Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	P/N	Symbol	Value	Unit
Supply Voltage		V_{CC}	50	V
Input Voltage	DDTC123JLP	V_{IN}	-5 to +12	V
	DDTC143ZLP		-5 to +30	
	DDTC114YLP		-5 to +40	
Output Voltage	DDTC123JLP	I_O	100	mA
	DDTC143ZLP		100	
	DDTC114YLP		70	
Maximum Collector Current		$I_{C(MAX)}$	100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	250	mW
Power Deration above +25°C	P_{der}	2	mW/°C
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	500	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	P/N	Symbol	Min	Typ	Max	Unit	Test Condition
Off Characteristics (Note 6)							
Collector-Base Breakdown Voltage		BV_{CBO}	50	—	—	V	I_C = 50µA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 7)		BV_{CEO}	50	—	—	V	I_C = 2mA, I_B = 0
Emitter-Base Breakdown Voltage (Note 7)		BV_{EBO}	4.5	—	—	V	I_E = 50µA, I_C = 0
Collector Cutoff Current (Note 7)		I_{CEX}	—	—	0.5	µA	V_{CE} = 50V, $V_{EB(OFF)}$ = 3.0V
Base Cutoff Current (I_{BEX})		I_{BL}	—	—	0.5	µA	V_{CE} = 50V, $V_{EB(OFF)}$ = 3.0V
Collector-Base Cut Off Current		I_{CBO}	—	—	0.5	µA	V_{CB} = 50V, I_E = 0
Collector-Emitter Cut Off Current, $I_{O(OFF)}$		I_{CEO}	—	—	0.5	µA	V_{CE} = 50V, I_B = 0
Emitter-Base Cut Off Current		I_{EBO}	—	—	0.5	mA	V_{EB} = 5V, I_C = 0
Input-Off Voltage		$V_{I(OFF)}$	0.5	—	—	V	V_{CE} = 5V, I_C = 100µA
On Characteristics (Note 6)							
Base-Emitter Turn-On Voltage (Note 7)	DDTC123JLP	$V_{BE(ON)}$	—	—	0.85	V	V_{CE} = 5V, I_C = 2mA
	DDTC143ZLP		—	—	0.85		
	DDTC114YLP		—	—	0.95		
Base-Emitter Saturation Voltage (Note 7)	DDTC123JLP	$V_{BE(SAT)}$	—	—	0.98	V	I_C = 10mA, I_B = 1mA
	DDTC143ZLP		—	—	0.998		
	DDTC114YLP		—	—	0.98		
Input-On Voltage		$V_{I(ON)}$	—	—	1.1	V	V_O = 0.3V, I_C = 5mA
Input Current	DDTC123JLP	I_I	—	—	7.2	mA	V_I = 5V
	DDTC143ZLP		—	—	1.5		
	DDTC114YLP		—	—	7.2		
DC Current Gain		h_{FE}	50	—	—	—	V_{CE} = 5V, I_C = 1mA
			70	—	—	—	V_{CE} = 5V, I_C = 2mA
			125	—	—	—	V_{CE} = 5V, I_C = 5mA
			150	—	—	—	V_{CE} = 5V, I_C = 10mA
			180	—	—	—	V_{CE} = 5V, I_C = 50mA
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	—	0.15	V	I_C = 10mA, I_B = 1mA
			—	—	0.2	V	I_C = 50mA, I_B = 5mA
Output On Voltage (Same as $V_{CE(SAT)}$)		$V_{O(ON)}$	—	—	0.3		I_J = 2.5mA, I_O = 50mA
Input Resistor +/-30%		ΔR1	-30	—	30	%	—
Resistor Ratio		Δ (R2/R1)	-20	—	-20	%	—
Small Signal Characteristics							
Transition Frequency (gain bandwidth product)		f_T	—	250	—	MHz	V_{CE} = 10V, I_E = 5mA, f = 100MHz

Notes:
5. For the device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition. The entire exposed collector pad is attached to the heatsink.
6. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.
7. Guaranteed by design.

