

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>		V <sub>CC</sub>	50	V
Input Voltage <Pin: (1) to (2)>	DDTC123ECA DDTC143ECA DDTC114ECA DDTC124ECA DDTC144ECA DDTC115ECA	V <sub>IN</sub>	-10 to +12 -10 to +30 -10 to +40 -10 to +40 -10 to +40 -10 to +40	V
Output Current	DDTC123ECA DDTC143ECA DDTC114ECA DDTC124ECA DDTC144ECA DDTC115ECA	I <sub>O</sub>	100 100 50 30 30 20	mA
Output Current		I <sub>C</sub> (Max)	100	mA

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 7)	P <sub>D</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 7)	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Note: 7. Mounted on FR4 PC Board with minimum recommended pad layout

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage		V <sub>I(off)</sub>	0.5	1.1	—	V	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA
		V <sub>I(on)</sub>	—	1.9	3		V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA, DDTC123ECA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA, DDTC143ECA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 10mA, DDTC114ECA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 5mA, DDTC124ECA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 2mA, DDTC144ECA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 1mA, DDTC115ECA
Output Voltage		V <sub>O(on)</sub>	—	0.1	0.3	V	I <sub>O</sub> /I <sub>I</sub> = 10mA/0.5mA, DDTC123ECA I <sub>O</sub> /I <sub>I</sub> = 10mA/0.5mA, DDTC143ECA I <sub>O</sub> /I <sub>I</sub> = 10mA/0.5mA, DDTC114ECA I <sub>O</sub> /I <sub>I</sub> = 10mA/0.5mA, DDTC124ECA I <sub>O</sub> /I <sub>I</sub> = 10mA/0.5mA, DDTC144ECA I <sub>O</sub> /I <sub>I</sub> = 5mA/0.25mA, DDTC115ECA
Input Current	DDTC123ECA DDTC143ECA DDTC114ECA DDTC124ECA DDTC144ECA DDTC115ECA	I <sub>I</sub>	—	—	3.8 1.8 0.88 0.36 0.18 0.15	mA	V <sub>I</sub> = 5V
Output Current		I <sub>O(off)</sub>	—	—	0.5	μA	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V
DC Current Gain	DDTC123ECA DDTC143ECA DDTC114ECA DDTC114ECAQ DDTC124ECA DDTC144ECA DDTC144ECAQ DDTC115ECA	G <sub>I</sub>	20 20 30 35 56 68 80 82	—	—	—	V <sub>O</sub> = 5V, I <sub>O</sub> = 20mA V <sub>O</sub> = 5V, I <sub>O</sub> = 10mA V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA
Input Resistor Tolerance		ΔR <sub>1</sub>	-30	—	+30	%	—
Resistance Ratio Tolerance		ΔR <sub>2</sub> /R <sub>1</sub>	0.8	1	1.2	%	—
Gain-Bandwidth Product (Note 8)		f <sub>T</sub>	—	250	—	MHz	V <sub>CE</sub> = 10V, I <sub>E</sub> = 5mA, f = 100MHz

