



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



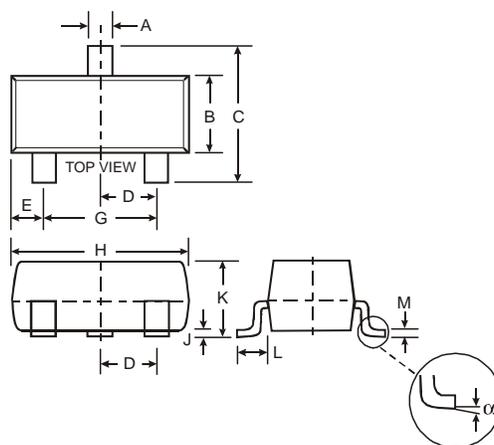
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Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2

Mechanical Data

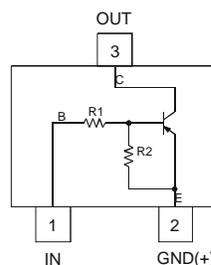
- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking and Date Code: See Table Below & Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)



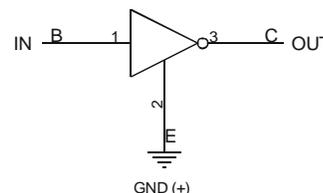
SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°

All Dimensions in mm

P/N	R1 (NOM)	R2 (NOM)	MARKING
NK-DDTA113ZCA	1K Ω	10K Ω	P02
NK-DDTA123YCA	2.2K Ω	10K Ω	P05
NK-DDTA123JCA	2.2K Ω	47K Ω	P06
NK-DDTA143XCA	4.7K Ω	10K Ω	P09
NK-DDTA143FCA	4.7K Ω	22K Ω	P10
NK-DDTA143ZCA	4.7K Ω	47K Ω	P11
NK-DDTA114YCA	10K Ω	47K Ω	P14
NK-DDTA114WCA	10K Ω	4.7K Ω	P15
NK-DDTA124XCA	22K Ω	47K Ω	P18
NK-DDTA144VCA	47K Ω	10K Ω	P21
NK-DDTA144WCA	47K Ω	22K Ω	P22



Schematic and Pin Configuration



Equivalent Inverter Circuit

Maximum Ratings @_{T_A} = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V _{CC}	-50	V
Input Voltage, (1) to (2)	V _{IN}	+5 to -10 +5 to -12 +5 to -12 +7 to -20 +6 to -30 +5 to -30 +6 to -40 +10 to -30 +10 to -40 +15 to -40 +10 to -40	V
Output Current	I _O	-100 -100 -100 -100 -100 -100 -70 -100 -50 -30 -30	mA
Output Current	I _C (Max)	-100	mA

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
 2. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation	P_d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	°C

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	$V_{I(off)}$	-0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu A$	
		NK-DDTA113ZCA					-0.3
		NK-DDTA123YCA					-0.5
		NK-DDTA123JCA					-0.3
		NK-DDTA143XCA					-0.3
		NK-DDTA143FCA					-0.5
		NK-DDTA143ZCA					-0.3
		NK-DDTA114YCA					-0.3
		NK-DDTA114WCA					-0.8
		NK-DDTA124XCA					-0.4
NK-DDTA144VCA	-1.0						
NK-DDTA144WCA	-0.8						
Input Voltage	$V_{I(on)}$	—	—	-3.0	V	$V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -5mA$ $V_O = -0.3V, I_O = -20mA$ $V_O = -0.3V, I_O = -3mA$ $V_O = -0.3V, I_O = -5mA$ $V_O = -0.3V, I_O = -1mA$ $V_O = -0.3V, I_O = -2mA$ $V_O = -0.3V, I_O = -2mA$ $V_O = -0.3V, I_O = -2mA$ $V_O = -0.3V, I_O = -2mA$	
				NK-DDTA113ZCA			-3.0
				NK-DDTA123YCA			-1.1
				NK-DDTA123JCA			-2.5
				NK-DDTA143XCA			-1.3
				NK-DDTA143FCA			-1.3
				NK-DDTA143ZCA			-1.4
				NK-DDTA114YCA			-3.0
				NK-DDTA114WCA			-2.5
				NK-DDTA124XCA			-5.0
NK-DDTA144VCA	-4.0						
NK-DDTA144WCA							
Output Voltage	$V_{O(on)}$	—	-0.1	-0.3	V	$I_O/I_I = -5mA/-0.25mA$ NK-DDTA123JCA $I_O/I_I = -5mA/-0.25mA$ NK-DDTA143ZCA $I_O/I_I = -5mA/-0.25mA$ NK-DDTA114YCA $I_O/I_I = -10mA/-0.5mA$ All Others	
Input Current	I_I	—	—	-7.2	mA	$V_I = -5V$	
				NK-DDTA113ZCA			-3.8
				NK-DDTA123YCA			-3.6
				NK-DDTA123JCA			-1.8
				NK-DDTA143XCA			-1.8
				NK-DDTA143FCA			-1.8
				NK-DDTA143ZCA			-0.88
				NK-DDTA114YCA			-0.88
				NK-DDTA114WCA			-0.36
				NK-DDTA124XCA			-0.16
NK-DDTA144VCA	-0.16						
NK-DDTA144WCA							
Output Current	$I_{O(off)}$	—	—	-0.5	μA	$V_{CC} = -50V, V_I = 0V$	
DC Current Gain	G_I	—	—	-33	—	$V_O = -5V, I_O = -10mA$	
				NK-DDTA113ZCA			-33
				NK-DDTA123YCA			-80
				NK-DDTA123JCA			-30
				NK-DDTA143XCA			-68
				NK-DDTA143FCA			-80
				NK-DDTA143ZCA			-68
				NK-DDTA114YCA			-24
				NK-DDTA114WCA			-68
				NK-DDTA124XCA			-33
NK-DDTA144VCA	-56						
NK-DDTA144WCA							
Input Resistor Tolerance	ΔR_1	-30	—	+30	%	—	
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-20	—	+20	%	—	
Gain-Bandwidth Product*	f_T	—	250	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$	

