



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

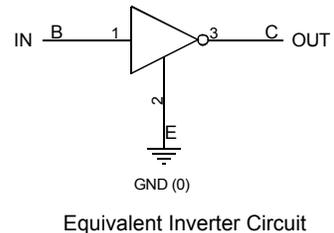
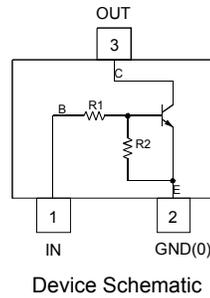
Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors, $R1 \neq R2$

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 
- Weight: 0.008 grams (approximate)

Part Number	R1 (NOM)	R2 (NOM)
NK-DDTC113ZCA	1K Ω	10K Ω
NK-DDTC123YCA	2.2K Ω	10K Ω
NK-DDTC123JCA	2.2K Ω	47K Ω
NK-DDTC143XCA	4.7K Ω	10K Ω
NK-DDTC143FCA	4.7K Ω	22K Ω
NK-DDTC143ZCA	4.7K Ω	47K Ω
NK-DDTC114YCA	10K Ω	47K Ω
NK-DDTC114WCA	10K Ω	4.7K Ω
NK-DDTC124XCA	22K Ω	47K Ω
NK-DDTC144VCA	47K Ω	10K Ω
NK-DDTC144WCA	47K Ω	22K Ω



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

Characteristic	Symbol	Value	Unit	
Supply Voltage, <Pin: (3) to (2)>	V_{CC}	50	V	
Input Voltage, <Pin: (1) to (2)>	V_{IN}	NK-DDTC113ZCA	-5 to +10	
		NK-DDTC123YCA	-5 to +12	
		NK-DDTC123JCA	-5 to +12	
		NK-DDTC143XCA	-7 to +20	
		NK-DDTC143FCA	-6 to +30	
		NK-DDTC143ZCA	-5 to +30	
		NK-DDTC114YCA	-6 to +40	
		NK-DDTC114WCA	-10 to +30	
		NK-DDTC124XCA	-10 to +40	
		NK-DDTC144VCA	-15 to +40	
NK-DDTC144WCA	-10 to +40			
Output Current	I_O	NK-DDTC113ZCA	100	
		NK-DDTC123YCA	100	
		NK-DDTC123JCA	100	
		NK-DDTC143XCA	100	
		NK-DDTC143FCA	100	
		NK-DDTC143ZCA	100	
		NK-DDTC114YCA	70	
		NK-DDTC114WCA	100	
		NK-DDTC124XCA	50	
		NK-DDTC144VCA	30	
NK-DDTC144WCA	30			
Output Current	All	$I_{C(MAX)}$	100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 6. Mounted on FR4 PC Board with minimum recommended pad layout

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	NK-DDTC113ZCA NK-DDTC123YCA NK-DDTC123JCA NK-DDTC143XCA NK-DDTC143FCA NK-DDTC143ZCA NK-DDTC114YCA NK-DDTC114WCA NK-DDTC124XCA NK-DDTC144VCA NK-DDTC144WCA	V _{I(OFF)}	0.3 0.3 0.5 0.3 0.3 0.5 0.3 0.8 0.4 1.0 0.8				V	V _{CC} = 5V, I _O = 100μA
	NK-DDTC113ZCA NK-DDTC123YCA NK-DDTC123JCA NK-DDTC143XCA NK-DDTC143FCA NK-DDTC143ZCA NK-DDTC114YCA NK-DDTC114WCA NK-DDTC124XCA NK-DDTC144VCA NK-DDTC144WCA		V _{I(ON)}	— — — — — — — — — — — —	— — — — — — — — — — — —	3.0 3.0 1.1 2.5 1.3 1.3 1.4 3.0 2.5 5.0 4.0		
Output Voltage		V _{O(ON)}	—	0.1	0.3	V	I _O /I _I = 5mA/0.25mA NK-DDTC123JCA I _O /I _I = 5mA/0.25mA NK-DDTC143ZCA I _O /I _I = 5mA/0.25mA NK-DDTC114YCA I _O /I _I = 10mA/0.5mA All Others	
Input Current	NK-DDTC113ZCA NK-DDTC123YCA NK-DDTC123JCA NK-DDTC143XCA NK-DDTC143FCA NK-DDTC143ZCA NK-DDTC114YCA NK-DDTC114WCA NK-DDTC124XCA NK-DDTC144VCA NK-DDTC144WCA	I _I	—	—	7.2 3.8 3.6 1.8 1.8 1.8 0.88 0.88 0.36 0.16 0.16	mA	V _I = 5V	
Output Current		I _{O(OFF)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V	
DC Current Gain	NK-DDTC113ZCA NK-DDTC123YCA NK-DDTC123JCA NK-DDTC143XCA NK-DDTC143FCA NK-DDTC143ZCA NK-DDTC114YCA NK-DDTC114YCAQ NK-DDTC114WCA NK-DDTC124XCA NK-DDTC144VCA NK-DDTC144WCA	G _I	33 33 80 30 68 80 68 80 24 68 33 56	—	—	—	V _O = 5V, I _O = 5mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 10mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA V _O = 5V, I _O = 5mA	
Input Resistor Tolerance		ΔR ₁	-30	—	+30	%	—	
Resistance Ratio Tolerance		ΔR ₂ /R ₁	-20	—	+20	%	—	
Gain-Bandwidth Product (Note 7)		f _T	—	250	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz	

