优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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企业微信二维码　　企业QQ二维码

Product Summary

Part Number	R1 (NOM)	R2 (NOM)	Marking
NK-DDTC123JLP	2.2kΩ	47kΩ	N0
NK-DDTC143ZLP	4.7kΩ	47kΩ	N1
NK-DDTC114YLP	10kΩ	47kΩ	N2

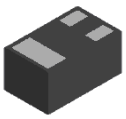
Features

- Epitaxial Planar Die Construction
- Ultra-Small Leadless Surface Mount Package
- Ideally Suited for Automated Assembly Processes

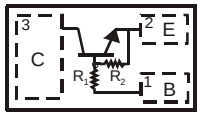
Mechanical Data

- Case: X1-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Marking Information
- Terminals: Finish — NiPdAu Solderable per MIL-STD-202, Method 208 e4
- Weight: 0.0009 grams (Approximate)

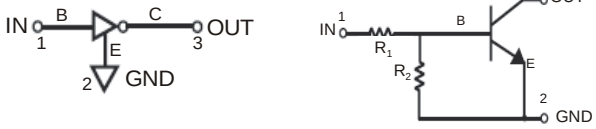
X1-DFN1006-3



Bottom View



Package Pin Out Configuration



Device Schematics

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

Characteristic	P/N	Symbol	Value	Unit
Supply Voltage		V_{CC}	50	V
Input Voltage	NK-DDTC123JLP	V_{IN}	-5 to +12	V
	NK-DDTC143ZLP		-5 to +30	
	NK-DDTC114YLP		-5 to +40	
Output Voltage	NK-DDTC123JLP	I_O	100	mA
	NK-DDTC143ZLP		100	
	NK-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)	NK-DDTC123JLP	$V_{BE(ON)}$	—	—	0.85	V	V_{CE} = 5V, I_C = 2mA
	NK-DDTC143ZLPN		—	—	0.85		
	NK-DDTC114YLP		—	—	0.95		
Base-Emitter Saturation Voltage (Note 7)	NK-DDTC123JLP	$V_{BE(SAT)}$	—	—	0.98	V	I_C = 10mA, I_B = 1mA
	NK-DDTC143ZLP		—	—	0.998		
	NK-DDTC114YLP		—	—	0.98		
Input-On Voltage		$V_{I(ON)}$	—	—	1.1	V	V_O = 0.3V, I_C = 5mA
Input Current	NK-DDTC123JLP	I_I	—	—	7.2	mA	V_I = 5V
	NK-DDTC143ZLP		—	—	1.5		
	NK-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.)

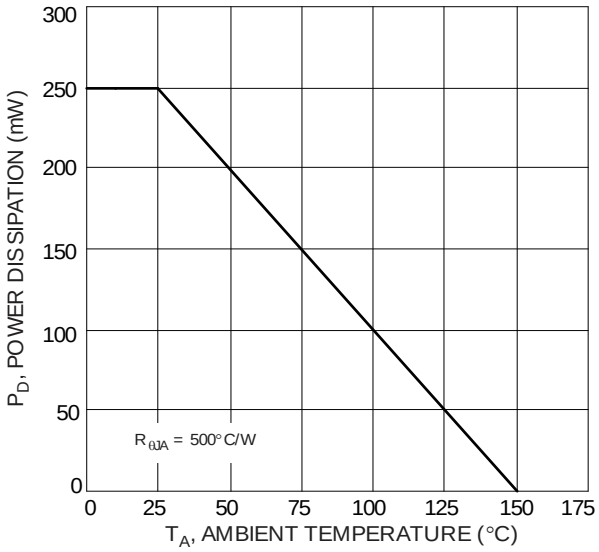


Fig. 1 Power Dissipation vs. Ambient temperature (Note 5)