Typical Curves –NK-DDTA123JCA

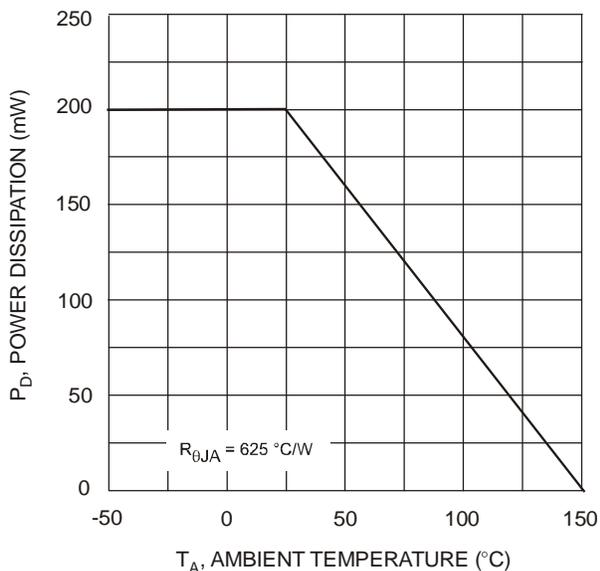


Fig. 1 Derating Curve

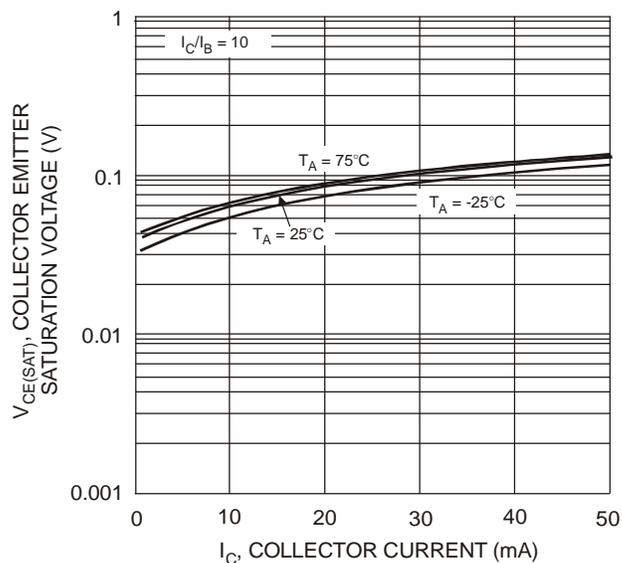


Fig. 2 V_{CE(SAT)} vs. I_C

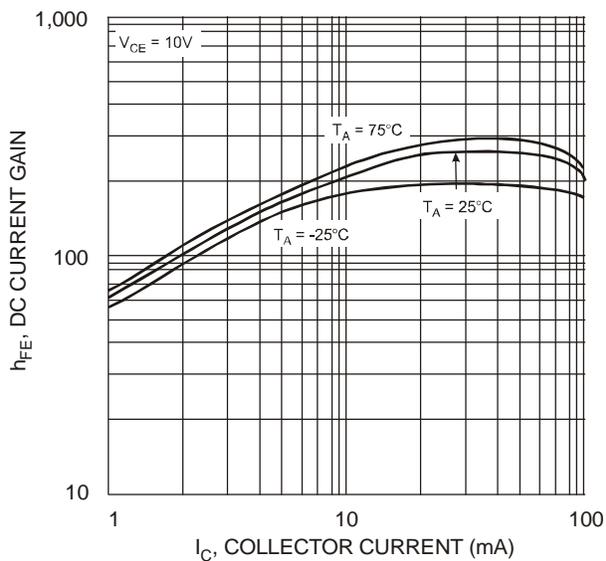


Fig. 3 DC Current Gain