Derating Curve (@T_A = +25°C, unless otherwise specified.)

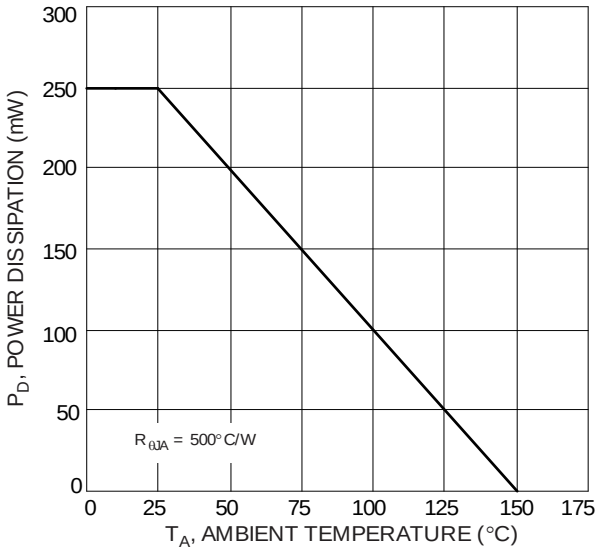


Fig. 1 Power Dissipation vs. Ambient temperature (Note 5)

Typical Electrical Characteristics of DDTC123JLP (@T_A = +25°C, unless otherwise specified.)

