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 NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1 = R2

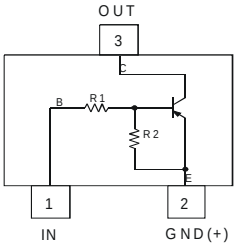
Mechanical Data

- Case: SOT523
- 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: 0.002 grams (Approximate)

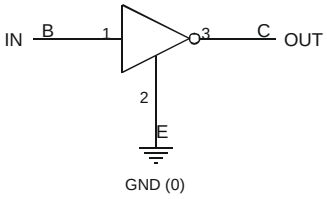
Part Number	R1, R2 (NOM)
NK-DDTA123EE	2.2kΩ
NK-DDTA143EE	4.7kΩ
NK-DDTA114EE	10kΩ
NK-DDTA124EE	22kΩ
NK-DDTA144EE	47kΩ
NK-DDTA115EE	100kΩ

SOT523

Top View



Device Schematic



Equivalent Inverter Circuit

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-DDTA123EE NK-DDTA143EE NK-DDTA114EE NK-DDTA124EE NK-DDTA144EE NK-DDTA115EE	V_{IN}	+10 to -12 +10 to -30 +10 to -40 +10 to -40 +10 to -40 +10 to -40	V
Output Current	NK-DDTA123EE NK-DDTA143EE NK-DDTA114EE NK-DDTA124EE NK-DDTA144EE NK-DDTA115EE	I_O	-100 -100 -50 -30 -30 -20	mA
Output Current		I_C (Max)	-100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5 & 6)	P_D	150	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	833	°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		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage		$V_{I(OFF)}$	-0.5	-1.1	—	V	
		$V_{I(ON)}$	—	-1.9	-3		V_O = -0.3V, I_O = -20mA, NK-DDTA123EE V_O = -0.3V, I_O = -20mA, NK-DDTA143EE V_O = -0.3V, I_O = -10mA, NK-DDTA114EE V_O = -0.3V, I_O = -5mA, NK-DDTA124EE V_O = -0.3V, I_O = -2mA, NK-DDTA144EE V_O = -0.3V, I_O = -1mA, NK-DDTA115EE
Output Voltage		$V_{O(ON)}$	—	-0.1	-0.3	V	I_O/I_I = -10mA/-0.5mA NK-DDTA123EE I_O/I_I = -10mA/-0.5mA NK-DDTA143EE I_O/I_I = -10mA/-0.5mA NK-DDTA114EE I_O/I_I = -10mA/-0.5mA NK-DDTA124EE I_O/I_I = -10mA/-0.5mA NK-DDTA144EE I_O/I_I = -5mA/-0.25mA NK-DDTA115EE
Input Current	NK-DDTA123EE NK-DDTA143EE NK-DDTA114EE NK-DDTA124EE NK-DDTA144EE NK-DDTA115EE	I_I	—	—	-3.8 -1.8 -0.88 -0.36 -0.18 -0.15	mA	V_I = -5V
Output Current		$I_{O(OFF)}$	—	—	-0.5	μA	V_{CC} = -50V, V_I = 0V
DC Current Gain	NK-DDTA123EE NK-DDTA143EE NK-DDTA114EE NK-DDTA124EE NK-DDTA144EE NK-DDTA115EE	G_I	-20 -20 -30 -56 -68 -82	—	—	—	V_O = -5V, I_O = -20mA V_O = -5V, I_O = -10mA V_O = -5V, I_O = -5mA 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		$\Delta R_2/R_1$	0.8	1	1.2	%	—
Gain-Bandwidth Product (Note 7)		f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz

Notes: 5. Mounted on FR-4 PC Board with minimum recommended pad layout.
6. 150mW per element must not be exceeded.
7. Transistor only.