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

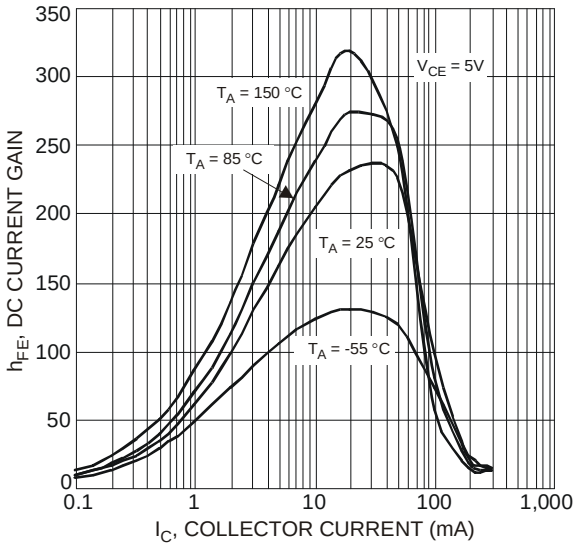


Fig. 2 Typical DC Current Gain vs. Collector Current

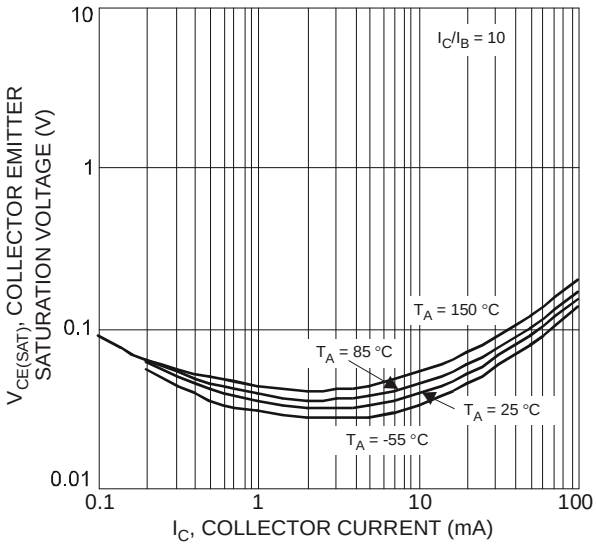


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

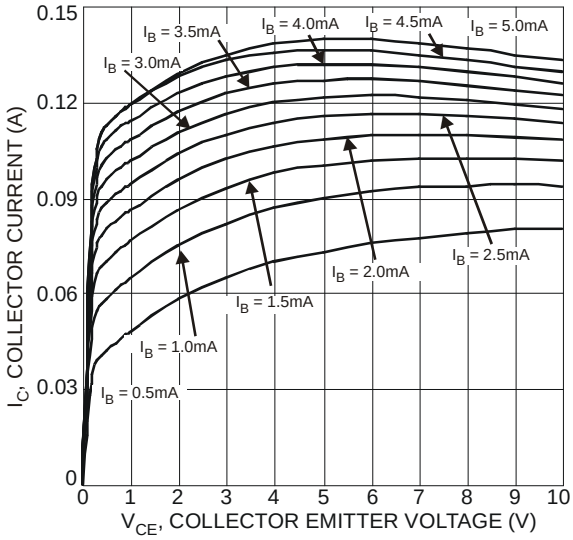


Fig. 4 Typical Collector Current vs. Collector Emitter Voltage

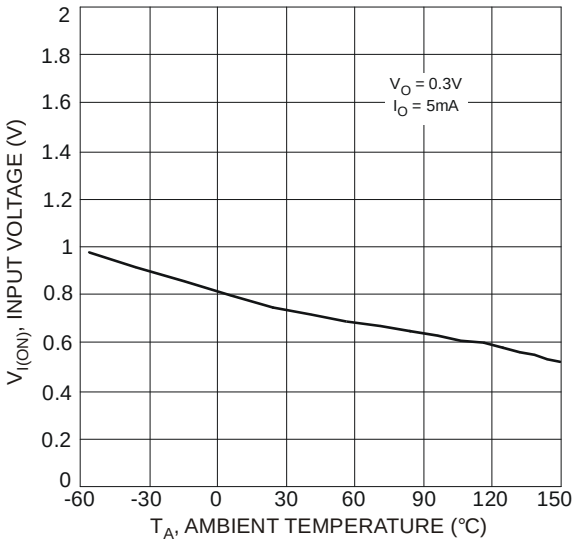


Fig. 5 Typical Input Voltage vs. Ambient Temperature