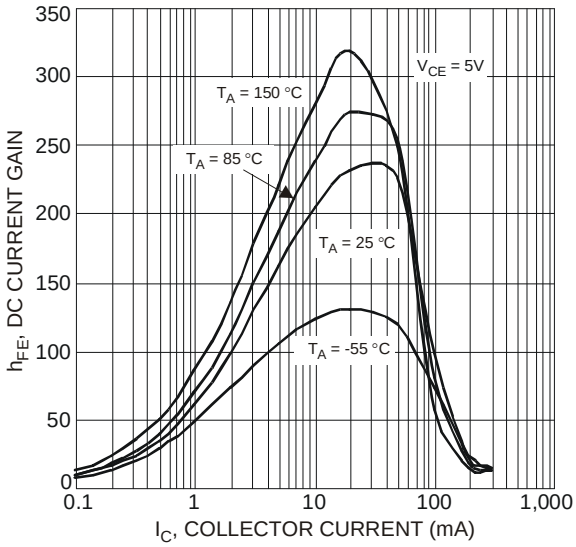


Fig. 2 Typical DC Current Gain vs. Collector Current

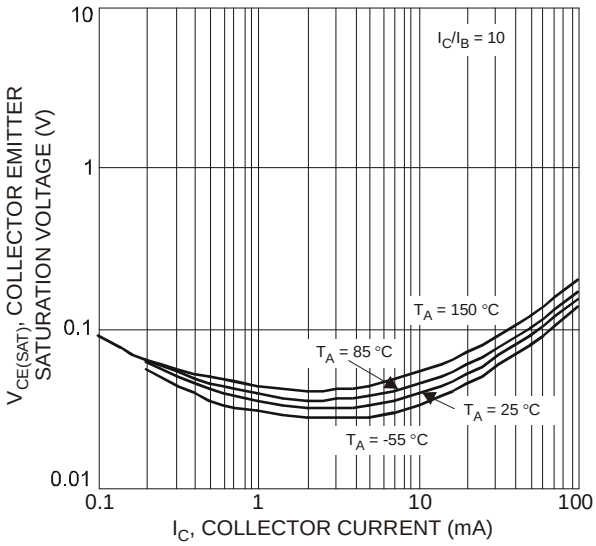


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

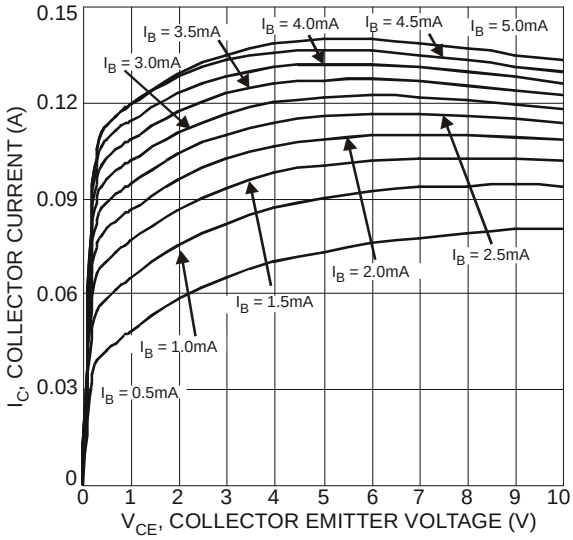


Fig. 4 Typical Collector Current vs. Collector Emitter Voltage

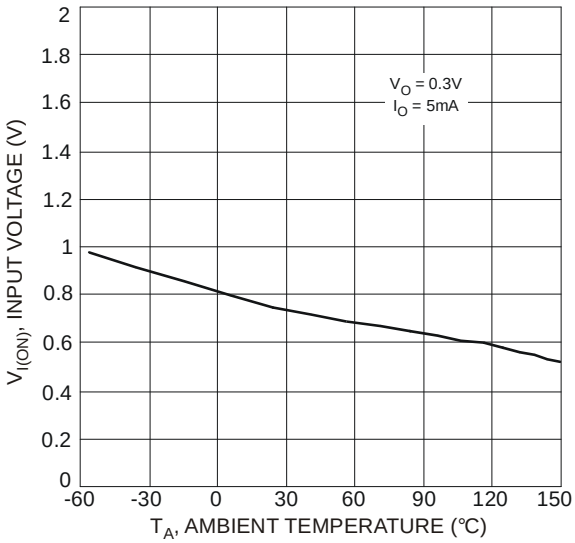


Fig. 5 Typical Input Voltage vs. Ambient Temperature

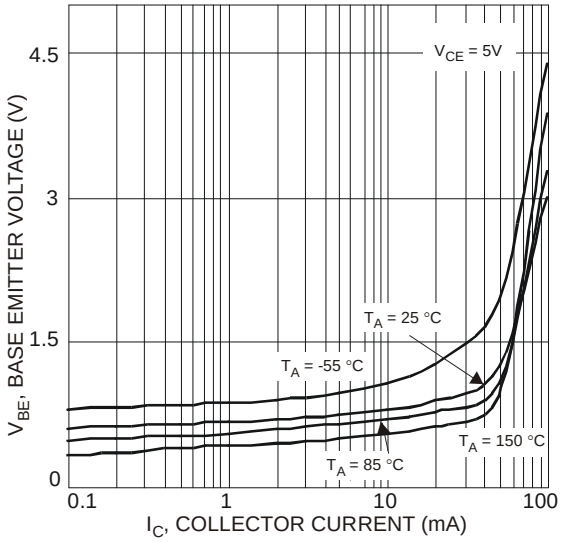


Fig. 6 Typical Base Emitter Voltage vs. Collector Current

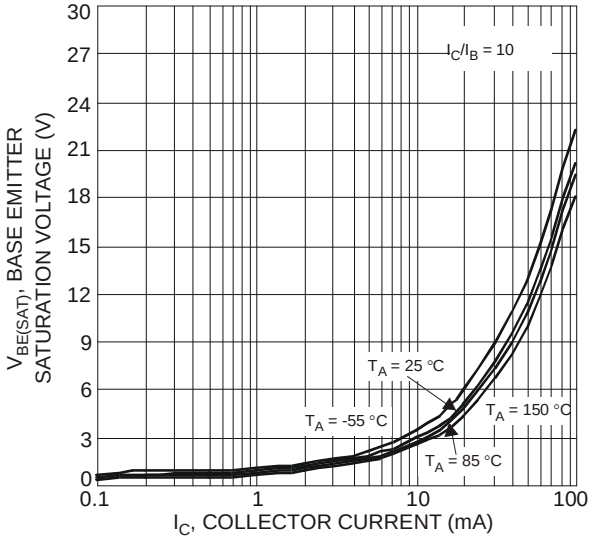


Fig. 7 Typical Base Emitter Saturation Voltage vs. Collector Current

Typical Electrical Characteristics of DDTC143ZLP (@T_A = +25°C, unless otherwise specified.)

