

DDTC (R1 = R2 SERIES) KA

NPN PRE-BIASED SMALL SIGNAL SC-59
SURFACE MOUNT TRANSISTOR

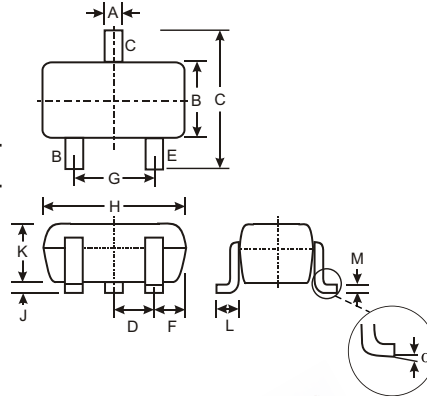
NEW PRODUCT

Features

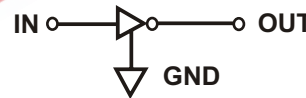
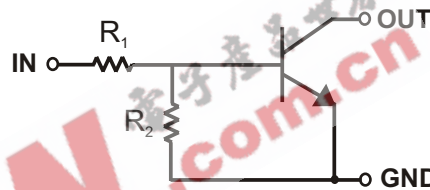
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, R1 = R2

Mechanical Data

- Case: SC-59, Molded Plastic
- Case material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- Weight: 0.008 grams (approx.)
- Ordering Information (See Page 2)



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		



SCHEMATIC DIAGRAM

P/N	R1, R2 (NOM)	MARKING
DDTC123EKA	2.2K Ω	N04
DDTC143EKA	4.7K Ω	N08
DDTC114EKA	10K Ω	N13
DDTC124EKA	22K Ω	N17
DDTC144EKA	47K Ω	N20
DDTC115EKA	100K Ω	N24

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (1)	V _{CC}	50	V
Input Voltage, (2) to (1)	V _{IN}	-10 to +12 -10 to +30 -10 to +40 -10 to +40 -10 to +40 -10 to +40 -10 to +40	V
Output Current	I _O	100 100 50 30 100 20	mA
Output Current	I _C (Max)	100	mA
Power Dissipation	P _d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R _{θJA}	625	°C/W
Operating and Storage and Temperature Range	T _j , T _{STG}	-55 to +150	°C

Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

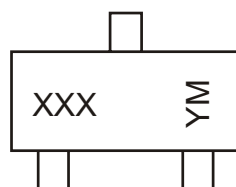
Electrical Characteristics @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage		V _{I(off)}	0.5	1.1	—	V	V _{CC} = 5V, I _O = 100μA
		V _{I(on)}	—	1.9	3		V _O = 0.3V, I _O = 20mA, DDTC123EKA V _O = 0.3V, I _O = 20mA, DDTC143EKA V _O = 0.3V, I _O = 10mA, DDTC114EKA V _O = 0.3V, I _O = 5mA, DDTC124EKA V _O = 0.3V, I _O = 2mA, DDTC144EKA V _O = 0.3V, I _O = 1mA, DDTC115EKA
Output Voltage		V _{O(on)}	—	0.1	0.3	V	I _O /I _I = 10mA/0.5mA, DDTC123EKA I _O /I _I = 10mA/0.5mA, DDTC143EKA I _O /I _I = 10mA/0.5mA, DDTC114EKA I _O /I _I = 10mA/0.5mA, DDTC124EKA I _O /I _I = 10mA/0.5mA, DDTC144EKA I _O /I _I = 5mA/0.25mA, DDTC115EKA
Input Current	DDTC123EKA DDTC143EKA DDTC114EKA DDTC124EKA DDTC144EKA DDTC115EKA	I _I	—	—	3.8 1.8 0.88 0.36 0.18 0.15	mA	V _I = 5V
Output Current		I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	DDTC123EKA DDTC143EKA DDTC114EKA DDTC124EKA DDTC144EKA DDTC115EKA	G _I	20 20 30 56 68 82	—	—	—	V _O = 5V, I _O = 20mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA
Input Resistor (R ₁) Tolerance		DR ₁	-30	—	+30	%	—
Resistance Ratio		R ₂ /R ₁	0.8	1	1.2	—	—
Gain-Bandwidth Product*		f _T	—	250	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

