



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

- $BV_{CE0} > 250V$
- $I_C = 0.5A$ Continuous Collector Current
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (NK-DP350T05)
- Ideal for Medium Power Amplification and Switching

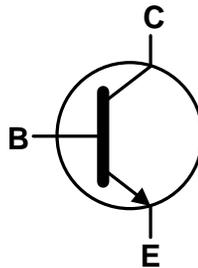
Mechanical Data

- 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)

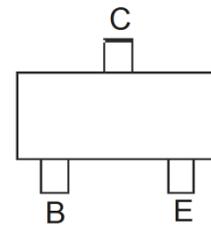
SOT23



Top View



Device Symbol



Top View
Pin-Out

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	350	V
Collector-Emitter Voltage	V_{CEO}	350	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Continuous Base Current	I_B	25	mA
Continuous Collector Current	I_C	500	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)					
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	350	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	350	—	V	$I_C = 1.0\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5.0	—	V	$I_E = 10\mu\text{A}, I_C = 0$
Collector Cutoff Current	I_{CBO}	—	50	nA	$V_{CB} = 250\text{V}, I_E = 0$
Collector Cutoff Current	I_{EBO}	—	50	nA	$V_{CE} = 5\text{V}, I_C = 0$
ON CHARACTERISTICS (Note 6)					
DC Current Gain	h_{FE}	20 30 30 20 15	— — 200 200 —	—	$I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$ $I_C = 10\text{mA}, V_{CE} = 10\text{V}$ $I_C = 30\text{mA}, V_{CE} = 10\text{V}$ $I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $I_C = 100\text{mA}, V_{CE} = 10\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	— — — —	0.30 0.35 0.50 1.0	V	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 20\text{mA}, I_B = 2.0\text{mA}$ $I_C = 30\text{mA}, I_B = 3.0\text{mA}$ $I_C = 50\text{mA}, I_B = 5.0\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	— — —	0.75 0.80 0.90	V	$I_C = 10\text{mA}, I_B = 1.0\text{mA}$ $I_C = 20\text{mA}, I_B = 2.0\text{mA}$ $I_C = 30\text{mA}, I_B = 3.0\text{mA}$
Base-Emitter On Voltage	$V_{BE(ON)}$	—	2.0	V	$I_C = 100\text{mA}, V_{CE} = 10\text{V}$
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C_{obo}	—	7.0	pF	$V_{CB} = 20\text{V}, f = 1.0\text{MHz}, I_E = 0$
Transition Frequency	f_T	50	—	MHz	$V_{CE} = 10\text{V}, I_C = 20\text{mA}$

- Notes:
5. For a device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper; device is measured under still air conditions whilst operating in a steady-state.
 6. Short duration pulse test used to minimize self-heating effect.

