



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**

0755-83047638  
ysbdt@szyoushang.cn  
www.szyoushang.cn



企业微信二维码



企业QQ二维码

## Product Summary

Part Number	R1 (NOM)	R2 (NOM)	Marking
NK-DDTA114YLP	10k $\Omega$	47k $\Omega$	P3

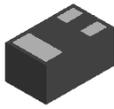
## Features

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

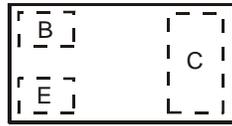
## Mechanical Data

- 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
- Terminals: Finish — NiPdAu  
Solderable per MIL-STD-202, Method 208 <sup>④</sup>
- Weight: 0.0009 grams (Approximate)

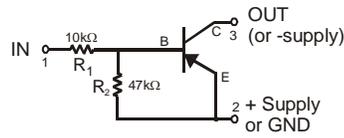
X1-DFN1006-3



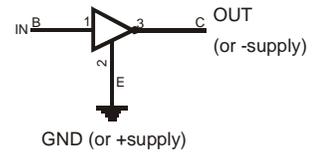
Bottom View



Top View  
Pin-Out



Device Symbol



Equivalent Inverter  
Circuit

**Absolute Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	-50	V
Input Voltage	$V_{IN}$	+6 to -40	V
Output Current	$I_O$	-70	mA
Output (Collector) Current	$I_{C(MAX)}$	-100	mA

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

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

**Electrical Characteristics: Discrete PNP Transistor (Q1)** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>Off Characteristics (Note 6)</b>						
Collector-Base Breakdown Voltage	$BV_{CBO}$	-50	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	-50	—	—	V	$I_C = -10.0\text{mA}, I_B = 0$
Collector-Base Cut Off Current	$I_{CBO}$	—	—	-0.1	$\mu\text{A}$	$V_{CB} = -50\text{V}, I_E = 0$
Collector-Emitter Cut Off Current, $I_{O(off)}$	$I_{CES}$	—	—	-0.1	$\mu\text{A}$	$V_{CB} = -50\text{V}, I_B = 0$
Emitter-Base Cut Off Current	$I_{EBO}$	—	—	-0.2	mA	$V_{EB} = 5\text{V}, I_C = 0$
Input Off Voltage	$V_{I(off)}$	-0.3	—	—	V	$V_{CC} = -5\text{V}, I_O = -100\mu\text{A}$
<b>On Characteristics (Note 6)</b>						
Input-On Voltage	$V_{I(on)}$	—	—	-1.4	V	$V_O = -0.3\text{V}, I_O = I_C = 1\text{mA}$
Input Current	$I_I$	—	—	-0.88	mA	$V_I = -5\text{V}$
DC Current Gain	$h_{FE}$	80	—	—	—	$V_{CE} = -5\text{V}, I_C = -5\text{mA}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.25	V	$I_C = -50\text{mA}, I_B = -2.5\text{mA}$
Output On Voltage (Same as $V_{CE(sat)}$ )	$V_{O(on)}$	—	-0.1	-0.3	V	$I_I = -0.25\text{mA}, I_O = -5\text{mA}$
Input Resistance	R1	7	10	13	k $\Omega$	—
Resistance Ratio	(R2/R1)	3.7	4.7	5.7	—	—
<b>Small Signal Characteristics</b>						
Current Gain-Bandwidth Product	$f_T$	—	250	—	MHz	$V_{CE} = -10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$

- Notes:
- 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.
  - Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

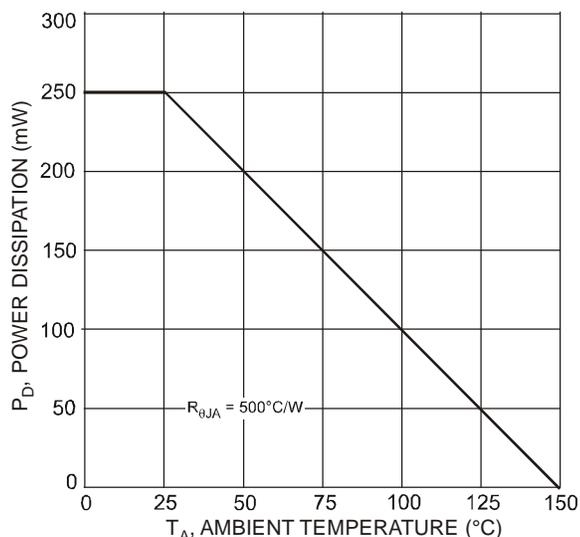


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 4)