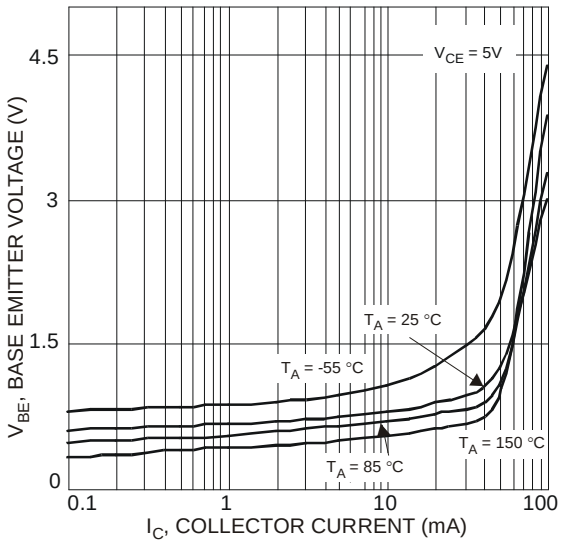


Fig. 6 Typical Base Emitter Voltage vs. Collector Current

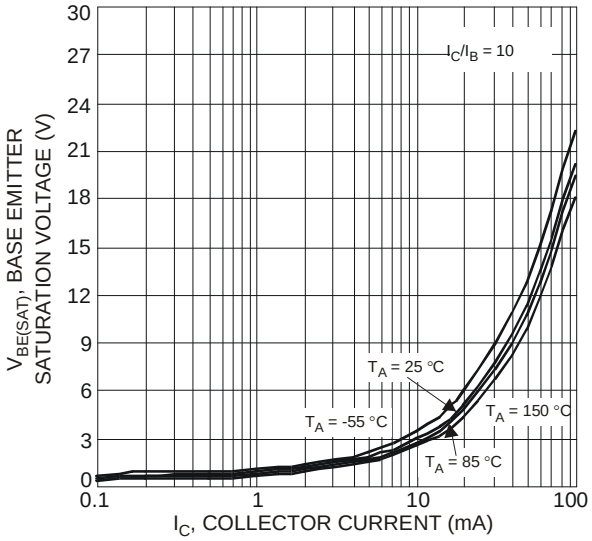


Fig. 7 Typical Base Emitter Saturation Voltage vs. Collector Current

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

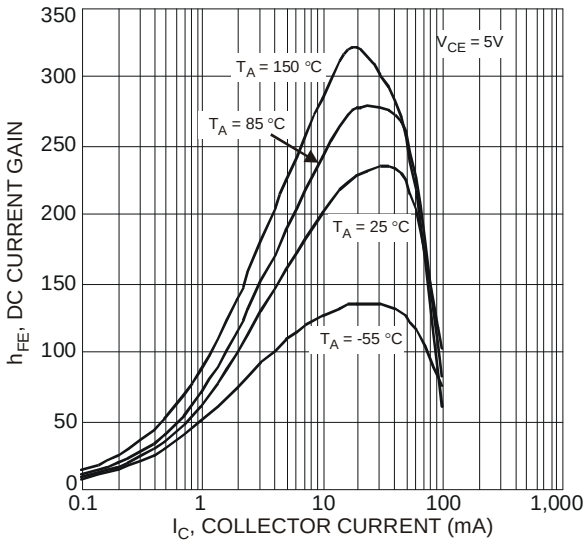


Fig. 8 Typical DC Current Gain vs. Collector Current

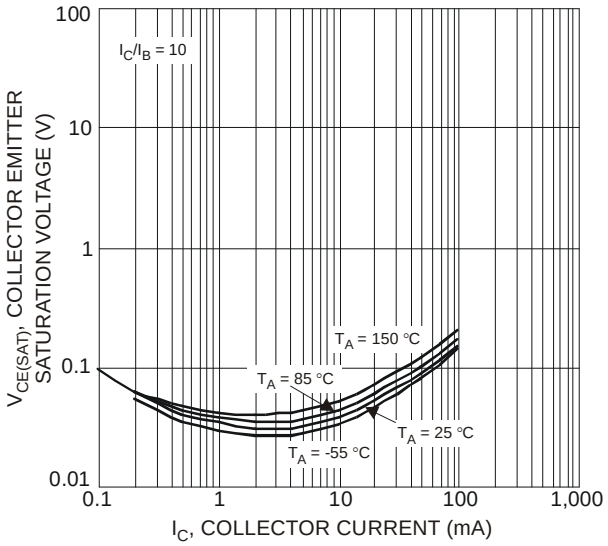


Fig. 9 Typical Collector Emitter Saturation Voltage vs. Collector Current

