

Maximum Ratings @T_A = 25°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 _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

Notes: 4. 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	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)}	—	—	3.0 3.0 1.1 2.5 1.3 1.3 1.4 3.0 2.5 5.0 4.0		V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 5mA V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 3mA V _O = 0.3V, I _O = 5mA V _O = 0.3V, I _O = 1mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 2mA V _O = 0.3V, I _O = 2mA
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

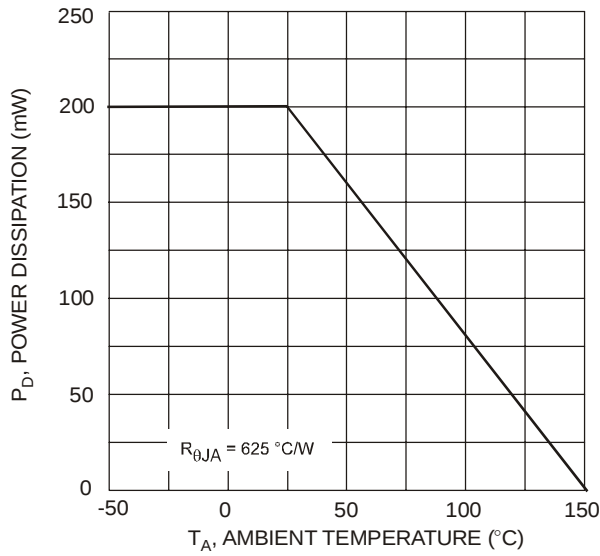


Fig. 1 Derating Curve

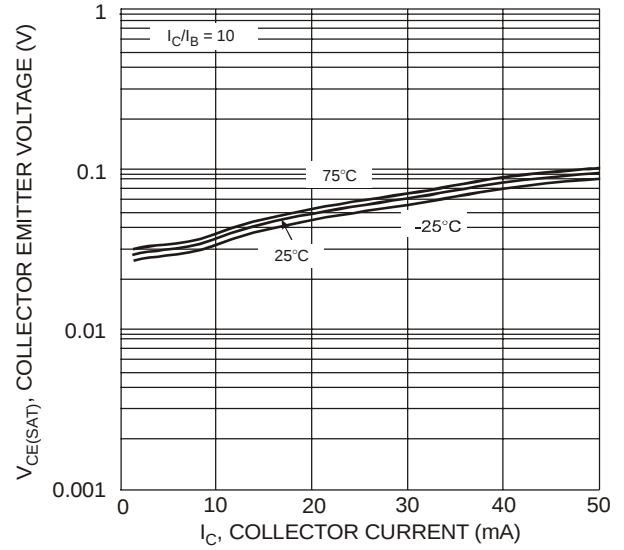


Fig. 2 $V_{CE(SAT)}$ vs. I_C

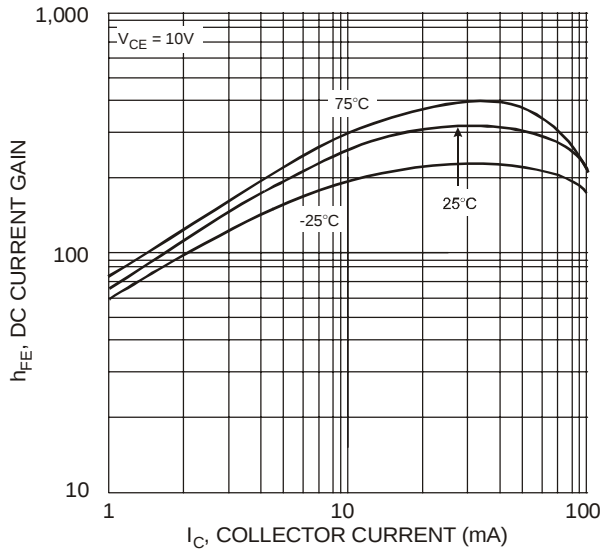


Fig. 3 DC Current Gain

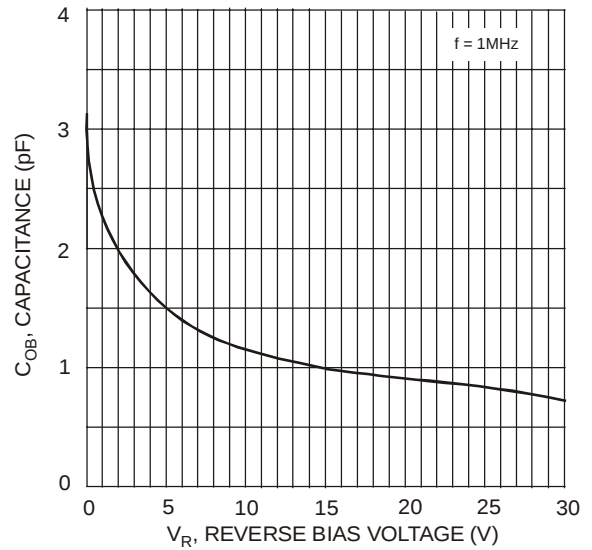


Fig. 4 Output Capacitance

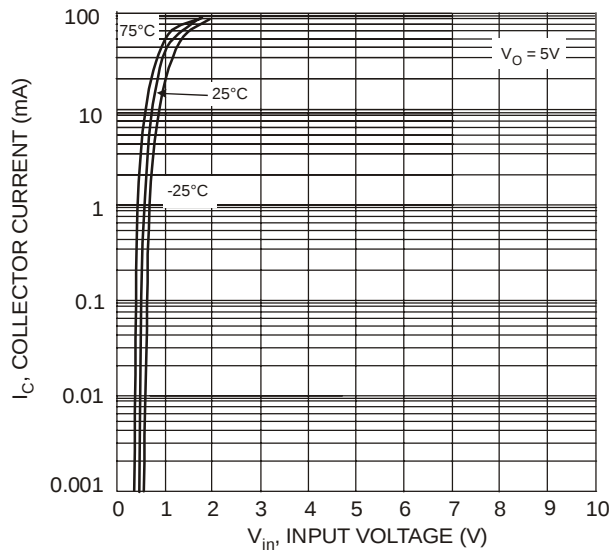


Fig. 5 Collector Current vs. Input Voltage

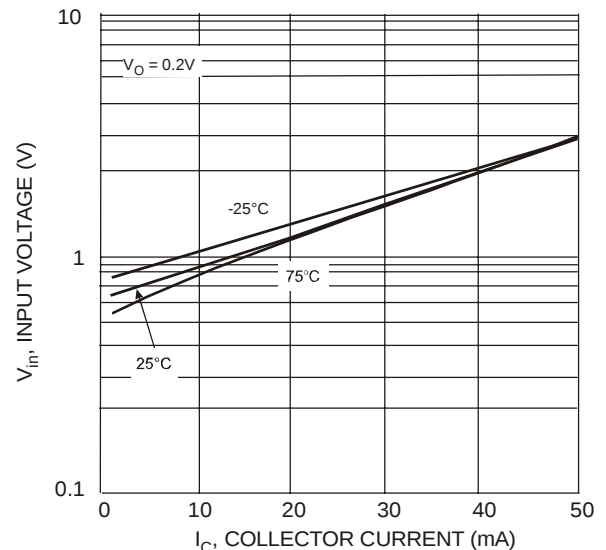


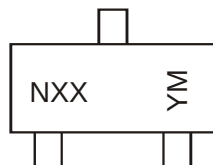
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 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: 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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