



DDTC (R1≠R2 SERIES) KA

NPN PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR

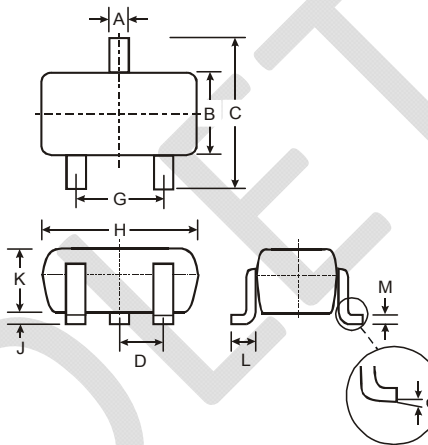
Obsolete Part Number	Alternative Part Number
DDTC113ZKA	DDTC113ZCA
DDTC114WKA	DDTC114WCA
DDTC114YKA	DDTC114YCA
DDTC123JKA	DDTC123JCA
DDTC123YKA	DDTC123YCA
DDTC124XKA	DDTC124XCA
DDTC143FKA	DDTC143FCA
DDTC143XKA	DDTC143XCA
DDTC143ZKA	DDTC143ZCA
DDTC144VKA	DDTC144VCA
DDTC144WKA	DDTC144WCA

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1≠R2
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device, Note 2 and 3**

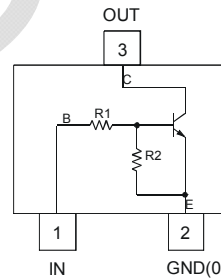
Mechanical Data

- Case: SC-59
- Case Material: Molded Plastic, "Green" Molding Compound, Note 3. 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 Information: See Table Below & Page 5
- Ordering Information: See Page 5
- Weight: 0.006 grams (approximate)

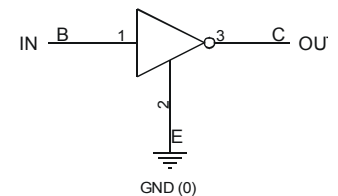


SC-59		
Dim	Min	Max
A	0.35	0.50
B	1.50	1.70
C	2.70	3.00
D	0.95	
G	1.90	
H	2.90	3.10
J	0.013	0.10
K	1.00	1.30
L	0.35	0.55
M	0.10	0.20
α	0°	8°
All Dimensions in mm		

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTC113ZKA	1KΩ	10KΩ	N02
DDTC123YKA	2.2KΩ	10KΩ	N05
DDTC123JKA	2.2KΩ	47KΩ	N06
DDTC143XKA	4.7KΩ	10KΩ	N09
DDTC143FKA	4.7KΩ	22KΩ	N10
DDTC143ZKA	4.7KΩ	47KΩ	N11
DDTC114YKA	10KΩ	47KΩ	N14
DDTC114WKA	10KΩ	4.7KΩ	N15
DDTC124XKA	22KΩ	47KΩ	N18
DDTC144VKA	47KΩ	10KΩ	N21
DDTC144WKA	47KΩ	22KΩ	N22



Schematic and Pin Configuration



Equivalent Inverter Circuit

- Notes:
1. No purposefully added Lead.
 2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage, (3) to (2)		V_{CC}	50	V
Input Voltage, (1) to (2)	DDTC113ZKA DDTC123YKA DDTC123JKA DDTC143XKA DDTC143FKA DDTC143ZKA DDTC114YKA DDTC114WKA DDTC124XKA DDTC144VKA DDTC144WKA	V_{IN}	-5 to +10 -5 to +12 -5 to +12 -7 to +20 -6 to +30 -5 to +30 -6 to +40 -10 to +30 -10 to +40 -15 to +40 -10 to +40	V
Output Current	DDTC113ZKA DDTC123YKA DDTC123JKA DDTC143XKA DDTC143FKA DDTC143ZKA DDTC114YKA DDTC114WKA DDTC124XKA DDTC144VKA DDTC144WKA	I_O	100 100 100 100 100 100 70 100 50 30 30	mA
Output Current	All	I_C (Max)	100	mA
Power Dissipation		P_D	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 4)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Note: 4. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

