

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation	P_d	150	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	$V_{I(off)}$	0.3			V	$V_{CC} = 5V, I_O = 100\mu\text{A}$	
		DDTC113ZE	0.3				
DDTC123YE		0.5					
DDTC123JE		0.3					
DDTC143XE		0.3					
DDTC143FE		0.5					
DDTC143ZE		0.3					
DDTC114YE		0.3					
DDTC114WE		0.8					
DDTC124XE		0.4					
DDTC144VE		1.0					
DDTC144WE	0.8						
Input Voltage	$V_{I(on)}$			3.0	V	$V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 5\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 3\text{mA}$ $V_O = 0.3V, I_O = 5\text{mA}$ $V_O = 0.3V, I_O = 1\text{mA}$ $V_O = 0.3V, I_O = 2\text{mA}$ $V_O = 0.3V, I_O = 2\text{mA}$ $V_O = 0.3V, I_O = 2\text{mA}$ $V_O = 0.3V, I_O = 2\text{mA}$	
		DDTC113ZE					3.0
		DDTC123YE					1.1
		DDTC123JE					2.5
		DDTC143XE					1.3
		DDTC143FE					1.3
		DDTC143ZE					1.4
		DDTC114YE					3.0
		DDTC114WE					2.5
		DDTC124XE					5.0
		DDTC144VE					4.0
DDTC144WE							
Output Voltage	$V_{O(on)}$	—	0.1	0.3	V	$I_O/I_I = 5\text{mA}/0.25\text{mA}$ DDTC123JE $I_O/I_I = 5\text{mA}/0.25\text{mA}$ DDTC143ZE $I_O/I_I = 5\text{mA}/0.25\text{mA}$ DDTC114YE $I_O/I_I = 10\text{mA}/0.5\text{mA}$ All Others	
Input Current	I_I			7.2	mA	$V_I = 5V$	
		DDTC113ZE					3.8
		DDTC123YE					3.6
		DDTC123JE					1.8
		DDTC143XE					1.8
		DDTC143FE					1.8
		DDTC143ZE					0.88
		DDTC114YE					0.88
		DDTC114WE					0.36
		DDTC124XE					0.16
		DDTC144VE					0.16
DDTC144WE							
Output Current	$I_{O(off)}$	—	—	0.5	μA	$V_{CC} = 50V, V_I = 0V$	
DC Current Gain	G_I	33			—	$V_O = 5V, I_O = 5\text{mA}$ $V_O = 5V, I_O = 10\text{mA}$ $V_O = 5V, I_O = 10\text{mA}$ $V_O = 5V, I_O = 10\text{mA}$ $V_O = 5V, I_O = 10\text{mA}$ $V_O = 5V, I_O = 10\text{mA}$ $V_O = 5V, I_O = 5\text{mA}$ $V_O = 5V, I_O = 10\text{mA}$ $V_O = 5V, I_O = 5\text{mA}$ $V_O = 5V, I_O = 5\text{mA}$ $V_O = 5V, I_O = 5\text{mA}$	
		DDTC113ZE	33				
		DDTC123YE	80				
		DDTC123JE	30				
		DDTC143XE	68				
		DDTC143FE	80				
		DDTC143ZE	68				
		DDTC114YE	24				
		DDTC114WE	68				
		DDTC124XE	33				
		DDTC144VE	56				
DDTC144WE							
Input Resistor Tolerance	ΔR_1	-30	—	+30	%	—	
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-20	—	+20	%	—	
Gain-Bandwidth Product*	f_T	—	250	—	MHz	$V_{CE} = 10V, I_E = 5\text{mA}, f = 100\text{MHz}$	