* Transistor - For Reference Only

Ordering Information (Note 2)

Device	Packaging	Shipping
DDTC123EKA-7	SC-59	3000/Tape & Reel
DDTC143EKA-7	SC-59	3000/Tape & Reel
DDTC114EKA-7	SC-59	3000/Tape & Reel
DDTC124EKA-7	SC-59	3000/Tape & Reel
DDTC144EKA-7	SC-59	3000/Tape & Reel
DDTC115EKA-7	SC-59	3000/Tape & Reel

Notes: 2. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.**Marking Information**

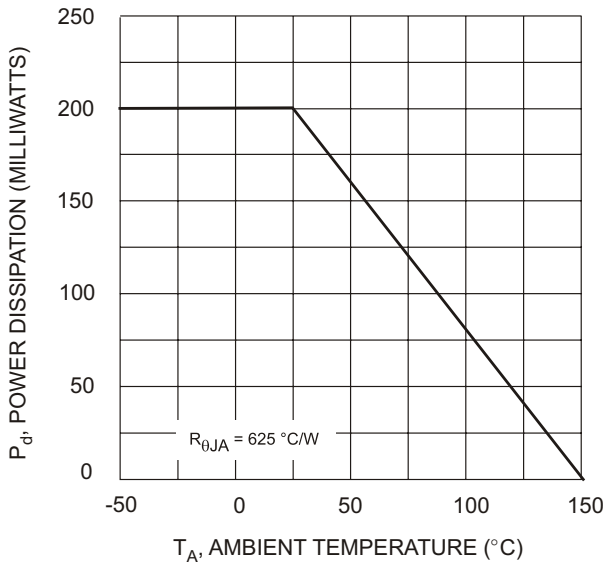
XXX = Product Type Marking Code
See Sheet 1 Diagrams
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

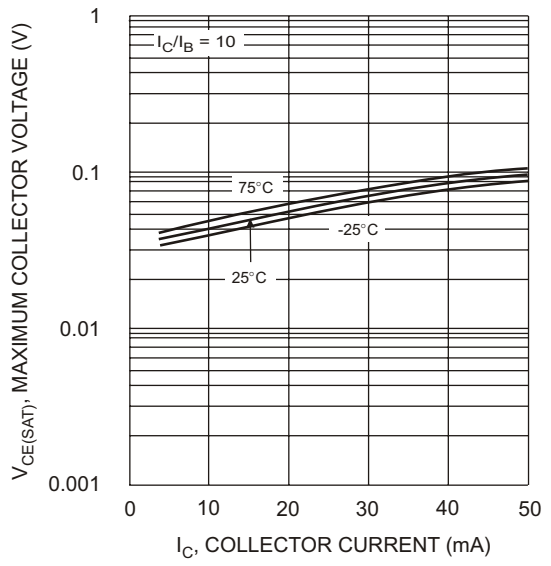
Year	2002	2003	2004	2005	2006	2007	2008	2009
Code	N	P	R	S	T	U	V	W