Note: 7. Transistor - For Reference Only

Typical Curves – NK-DDTC123JCA (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

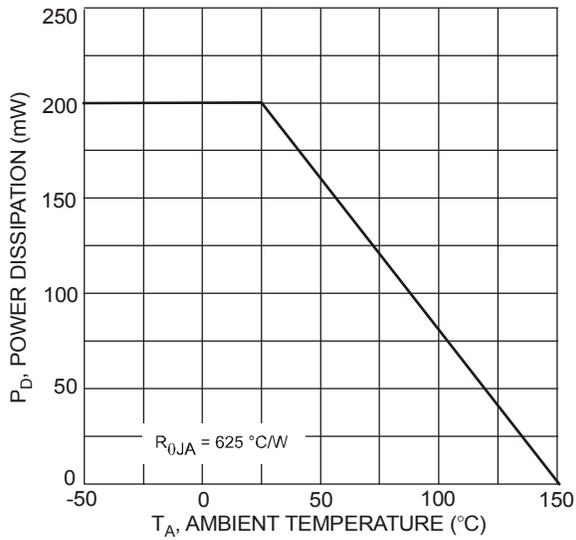


Fig. 1 Power Dissipation vs. Ambient Temperature

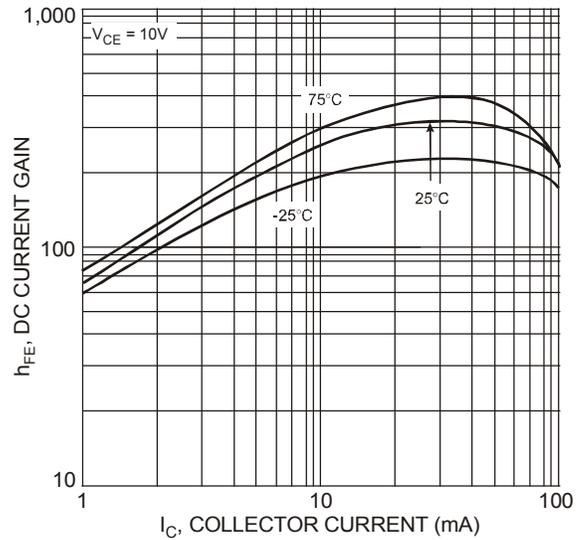


Fig. 2 Typical DC Current Gain vs. Collector Current

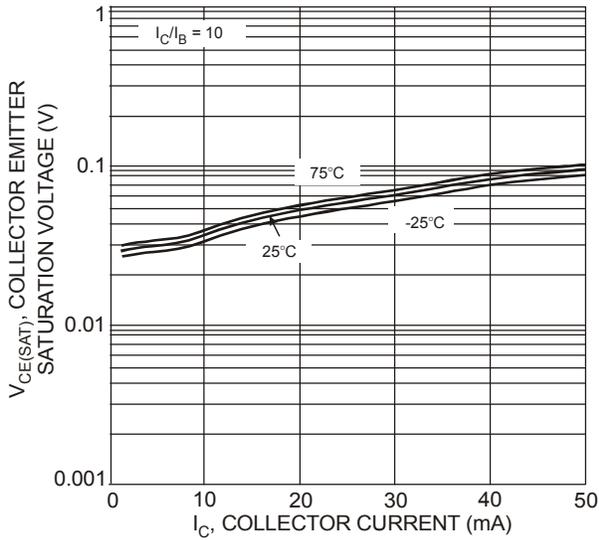


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

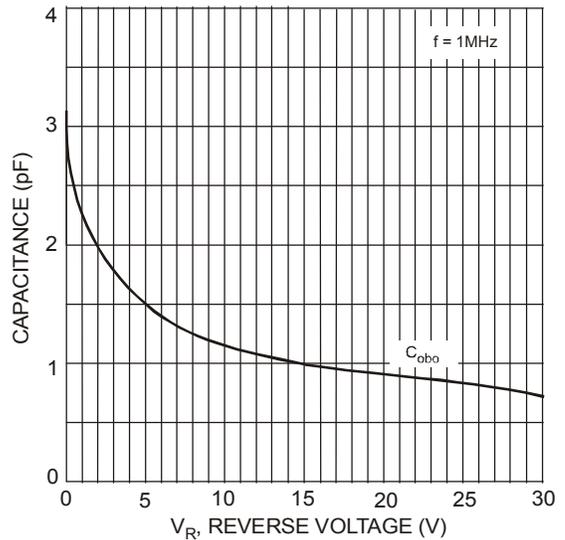


