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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Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirements of automotive applications.

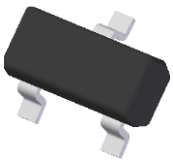
Features and Benefits

- BV_{CEO} > -150V
- Maximum Continuous Collector Current I_C = -600mA
- Excellent h_{FE} Characteristics up to I_C = -50mA
- Low Saturation Voltages
- Complementary part number: NK-ZXTN5551FLQ

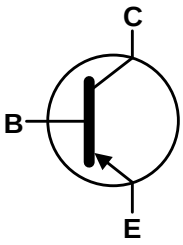
Mechanical Data

- Package: SOT23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (Approximate)

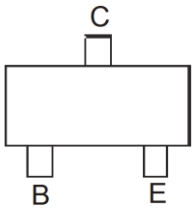
SOT23



Top View



Device Symbol



Top View
Pin-Out

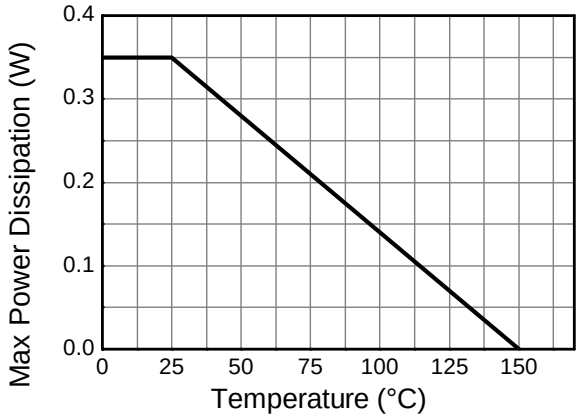
Absolute Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-160	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-600	mA
Peak Pulse Current	I_{CM}	-1	A

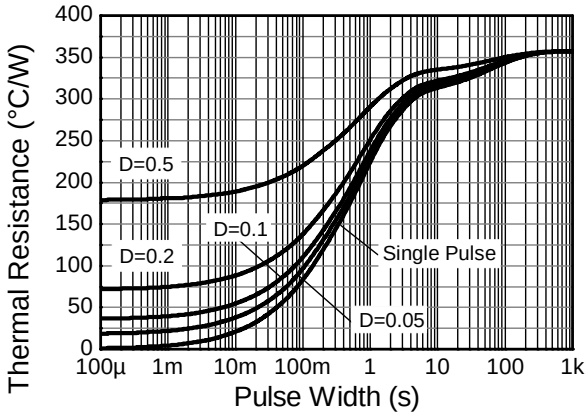
Thermal Characteristics @ T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Collector Power Dissipation	(Note 5)	P_D	310	mW
	(Note 6)		350	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	403	°C/W
	(Note 6)		357	
Thermal Resistance, Junction to Leads	(Note 7)	$R_{\theta JL}$	350	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

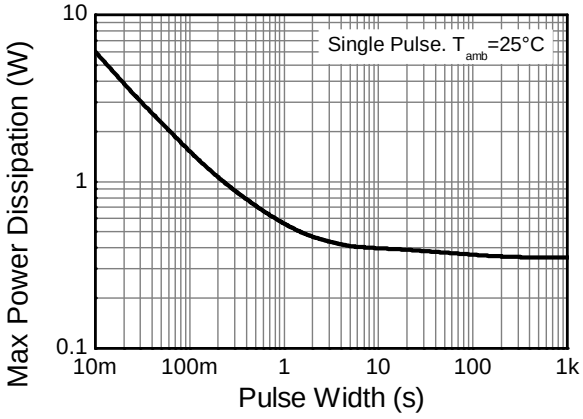
Notes: 5. For the device mounted on minimum recommended pad layout FR4 PCB with high coverage of single sided 1oz copper in still air condition.
6. Same as Note 5, expect the device is mounted on 15mm x 15mm x 1.6mm FR4 PCB.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).



