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 Resistor, R2 Only

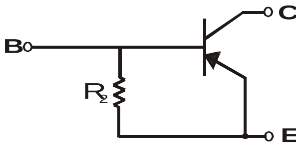
Mechanical Data

- 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 ⓔ3
- Weight: 0.002 grams (Approximate)

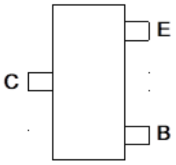
Part Number	R2 (NOM)
NK-DDTA114GE	10kΩ
NK-DDTA124GE	22kΩ
NK-DDTA144GE	47kΩ
NK-DDTA115GE	100kΩ

SOT523

Top View



Device Schematic



Package Pin Out Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-50	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C (Max)	-100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	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

Note: 5. 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
Collector-Base Breakdown Voltage		BV_{CBO}	-50	—	—	V	I_C = -50µA
Collector-Emitter Breakdown Voltage		BV_{CEO}	-50	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage		BV_{EBO}	5	—	—	V	I_E = -720µA, NK-DDTA114GE I_E = -330µA, NK-DDTA124GE I_E = -160µA, NK-DDTA144GE I_E = -72µA, NK-DDTA115GE
Collector Cutoff Current		I_{CBO}	—	—	-0.5	µA	V_{CB} = -50V
Emitter Cutoff Current	NK-DDTA114GE	I_{EBO}	-300	—	-580	µA	V_{EB} = -4V
	NK-DDTA124GE		-140		-260		
	NK-DDTA144GE		-65		-130		
	NK-DDTA115GE		-30		-58		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	-0.3	V	I_C = -10mA, I_B = -0.5mA
DC Current Transfer Ratio	NK-DDTA114GE	h_{FE}	30	—	—	—	I_C = -5mA, V_{CE} = -5V
	NK-DDTA124GE		56				
	NK-DDTA144GE		68				
	NK-DDTA115GE		82				
Shunt Resistor (R_2) Tolerance		ΔR_2	-30	—	+30	%	—
Gain-Bandwidth Product (Note 6)		f_T	—	250	—	MHz	V_{CE} = -10V, I_E = 5mA, f = 100MHz

Note: 6. Transistor—for reference only.