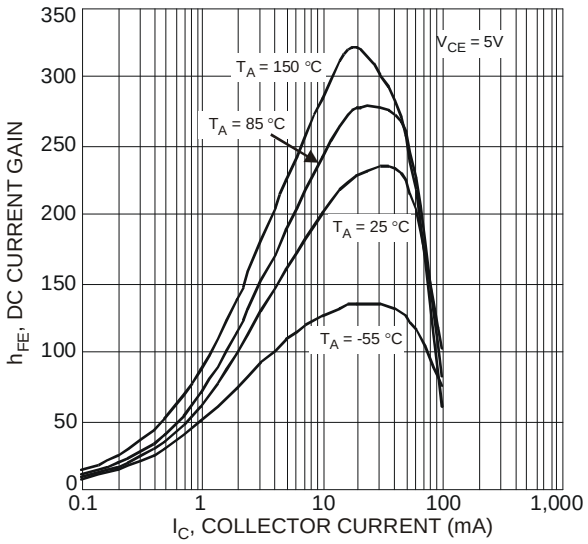


Fig. 8 Typical DC Current Gain vs. Collector Current

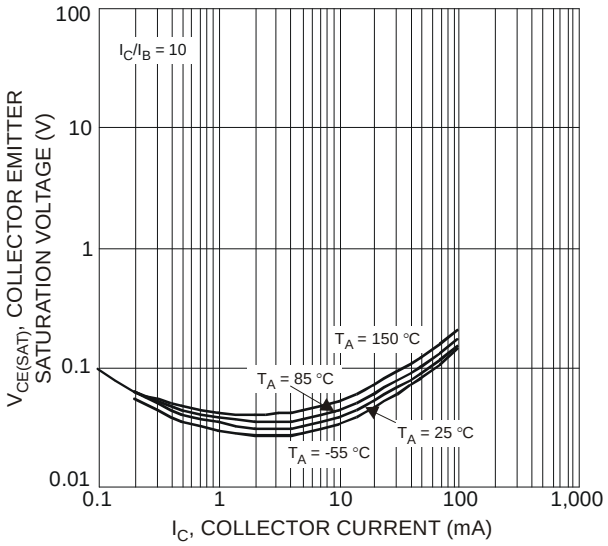


Fig. 9 Typical Collector Emitter Saturation Voltage vs. Collector Current

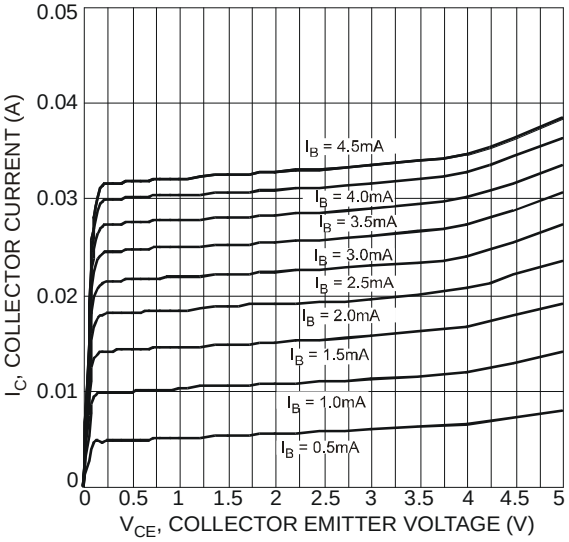


Fig. 10 Typical Collector Current vs. Collector Emitter Voltage

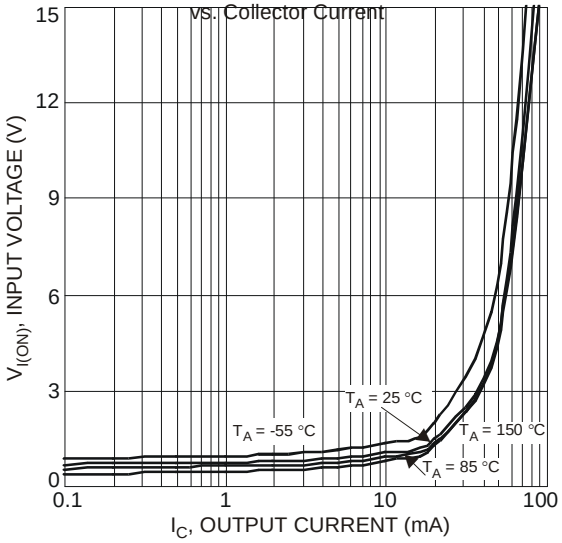