Derating Curve



Transient Thermal Impedance



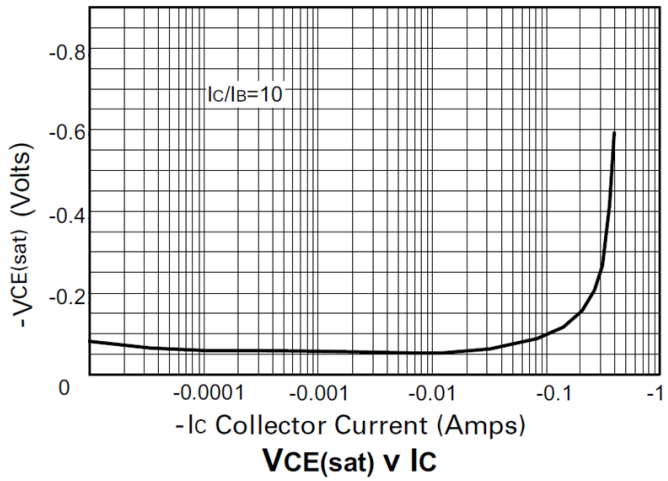
Pulse Power Dissipation

Electrical Characteristics @ T_A = 25°C unless otherwise specified

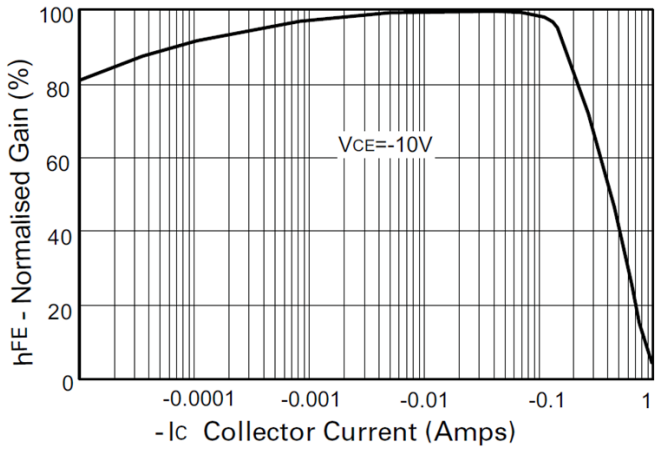
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-160	-270	-	V	I_C = -100μA
Collector-Emitter Breakdown Voltage (Note 8)	BV_{CEO}	-150	-240	-	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	-8.1	-	V	I_E = -100μA
Collector Cutoff Current	I_{CBO}	-	< -1 -	-50 -50	nA μA	V_{CB} = -120V V_{CB} = -120V, T_{amb} = 100°C
Static Forward Current Transfer Ratio (Note 8)	h_{FE}	50 60 50	135 135 130	- 240 -	-	I_C = -1mA, V_{CE} = -5V I_C = -10mA, V_{CE} = -5V I_C = -50mA, V_{CE} = -5V
Collector-Emitter Saturation Voltage (Note 8)	$V_{CE(sat)}$	- -	-50 -70	-200 -500	mV	I_C = - 10mA, I_B = -1mA I_C = - 50mA, I_B = -5mA
Base-Emitter Saturation Voltage (Note 8)	$V_{BE(sat)}$	-	-700 -750	-1000 -1000	mV	I_C = -10mA, I_B = -1mA I_C = -50mA, I_B = -5mA
Output Capacitance	C_{obo}	-	-	10	pF	V_{CB} = -10V, f = 1MHz
Transition Frequency	f_T	-	100	-	MHz	V_{CE} = -10V, I_C = -10mA, f = 100MHz
Delay Time	t_d	-	386	-	ns	V_{CC} = -50V, I_C = -100mA, I_{B1} = $-I_{B2}$ = -10mA
Rise Time	t_r	-	202	-	ns	
Storage Time	t_s	-	1720	-	ns	
Fall Time	t_f	-	275	-	ns	