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

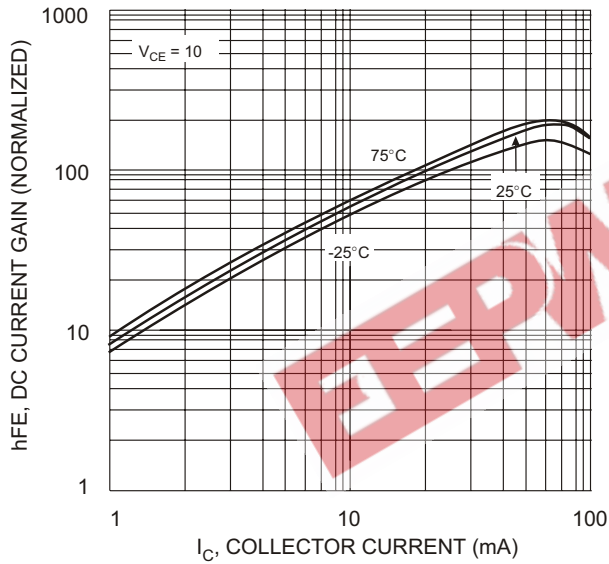
TYPICAL CURVES - DDTC143EKA



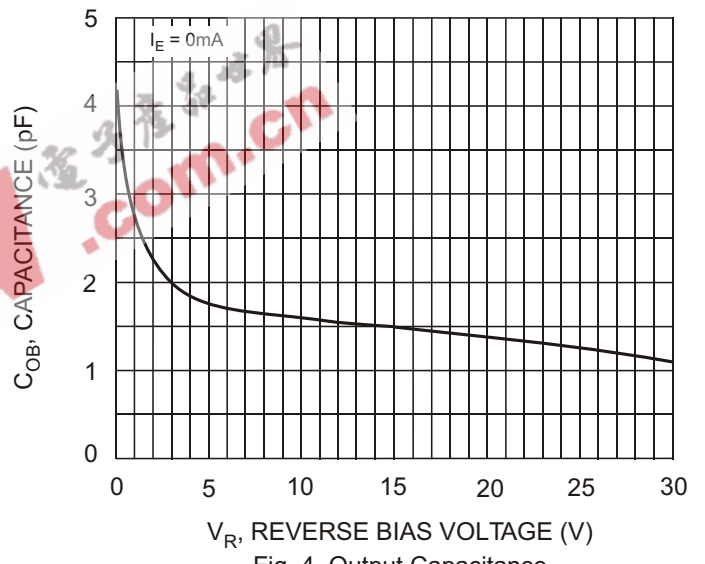
T_A, AMBIENT TEMPERATURE (°C)
Fig. 1 Derating Curve



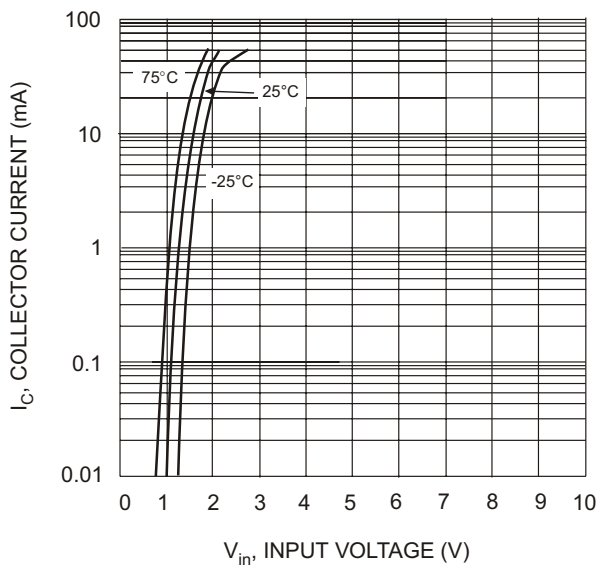
I_C, COLLECTOR CURRENT (mA)
Fig. 2 V_{CE(SAT)} vs. I_C



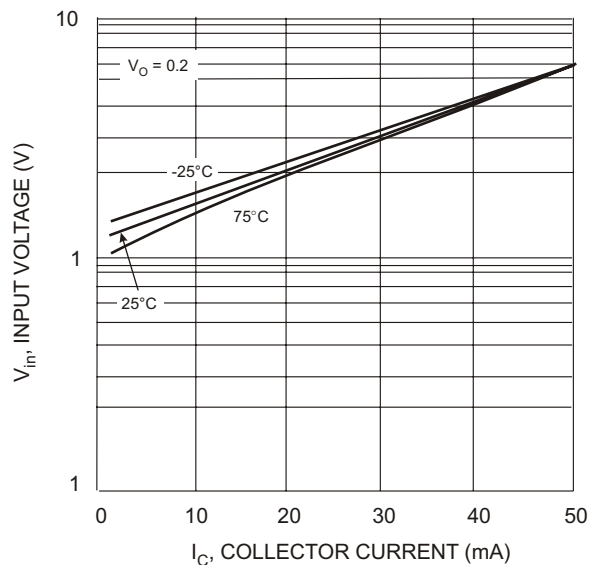
I_C, COLLECTOR CURRENT (mA)
Fig. 3 DC CURRENT GAIN



V_R, REVERSE BIAS VOLTAGE (V)
Fig. 4 Output Capacitance



V_{in}, INPUT VOLTAGE (V)
Fig. 5 Collector Current Vs. Input Voltage



I_C, COLLECTOR CURRENT (mA)
Fig. 6 Input Voltage vs. Collector Current