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

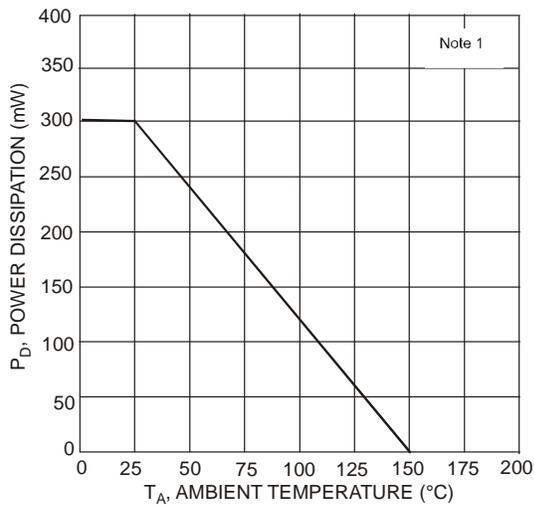


Fig. 1, Max Power Dissipation vs. Ambient Temperature

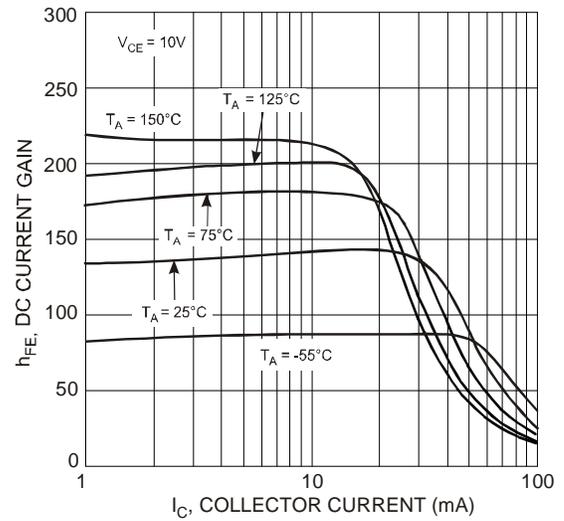


Fig. 2, DC Current Gain vs. Collector Current

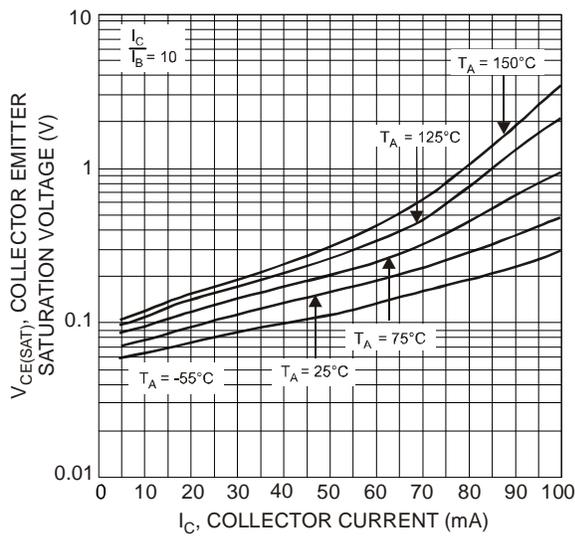


Fig. 3, Collector-Emitter Saturation Voltage vs. Collector Current

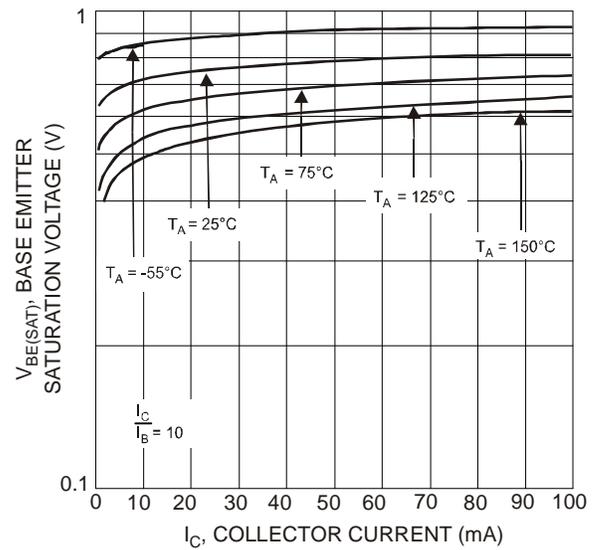


Fig. 4, Base-Emitter Saturation Voltage vs. Collector Current

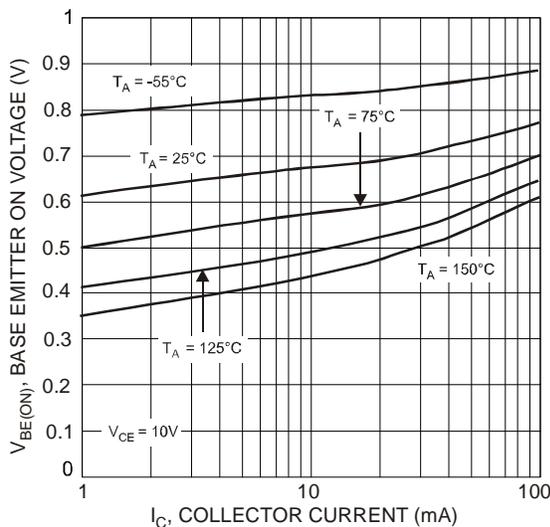


Fig. 5, Base-Emitter On Voltage vs. Collector Current

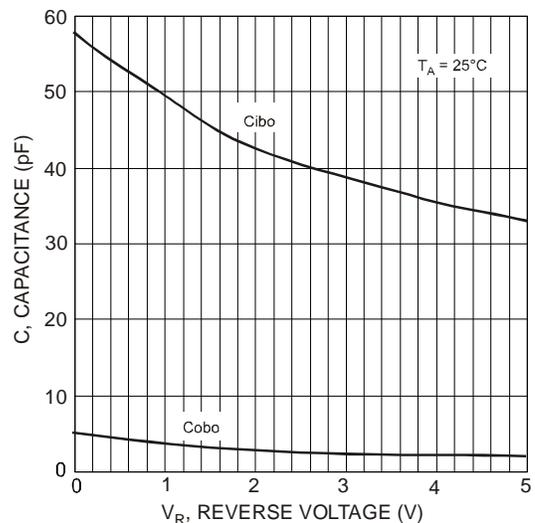
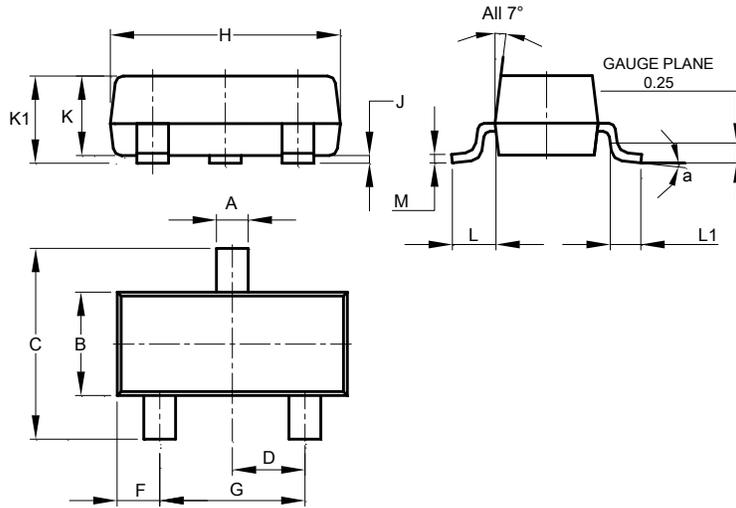


Fig. 6, Capacitance vs. Reverse Voltage

Package Outline Dimensions

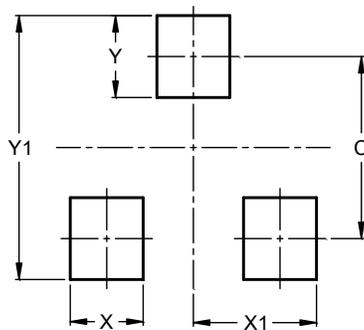
SOT23



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

SOT23



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