Fig. 11 Typical Input Voltage vs. Output Current

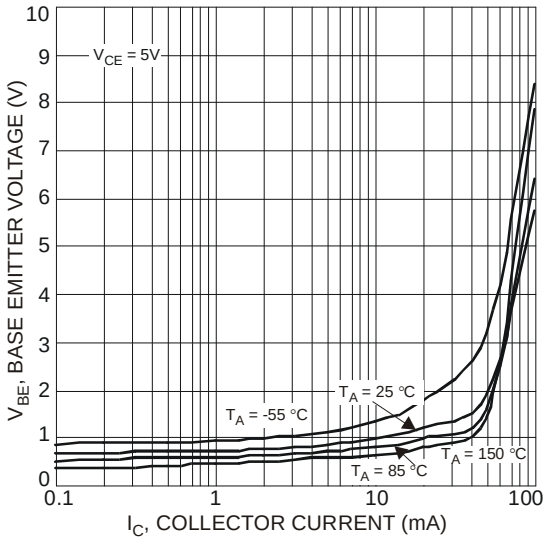


Fig. 12 Typical Base Emitter Voltage vs. Collector Current

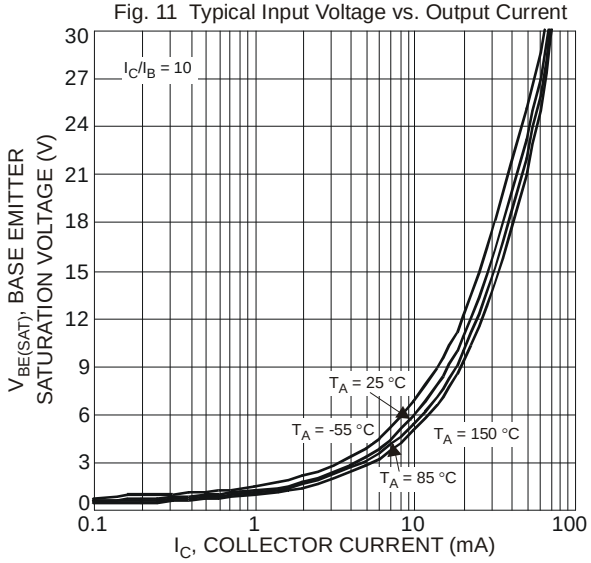


Fig. 13 Typical Base Emitter Saturation Voltage vs. Collector Current

Typical Electrical Characteristics of DDTC114YLP (@T_A = +25°C, unless otherwise specified.)