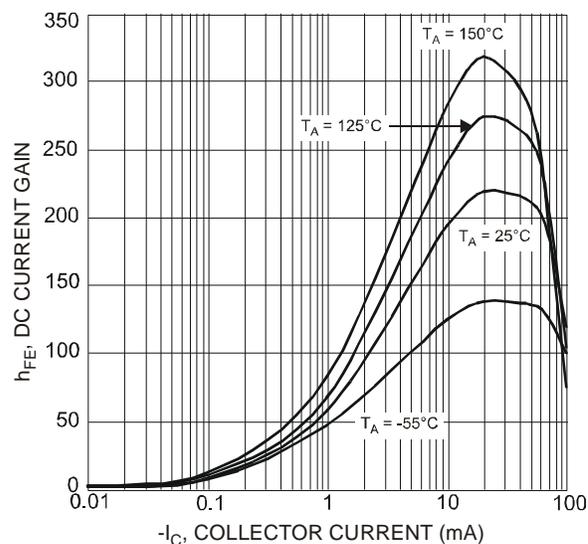


Fig. 2 Typical DC Current Gain vs. Collector Current

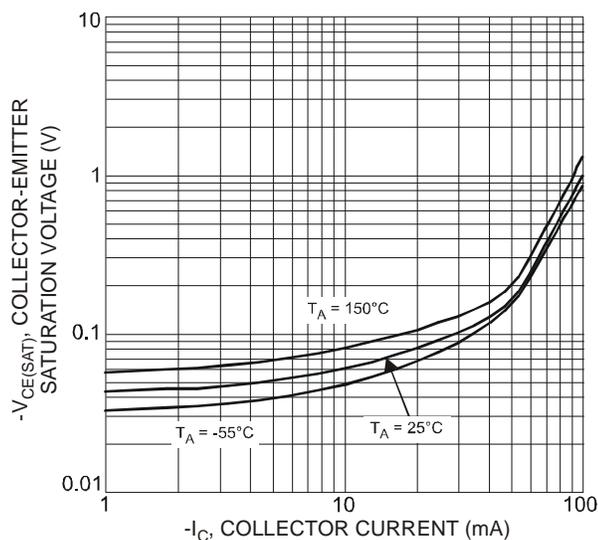


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

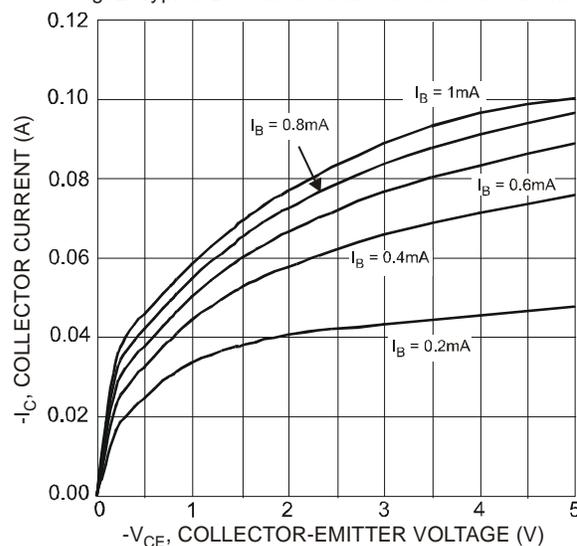


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

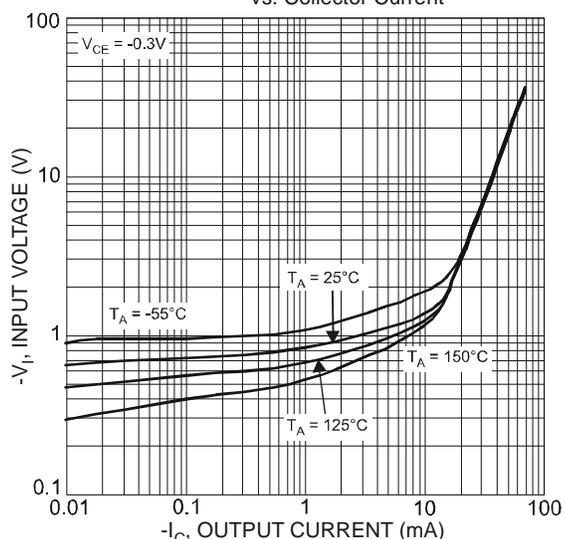


Fig. 5 Typical Input Voltage vs. Output Current (On Characteristics)

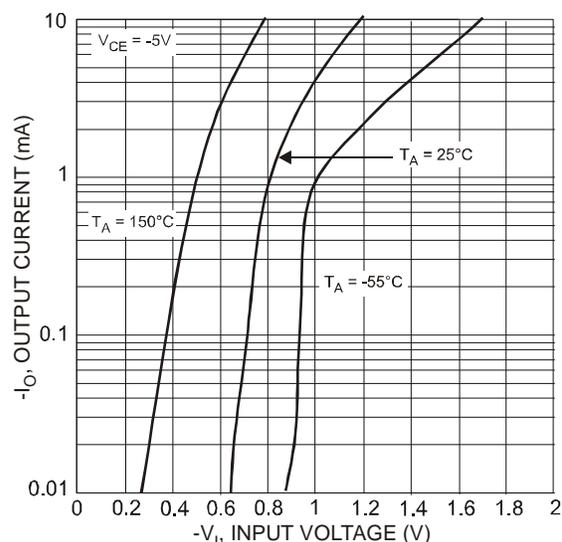
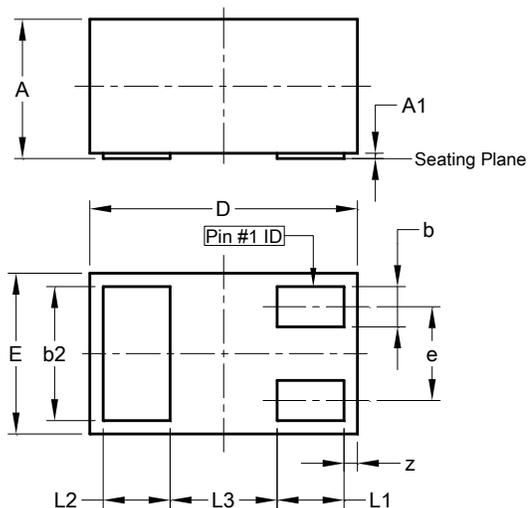


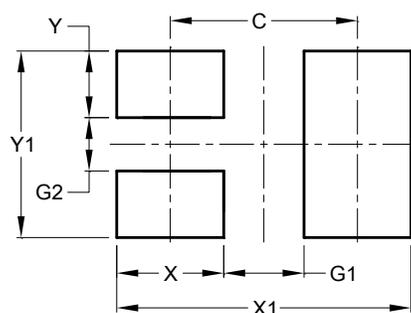
Fig. 6 Typical Output Current vs. Input Voltage (Off Characteristics)

## 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