Note: 8. Transistor - For Reference Only

**Typical Characteristics – DDTC143ECA** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

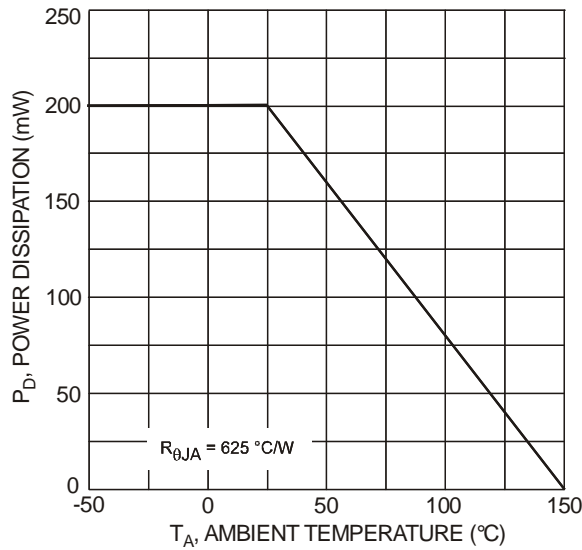


Fig. 1 Power Dissipation vs. Ambient Temperature

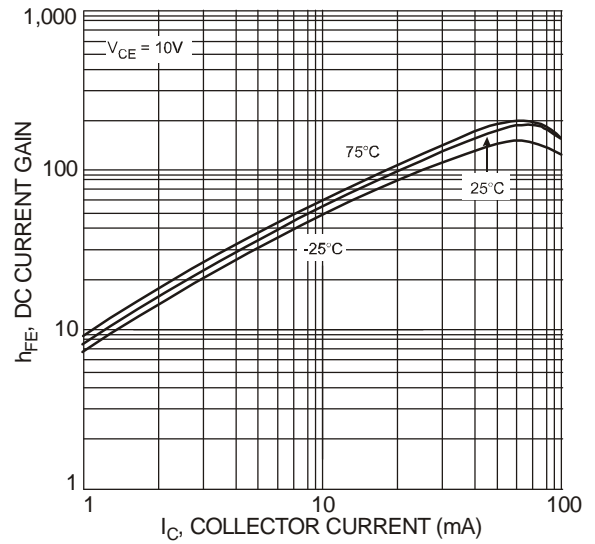


Fig. 2 Typical DC Current Gain vs. Collector Current

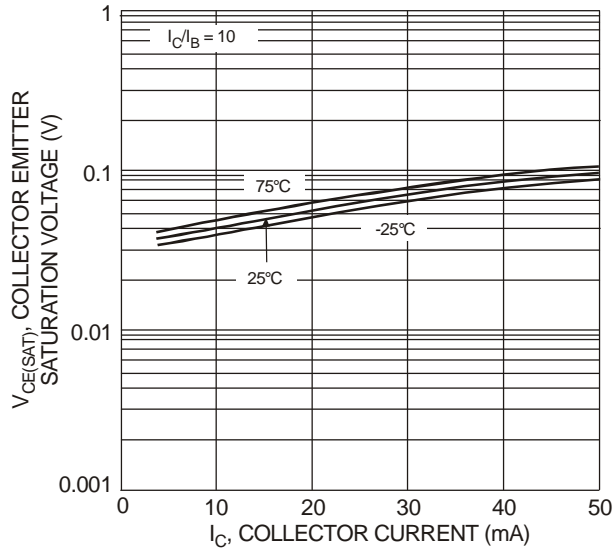


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

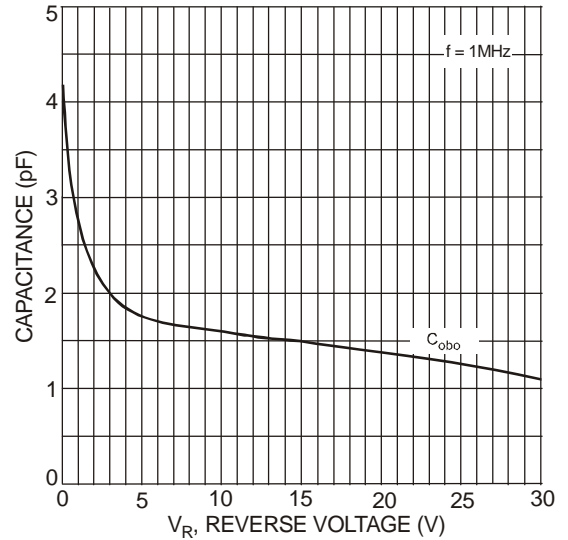