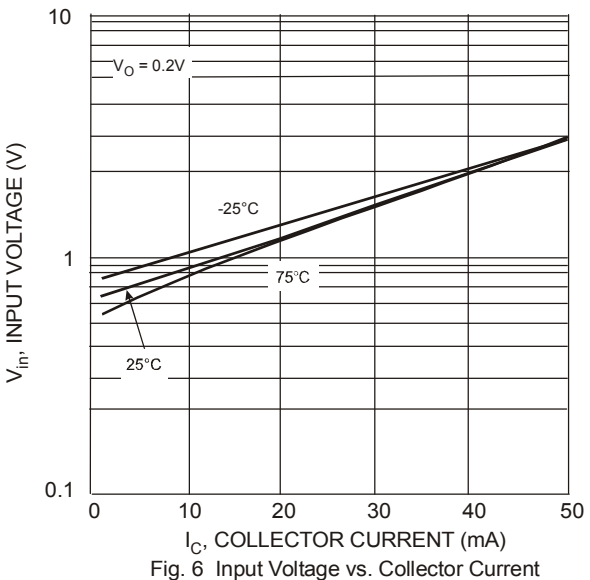
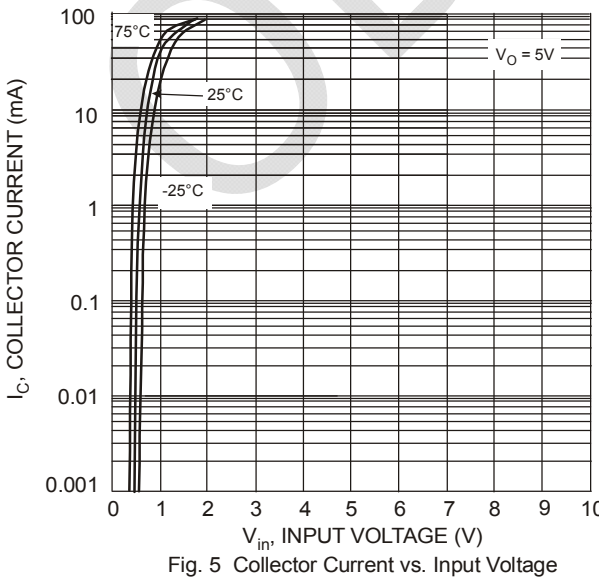
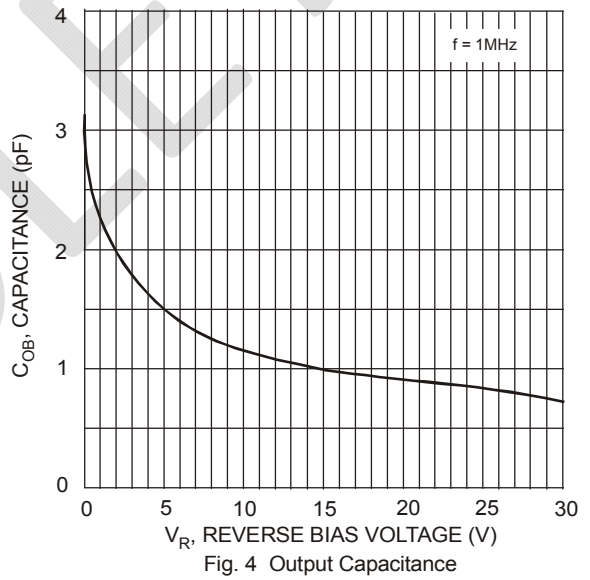
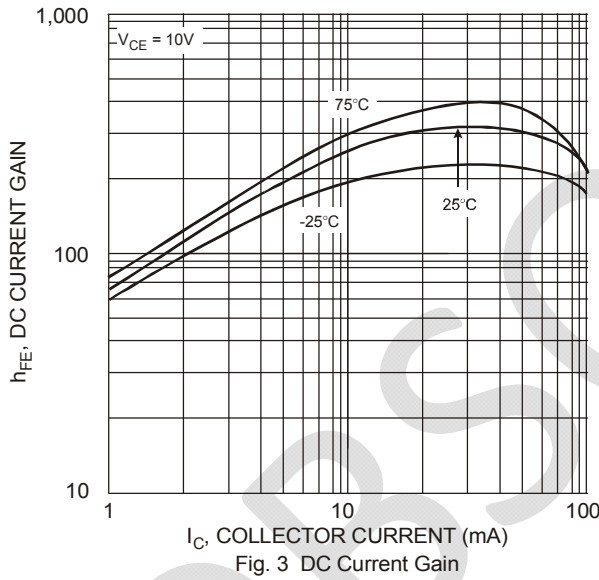
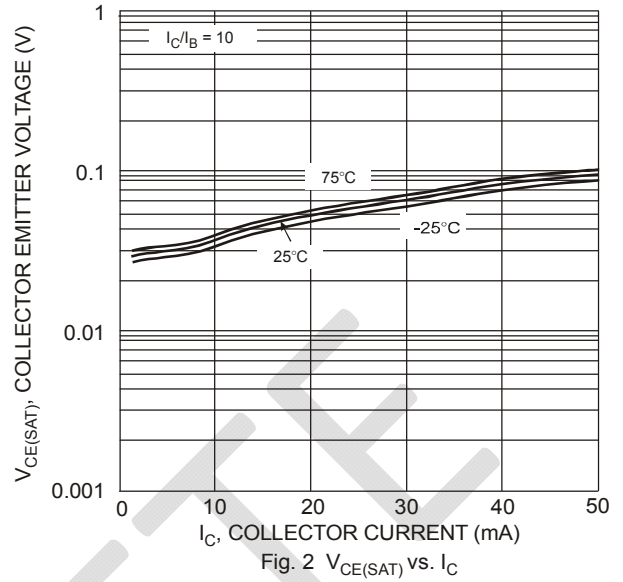
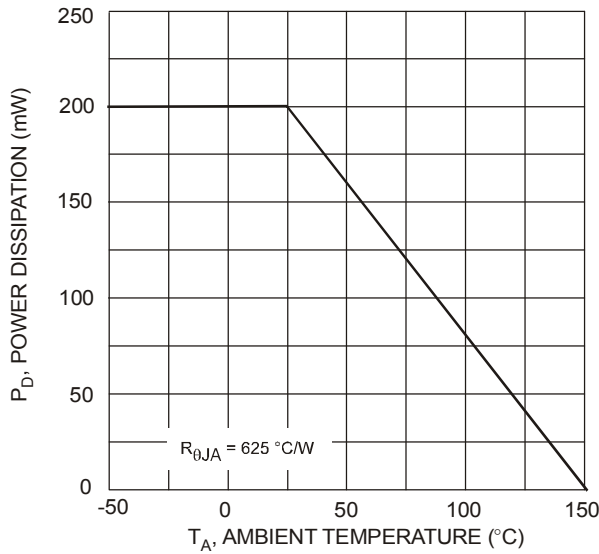
OBSOLETE