Notes: 8. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%

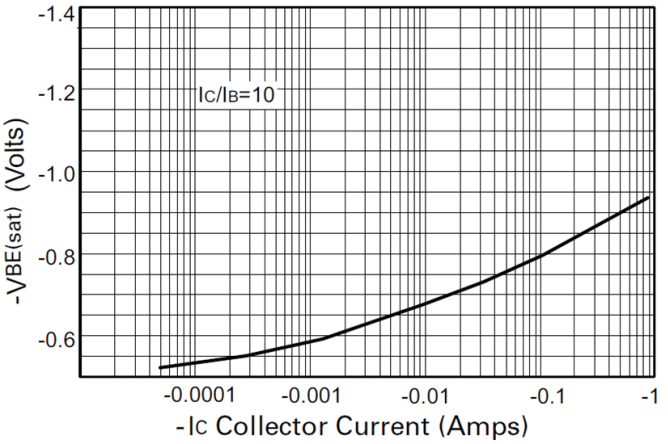
Typical Electrical Characteristics @ T_A = 25°C unless otherwise specified



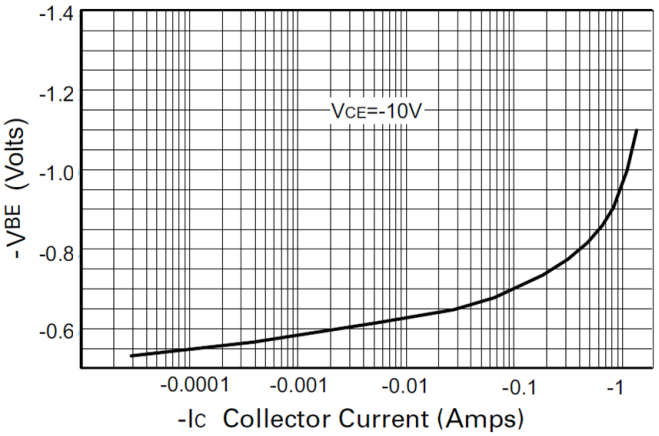
VCE(sat) v IC



hFE v IC



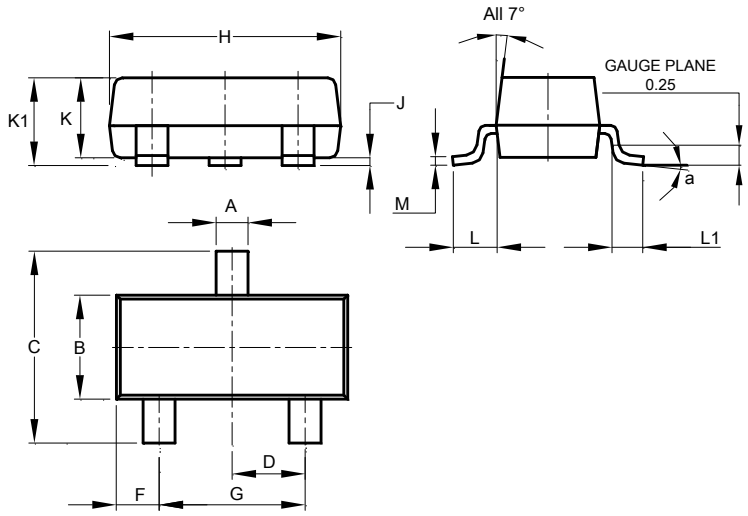
VBE(sat) v IC



VBE(on) v IC

Package Outline Dimensions

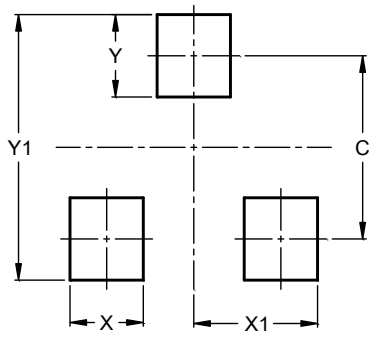
SOT23



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