* Transistor – For Reference Only

TYPICAL CURVES – DDTC123JE

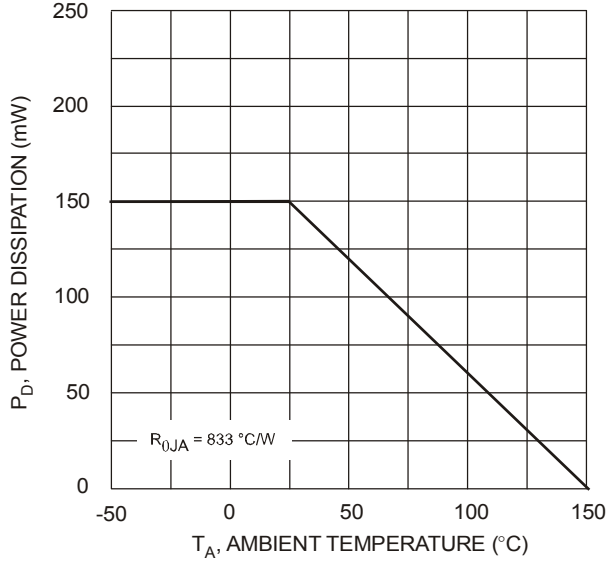


Fig. 1 Derating Curve

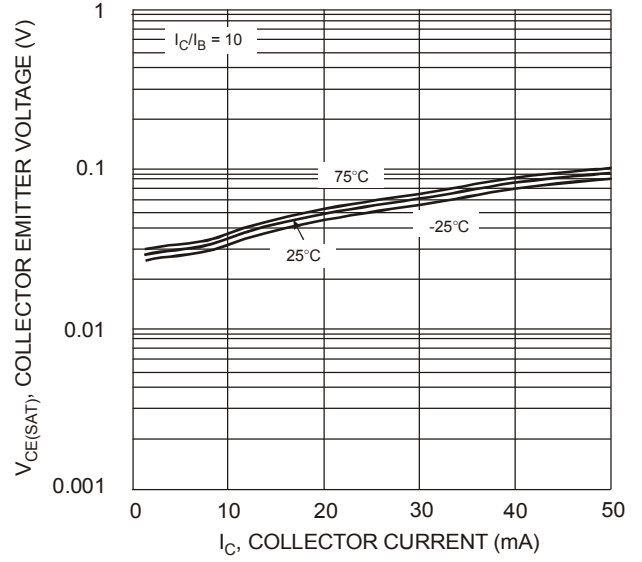


Fig. 2 $V_{CE(SAT)}$ vs. I_C

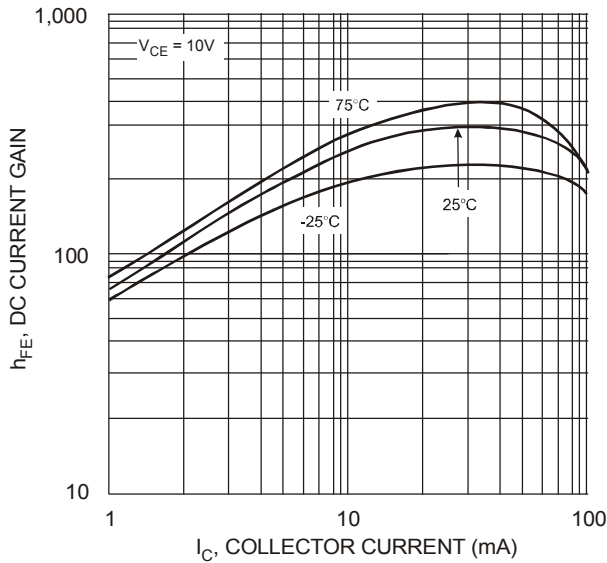


Fig. 3 DC Current Gain

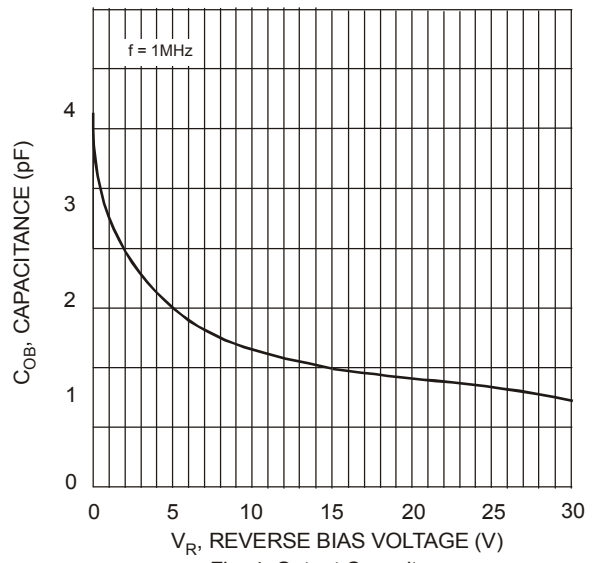


Fig. 4 Output Capacitance

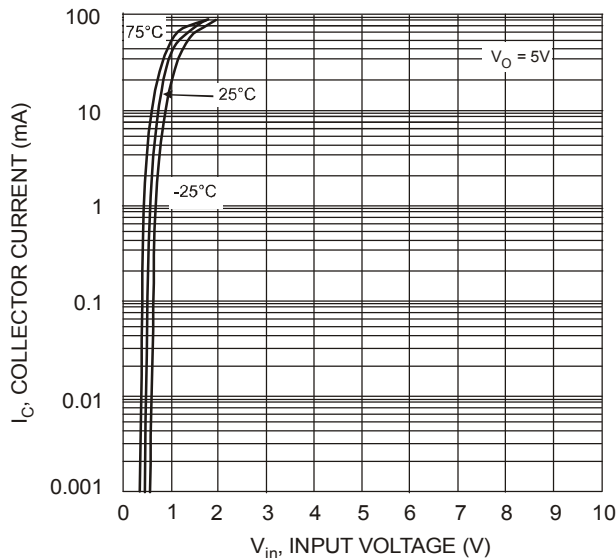


Fig. 5 Collector Current vs. Input Voltage

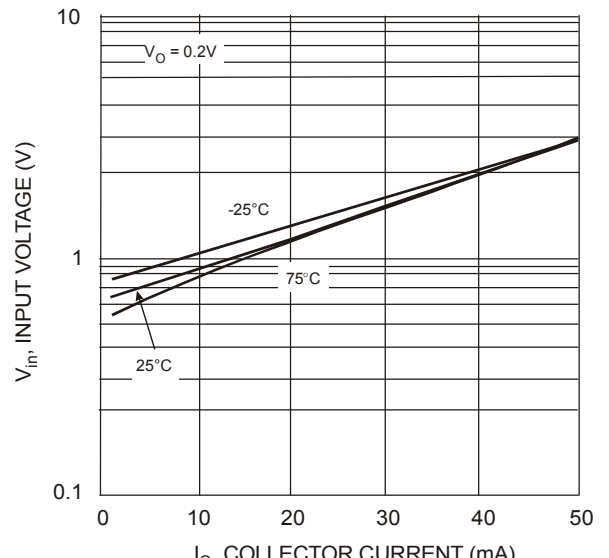


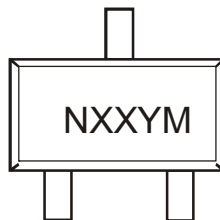
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DDTC113ZE-7-F	SOT-523	3000/Tape & Reel
DDTC123YE-7-F	SOT-523	3000/Tape & Reel
DDTC123JE-7-F	SOT-523	3000/Tape & Reel
DDTC143XE-7-F	SOT-523	3000/Tape & Reel
DDTC143FE-7-F	SOT-523	3000/Tape & Reel
DDTC143ZE-7-F	SOT-523	3000/Tape & Reel
DDTC114YE-7-F	SOT-523	3000/Tape & Reel
DDTC114WE-7-F	SOT-523	3000/Tape & Reel
DDTC124XE-7-F	SOT-523	3000/Tape & Reel
DDTC144VE-7-F	SOT-523	3000/Tape & Reel
DDTC144WE-7-F	SOT-523	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 Page 1, e.g. N02 = DDTC113ZE)

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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