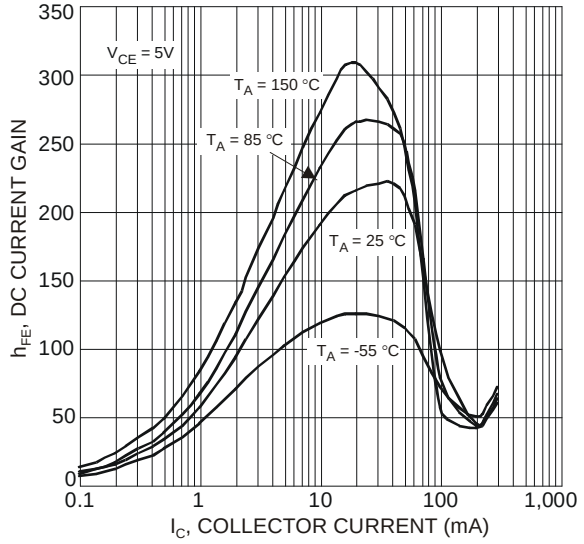


Fig. 14 Typical DC Current Gain vs. Collector Current

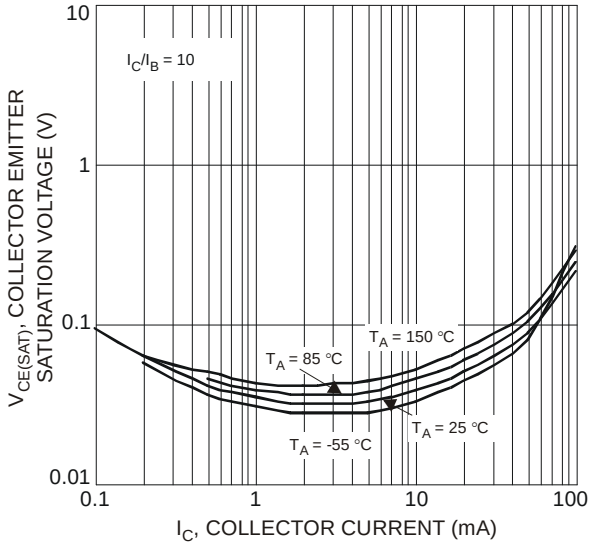


Fig. 15 Typical Collector Emitter Saturation Voltage vs. Collector Current

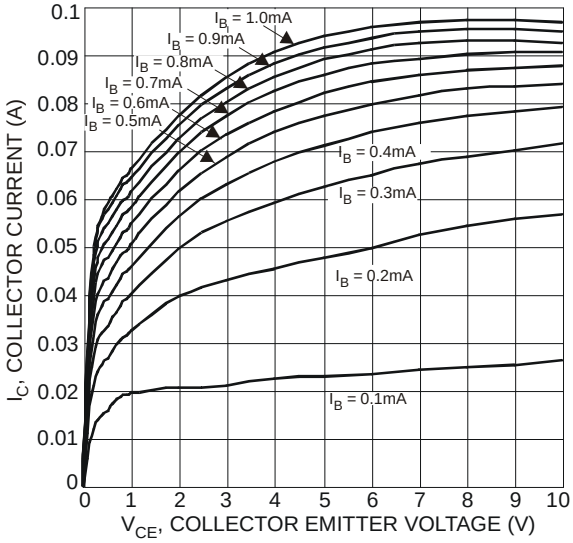


Fig. 16 Typical Collector Current vs. Collector Emitter Voltage

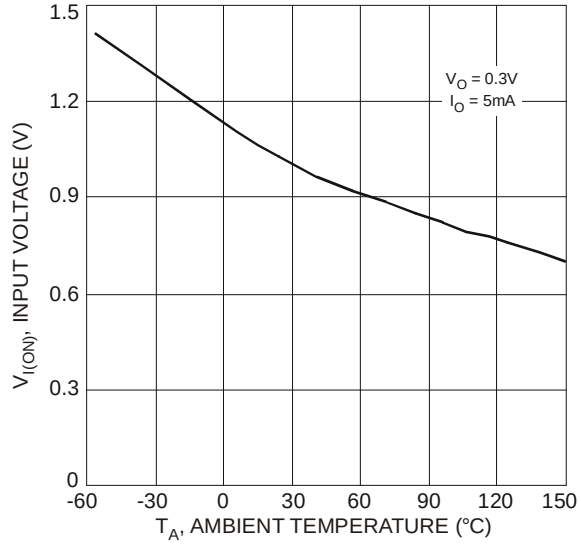


Fig. 17 Typical Input Voltage vs. Ambient Temperature

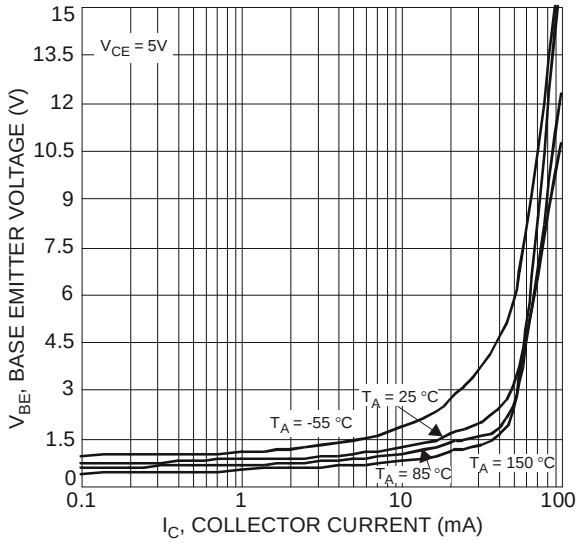