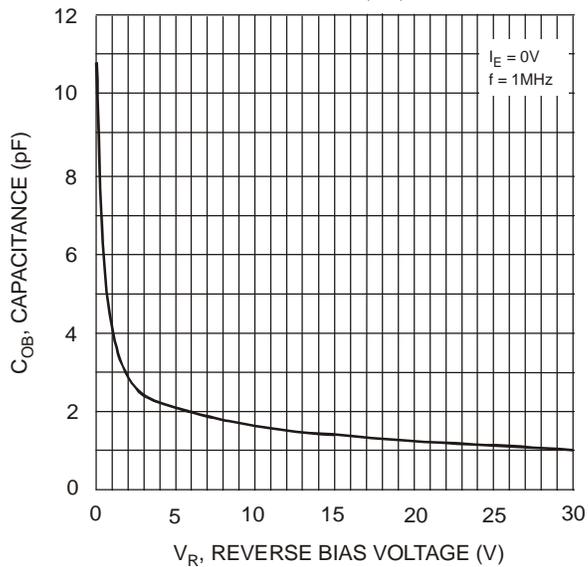


Fig. 4 Output Capacitance

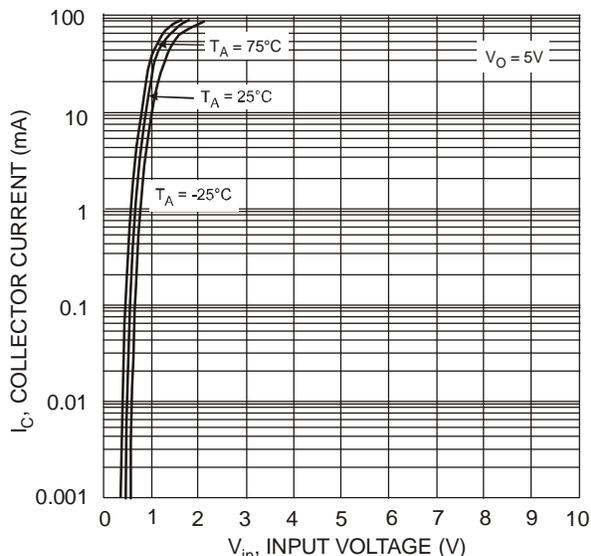


Fig. 5 Collector Current vs. Input Voltage

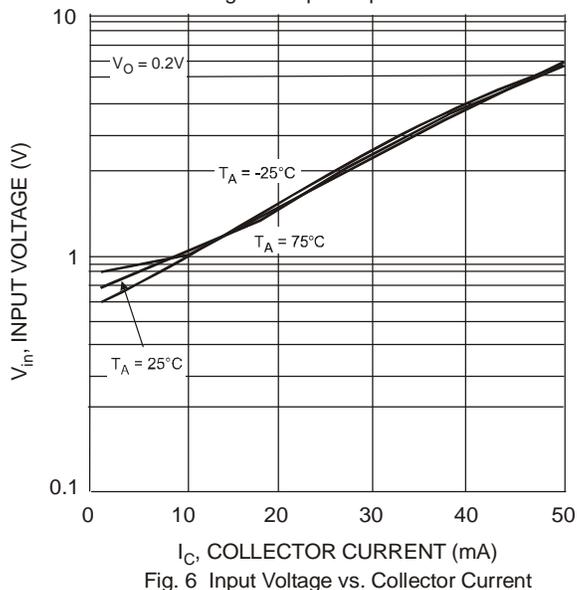


Fig. 6 Input Voltage vs. Collector Current