Fig. 4 Typical Capacitance Characteristics

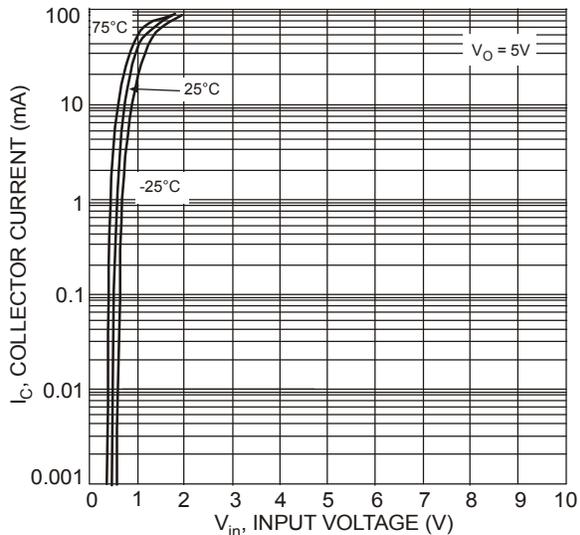


Fig. 5 Collector Current vs. Input Voltage

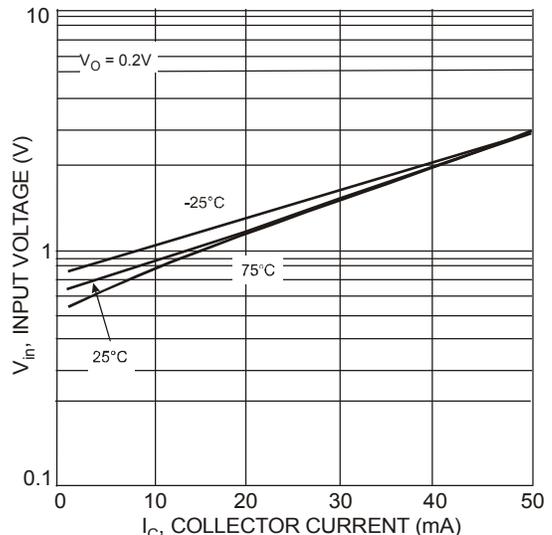
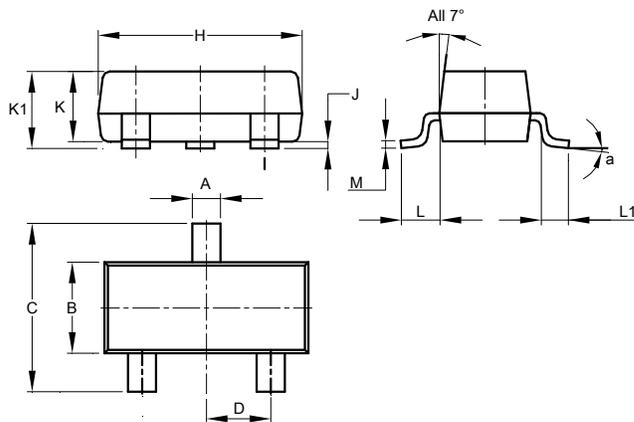


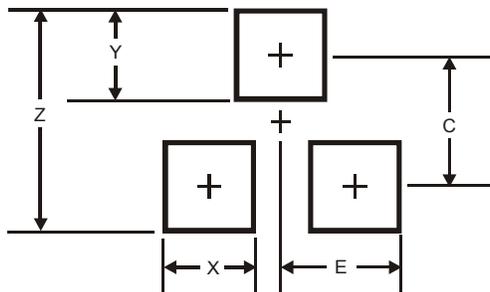
Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions



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	8°		
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35