Fig. 4 Typical Capacitance Characteristics

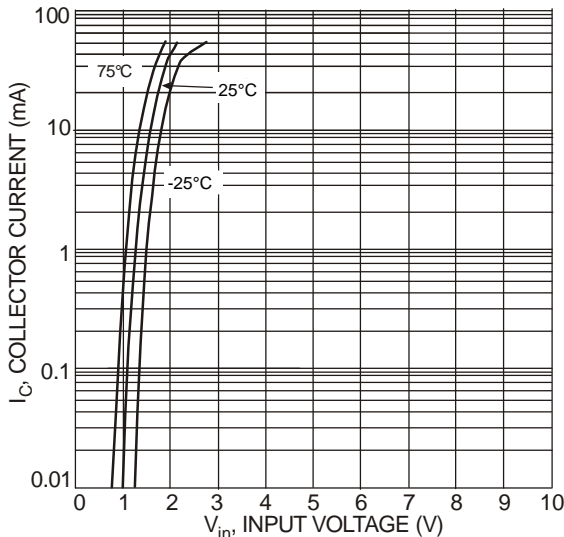


Fig. 5 Collector Current vs. Input Voltage

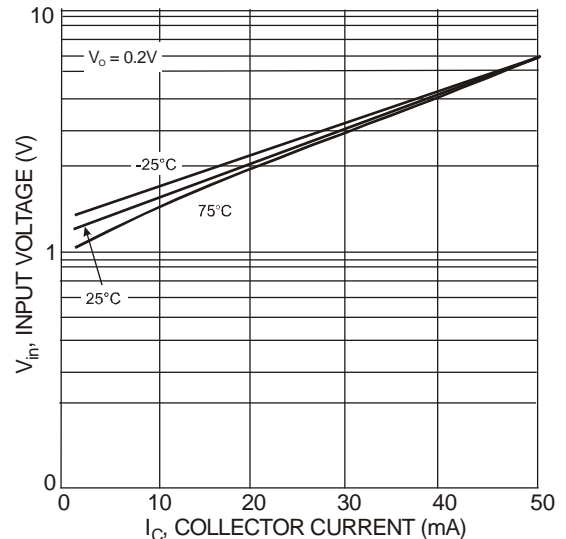
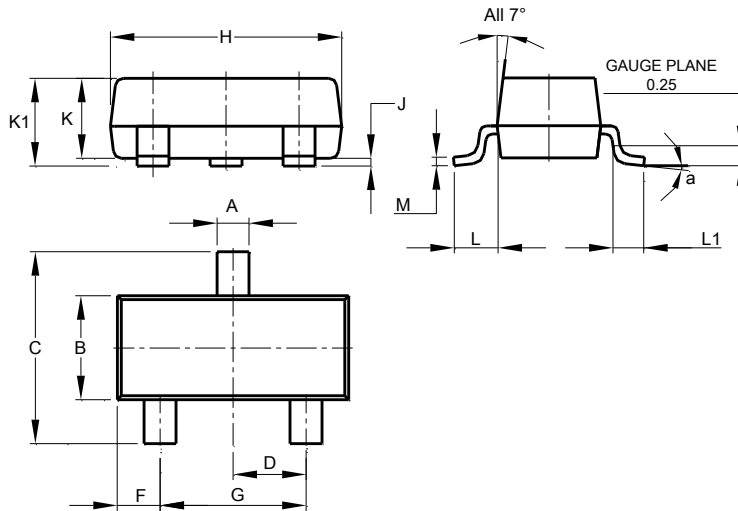


Fig. 6 Input Voltage vs. Collector Current

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

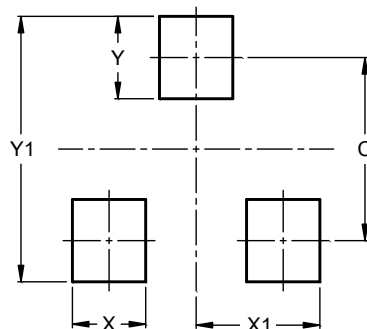


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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