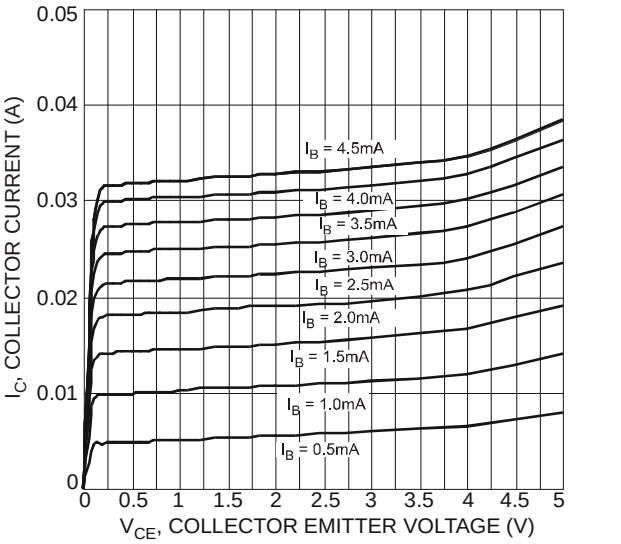


Fig. 10 Typical Collector Current vs. Collector Emitter Voltage

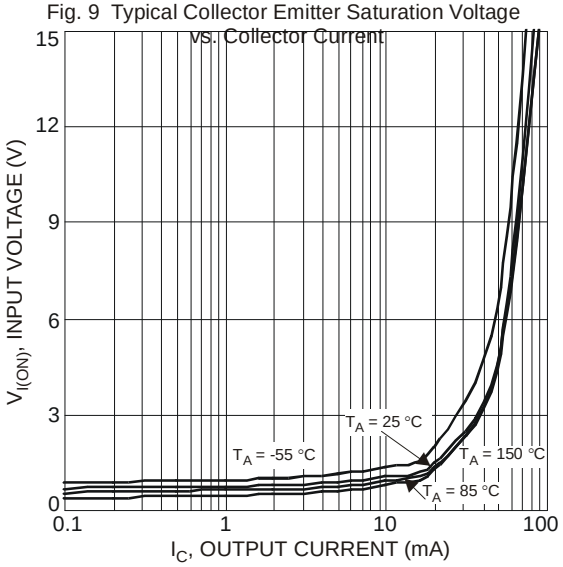


Fig. 11 Typical Input Voltage vs. Output Current

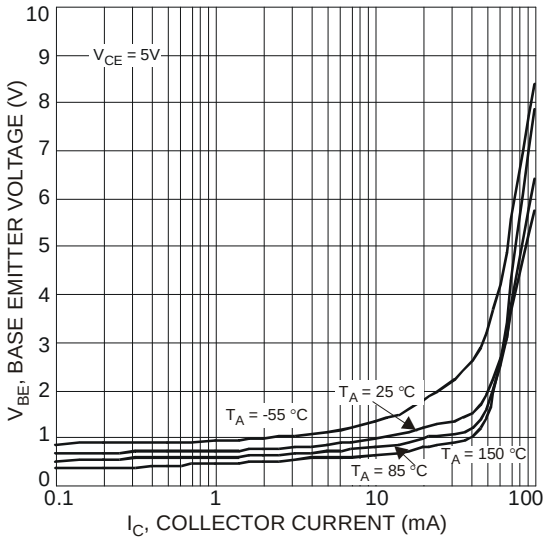


Fig. 12 Typical Base Emitter Voltage vs. Collector Current

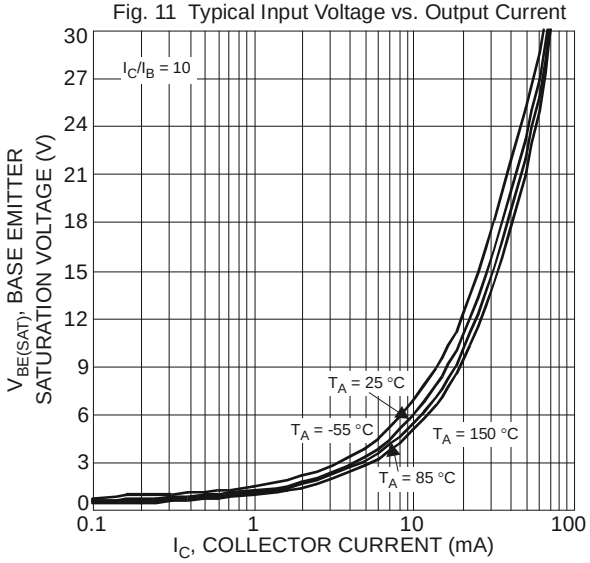


Fig. 13 Typical Base Emitter Saturation Voltage vs. Collector Current