Typical Electrical Characteristics – NK-DDTA143EE

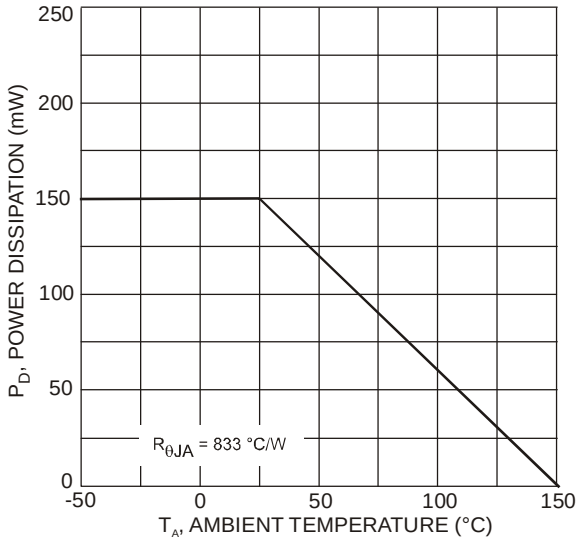


Figure 1 Power Dissipation vs. Ambient Temperature

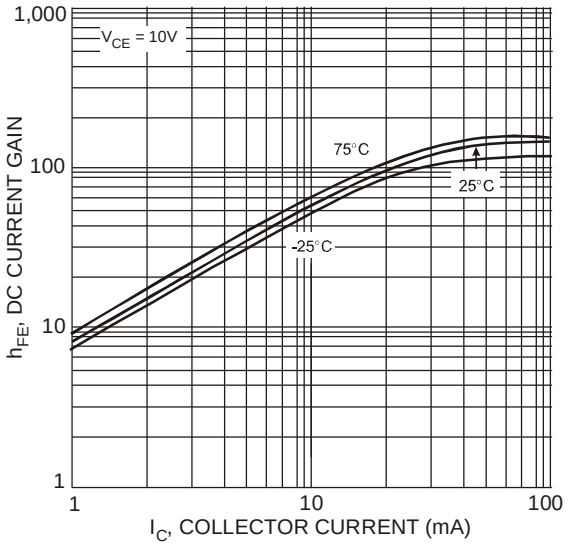


Figure 2 Typical DC Current Gain vs. Collector Current

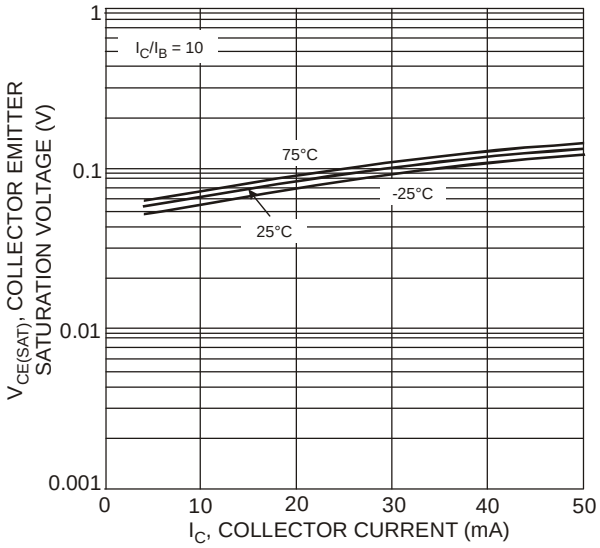


Figure 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

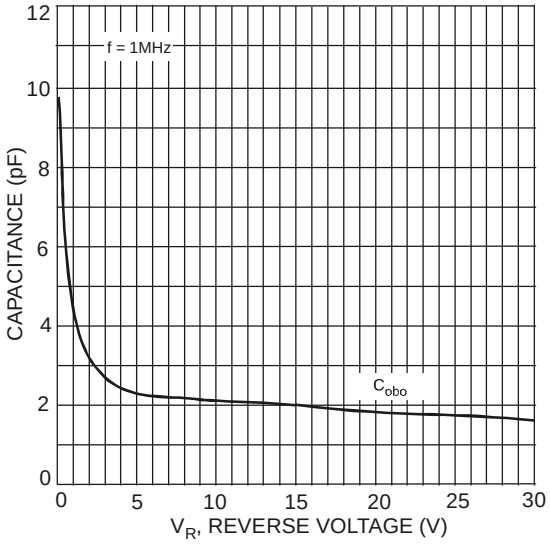


Figure 4 Typical Capacitance Characteristics

