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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Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors

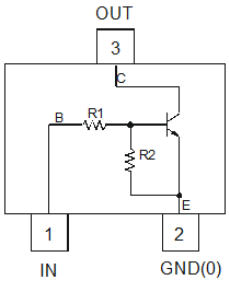
Mechanical Data

- 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 e3
- Weight: 0.008 grams (Approximate)

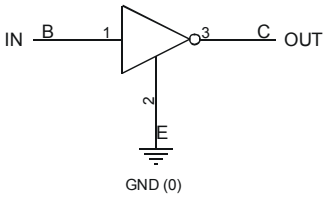
P/N	R1 (NOM)	R2 (NOM)
NK-DDTD122LC	0.22kΩ	10kΩ
NK-DDTD142JC	0.47kΩ	10kΩ
NK-DDTD122TC	0.22kΩ	OPEN
NK-DDTD142TC	0.47kΩ	OPEN

SOT23

Top View



Device Schematic



Equivalent Inverter Circuit

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

Characteristic		Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>		V_{CC}	50	V
Input Voltage <Pin: (1) to (2)	NK-DDTD122LC NK-DDTD142JC	V_{IN}	-5 to +6 -5 to +6	V
Input Voltage <Pin: (2) to (1)	NK-DDTD122TC NK-DDTD142TC	$V_{EBO\ (MAX)}$	5	V
Output Current		I_C	500	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. Mounted on FR4 PC board with recommended pad layout.

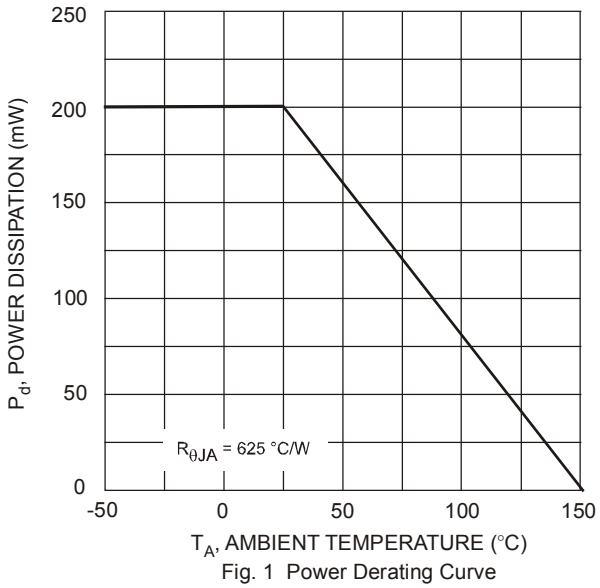


Fig. 1 Power Derating Curve

Electrical Characteristics - R1, R2 Types (@ T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	NK-DDTD122LC NK-DDTD142JC	$V_{I(off)}$	0.3 0.3	—	—	V	V_{CC} = 5V, I_O = 100μA
	NK-DDTD122LC NK-DDTD142JC	$V_{I(on)}$	—	—	2.0 2.0	V	V_O = 0.3V, I_O = 20mA V_O = 0.3V, I_O = 20mA
Output Voltage		$V_{O(on)}$	—	—	0.3V	V	I_O/I_I = 50mA/2.5mA
Input Current	NK-DDTD122LC NK-DDTD142JC	I_I	—	—	28 13	mA	V_I = 5V
Output Current		$I_{O(off)}$	—	—	0.5	μA	V_{CC} = 50V, V_I = 0V
DC Current Gain	NK-DDTD122LC NK-DDTD142JC	G_I	56 56	—	—	—	V_O = 5V, I_O = 50mA
Gain-Bandwidth Product (Note 6)		f_T	—	200	—	MHz	V_{CE} = 10V, I_E = 5mA, f = 100MHz

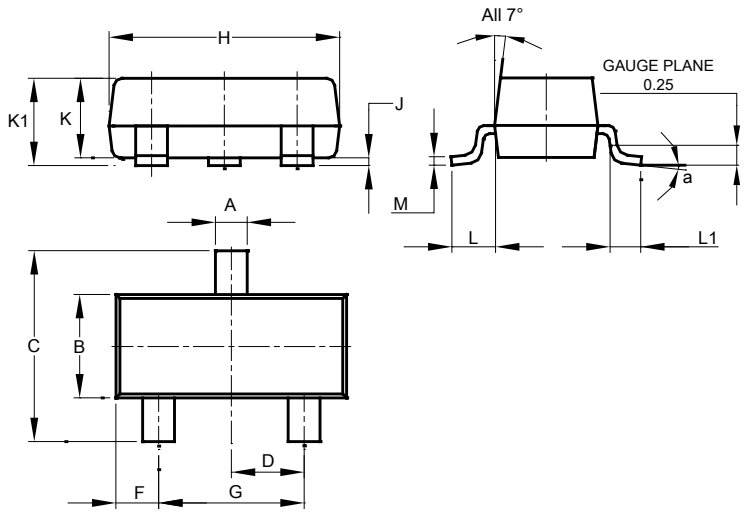
Electrical Characteristics - R1- Only, R2- Only Types (@ T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV_{CBO}	50	—	—	V	I_C = 50μA
Collector-Emitter Breakdown Voltage		BV_{CEO}	40	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	NK-DDTD122TC NK-DDTD142TC	BV_{EBO}	5	—	—	V	I_E = 50μA I_E = 50μA
Collector Cut-Off Current		I_{CBO}	—	—	0.5	μA	V_{CB} = 50V
Emitter Cut-Off Current	NK-DDTD122TC NK-DDTD142TC	I_{EBO}	— —	—	0.5 0.5	μA	V_{EB} = 4V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	0.3	V	I_C = 50mA, I_B = 2.5mA
DC Current Transfer Ratio	NK-DDTD122TC NK-DDTD142TC	h_{FE}	100 100	250 250	600 600	—	I_C = 5mA, V_{CE} = 5V
Gain-Bandwidth Product (Note 6)		f_T	—	200	—	MHz	V_{CE} = 10V, I_E = -5mA, f = 100MHz

Note: 6. Transistor – For Reference Only

Package Outline Dimensions

SOT23



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	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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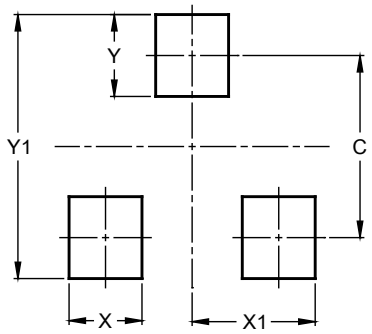
SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9