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

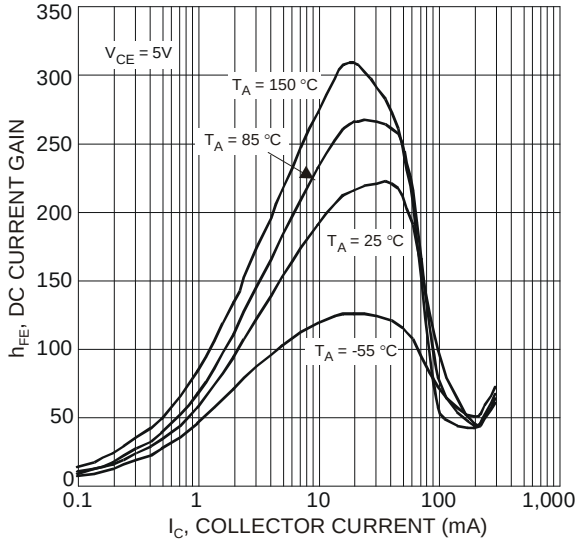


Fig. 14 Typical DC Current Gain vs. Collector Current

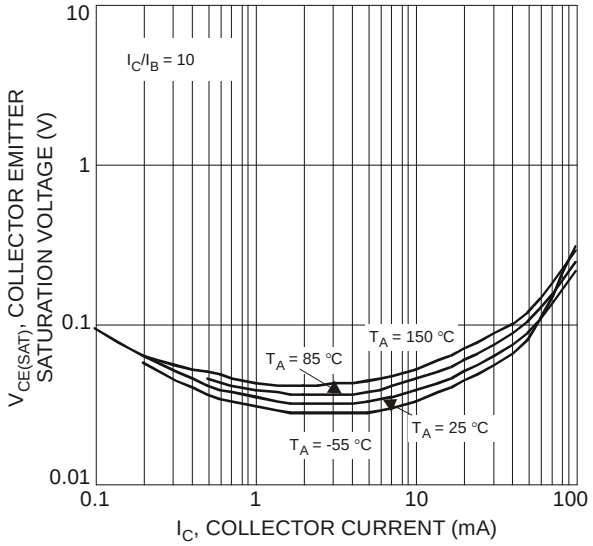


Fig. 15 Typical Collector Emitter Saturation Voltage vs. Collector Current

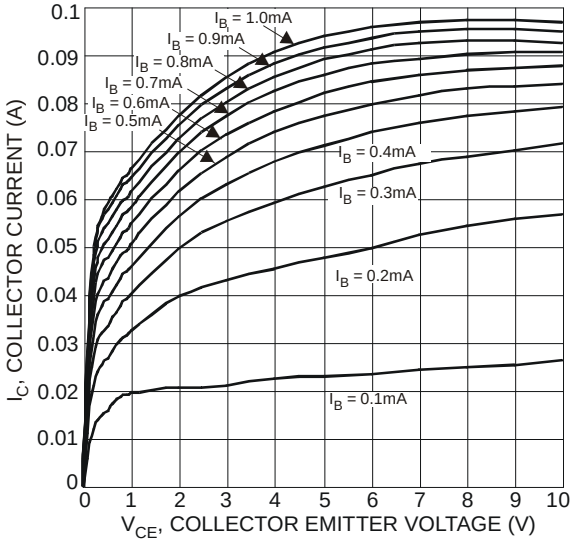


Fig. 16 Typical Collector Current vs. Collector Emitter Voltage

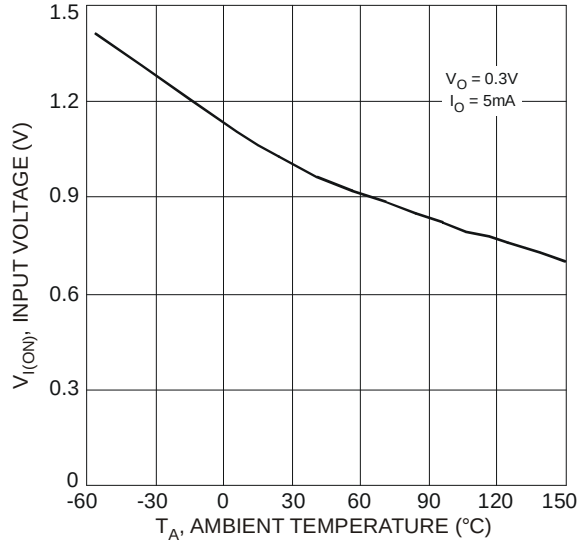