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DDTC113ZKA DDTC123YKA DDTC123JKA DDTC143XKA DDTC143FKA DDTC143ZKA DDTC114YKA DDTC114WKA DDTC124XKA DDTC144VKA DDTC144WKA	V _{I(OFF)}	0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.8 0.4 1.0 0.8	—	—	—	V	V _{CC} = 5V, I _O = 100µA
	DDTC113ZKA DDTC123YKA DDTC123JKA DDTC143XKA DDTC143FKA DDTC143ZKA DDTC114YKA DDTC114WKA DDTC124XKA DDTC144VKA DDTC144WKA		V _{I(ON)}					
Output Voltage		V _{O(ON)}	—	0.1	0.3	V	I _O /I _I = 5mA/0.25mA DDTC123JKA I _O /I _I = 5mA/0.25mA DDTC143ZKA I _O /I _I = 5mA/0.25mA DDTC114YKA I _O /I _I = 10mA/0.5mA All Others	
Input Current	DDTC113ZKA DDTC123YKA DDTC123JKA DDTC143XKA DDTC143FKA DDTC143ZKA DDTC114YKA DDTC114WKA DDTC124XKA DDTC144VKA DDTC144WKA	I _I	—	—	7.2 3.8 3.6 1.8 1.8 1.8 0.88 0.88 0.36 0.16 0.16	mA	V _I = 5V	
Output Current		I _{O(OFF)}	—	—	0.5	µA	V _{CC} = 50V, V _I = 0V	
DC Current Gain	DDTC113ZKA DDTC123YKA DDTC123JKA DDTC143XKA DDTC143FKA DDTC143ZKA DDTC114YKA DDTC114WKA DDTC124XKA DDTC144VKA DDTC144WKA	G _I	33 33 80 30 68 80 68 24 68 33 56	—	—	—	V _O = 5V, I _O = 5mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA	
Input Resistor Tolerance		ΔR ₁	-30	—	+30	%	—	
Resistance Ratio Tolerance		ΔR 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 – DDTC123JKA

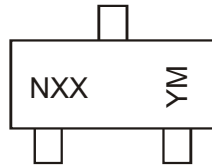


Ordering Information (Note 3 & 5)

Device	Packaging	Shipping
DDTC113ZKA-7-F	SC-59	3000/Tape & Reel
DDTC123YKA-7-F	SC-59	3000/Tape & Reel
DDTC123JKA-7-F	SC-59	3000/Tape & Reel
DDTC143XKA-7-F	SC-59	3000/Tape & Reel
DDTC143FKA-7-F	SC-59	3000/Tape & Reel
DDTC143ZKA-7-F	SC-59	3000/Tape & Reel
DDTC114YKA-7-F	SC-59	3000/Tape & Reel
DDTC114WKA-7-F	SC-59	3000/Tape & Reel
DDTC124XKA-7-F	SC-59	3000/Tape & Reel
DDTC144VKA-7-F	SC-59	3000/Tape & Reel
DDTC144WKA-7-F	SC-59	3000/Tape & Reel

Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



NXX = Product Type Marking Code, See Table on Page 1
 YM = Date Code Marking
 Y = Year ex: V = 2008
 M = Month ex: 9 = September

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	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

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2013, Diodes Incorporated

www.diodes.com