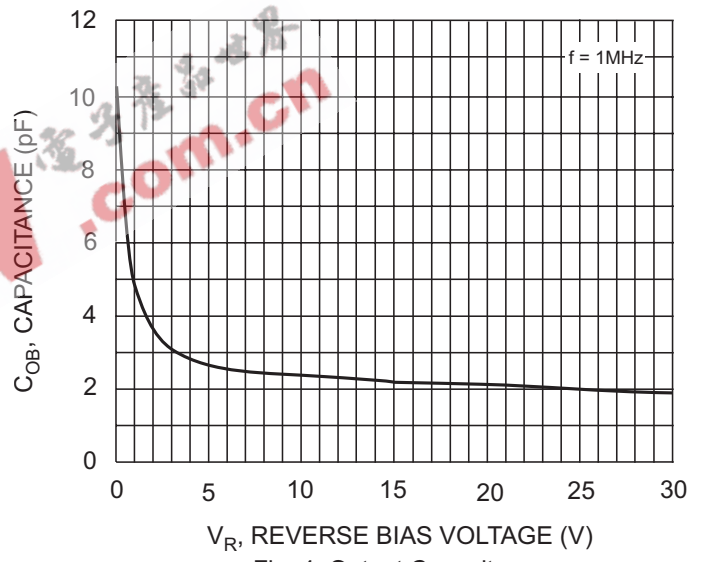


Fig. 4 Output Capacitance

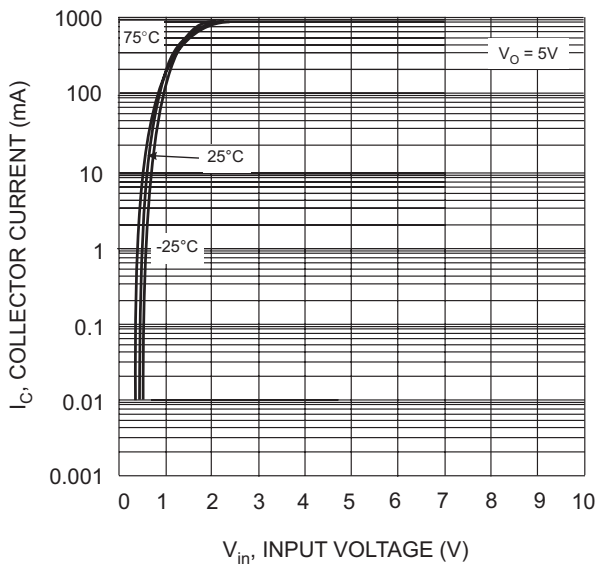


Fig. 5 Collector Current Vs. Input Voltage

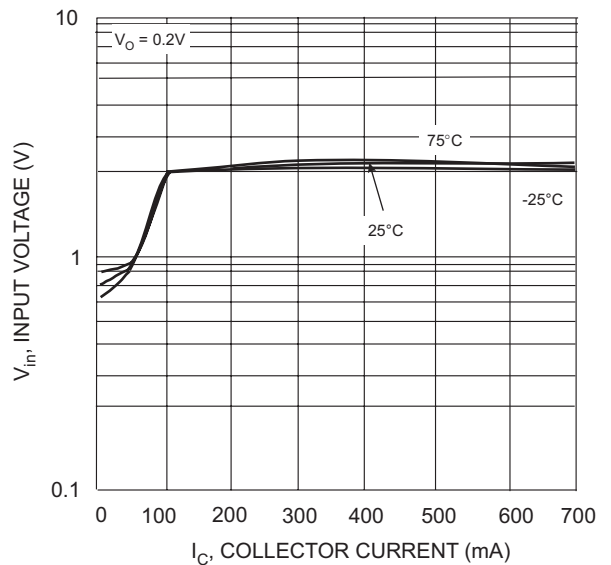


Fig. 6 Input Voltage vs. Collector Current

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