Fig. 17 Typical Input Voltage vs. Ambient Temperature

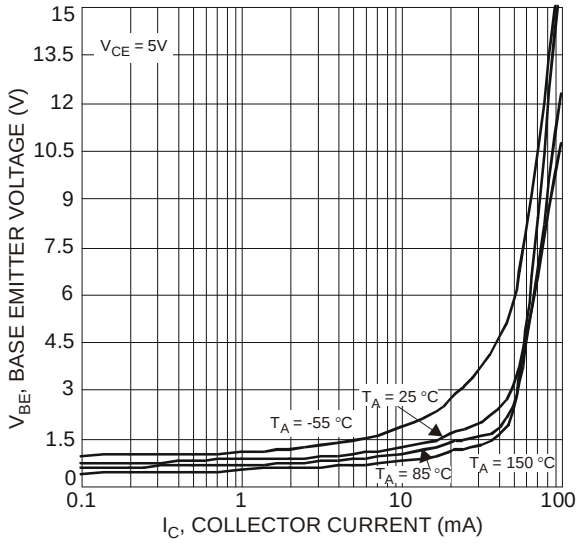


Fig. 18 Typical Base Emitter Voltage vs. Collector Current

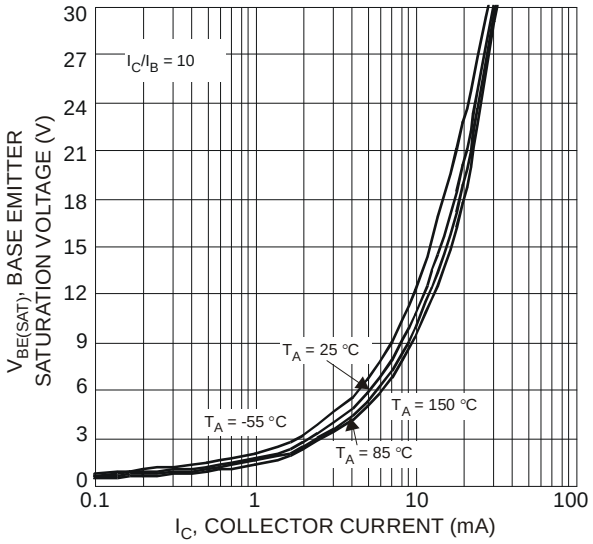
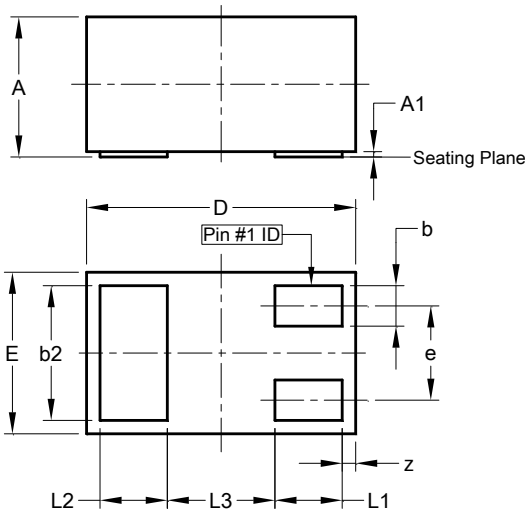


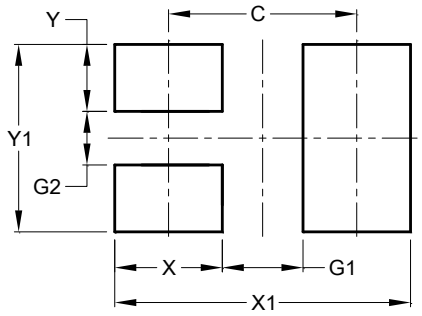
Fig. 19 Typical Base Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions



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



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