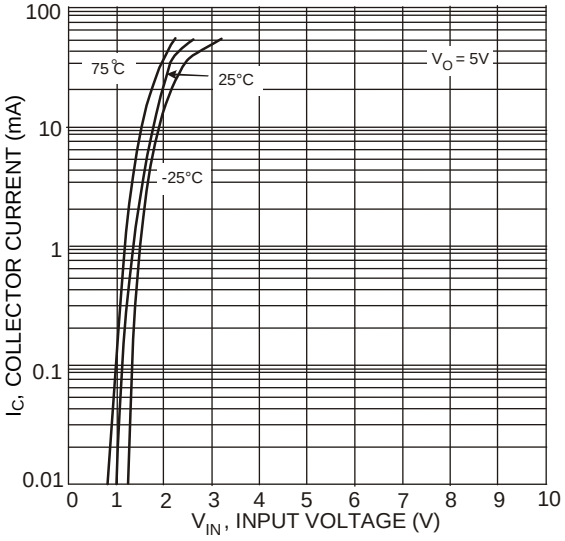


Figure 5 Collector Current vs. Input Voltage

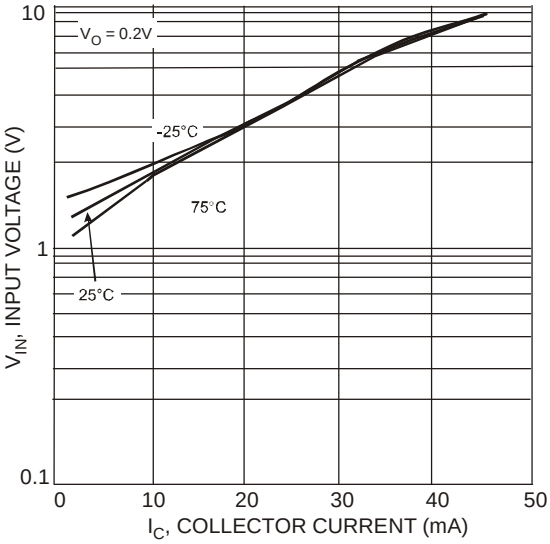
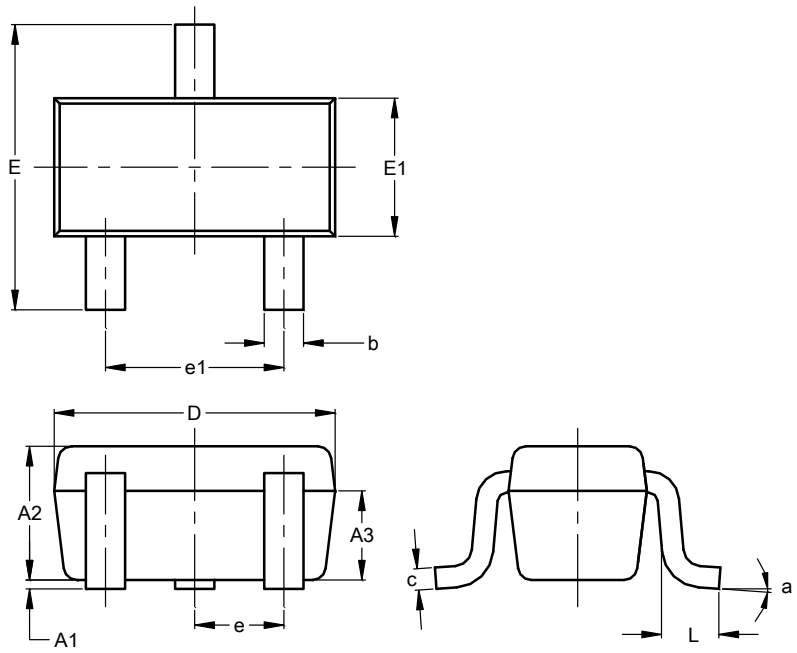


Figure 6 Input Voltage vs. Collector Current

Package Outline Dimensions

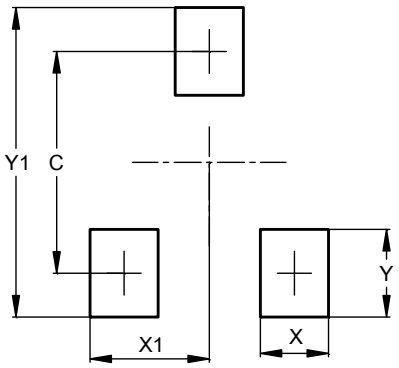
SOT523



SOT523			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

Suggested Pad Layout

SOT523



Dimensions	Value (in mm)
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80