Typical Curves—DDT114GE

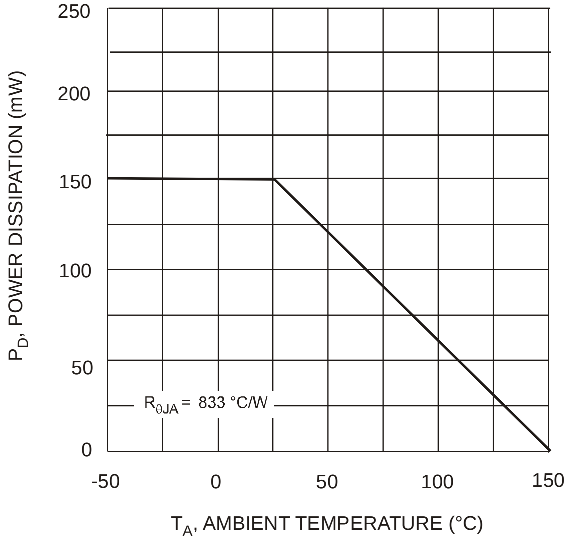


Fig. 1 Derating Curve

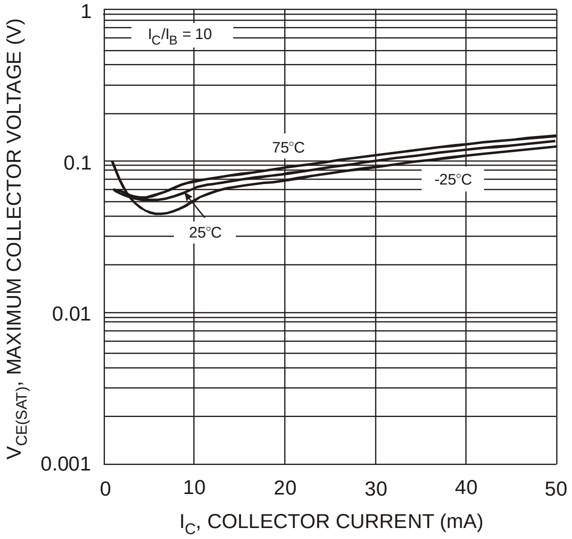


Fig. 2 $V_{CE(SAT)}$ vs. I_C

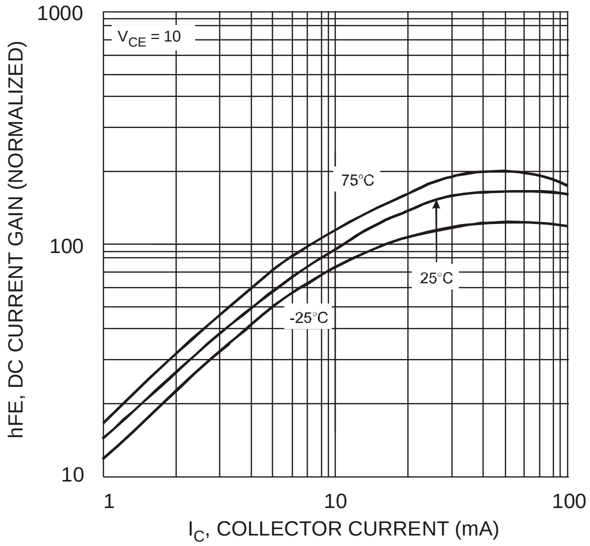


Fig. 3 DC Current Gain

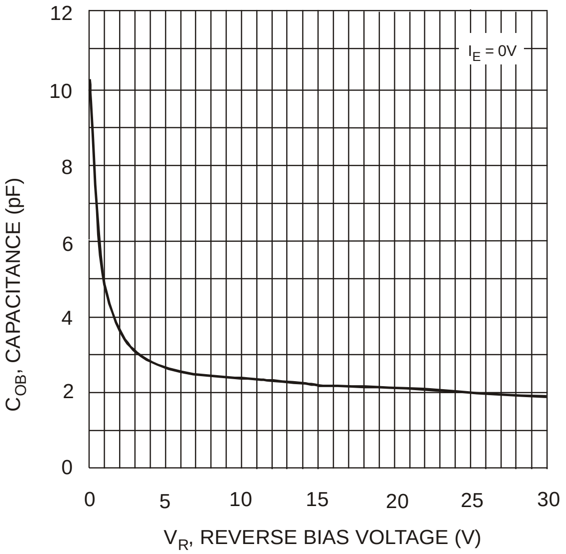


Fig. 4 Output Capacitance

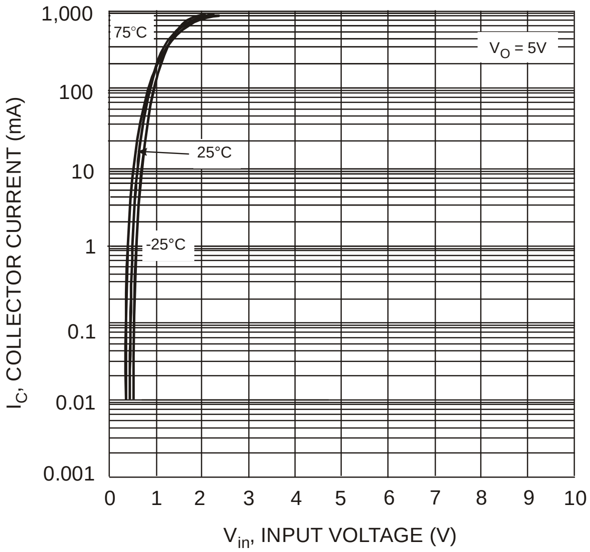


Fig. 5 Collector Current vs. Input Voltage

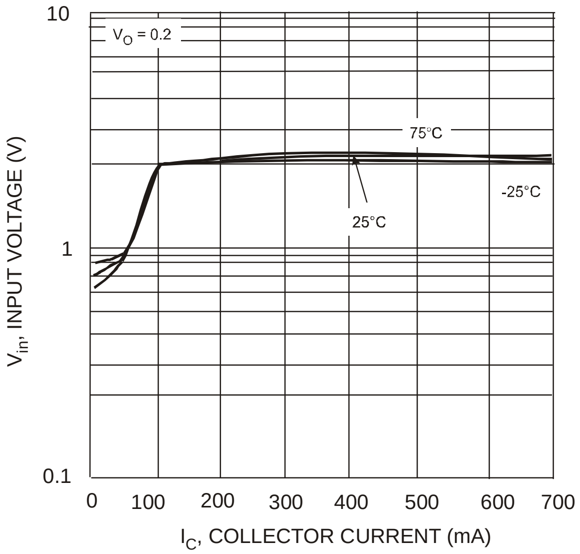
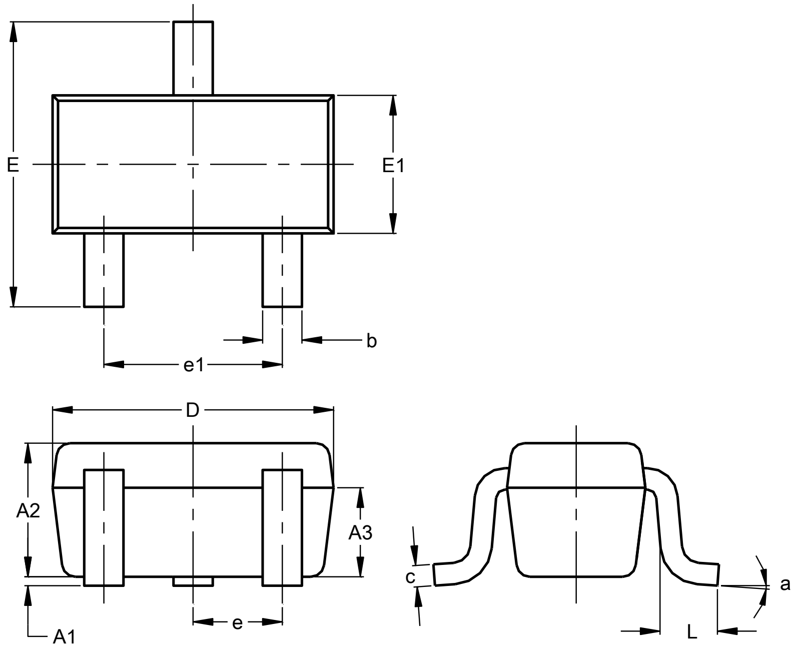


Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions

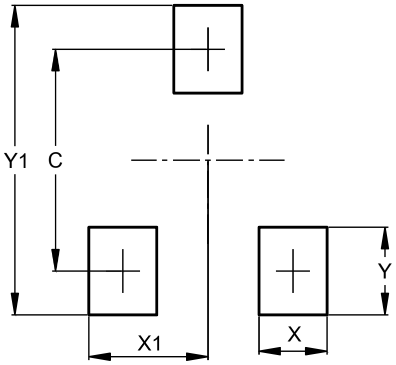
SOT523



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