Fig. 18 Typical Base Emitter Voltage vs. Collector Current

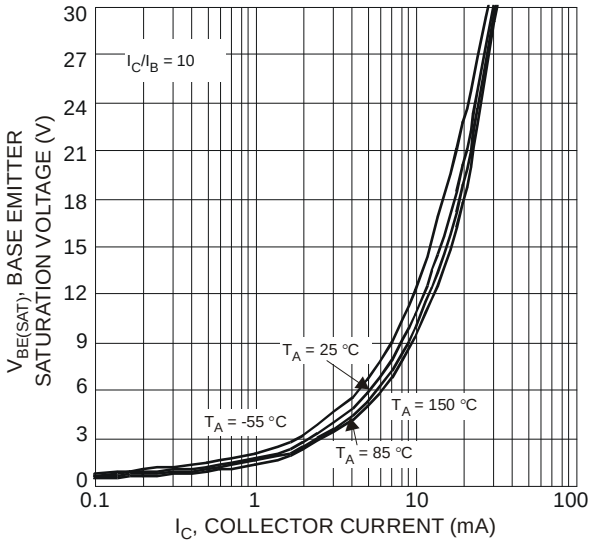
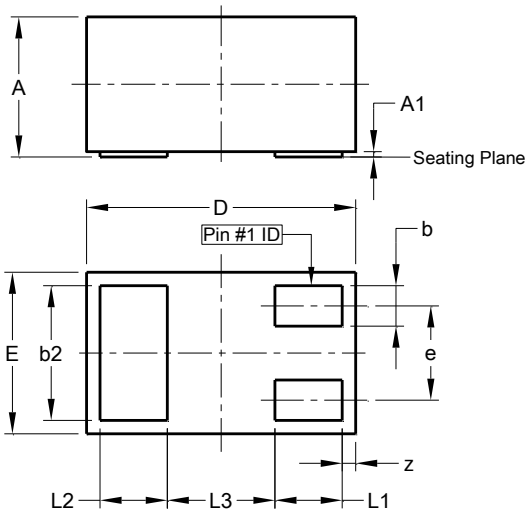


Fig. 19 Typical Base Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions

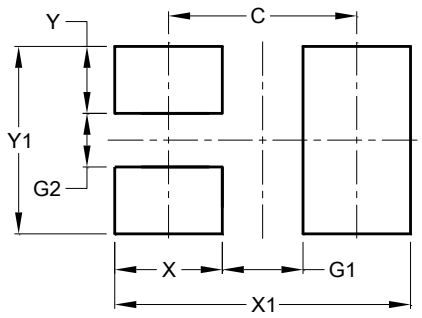
Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.



X1-DFN1006-3			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
C	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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