ZXTN649F

NPN LOW $V_{CE(sat)}$ TRANSISTOR IN SOT-23

Features

- BV_{CEO} > 25V
- BV_{CBO} > 35V
- $I_{C(cont)}$ = 3A Continuous Currrent
- $V_{CE(sat)}$ < 120mV @ 1A
- $R_{CE(sat)}$ = 77 mΩ
- P_D = 0.725W
- 6A Peak Pulse Current
- 25V Forward Blocking Voltage
- Complementary part number ZXTP749F
- **Lead, Halogen and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Devices (Note 2)**

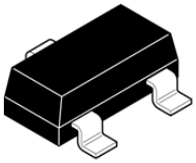
Mechanical Data

- Case: SOT-23
- Case material: molded Plastic. "Green" molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (approximate)

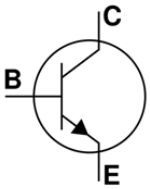
Applications

- MOSFET gate drivers
- Power switches
- Motor control

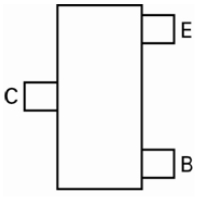
SOT-23



Top View



Device symbol



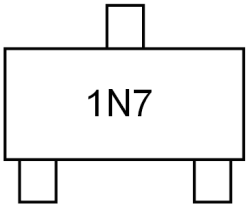
Pin Configuration

Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN649FTA	1N7	7	8mm	3000

Notes: 1. No purposefully added lead. Halogen and Antimony Free.
2. Diodes Inc.'s "Green" Policy can be found on our website at http://www.diodes.com

Marking Information



1N7 = Product type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

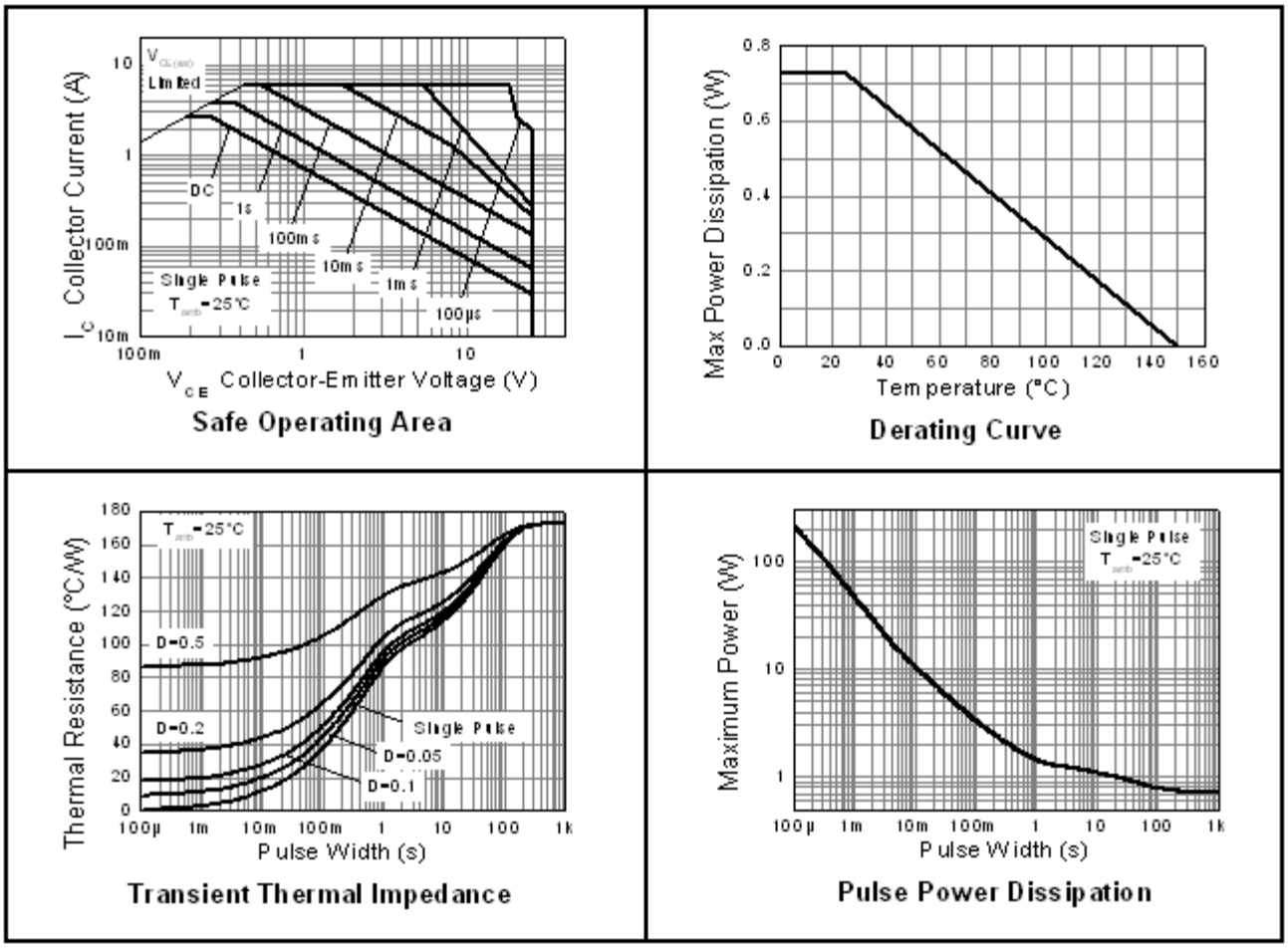
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	35	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current (Note 3)	I_C	3	A
Peak Pulse Current	I_{CM}	6	A
Base Current	I_B	500	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation at T_A = 25°C (Note 4)	P_D	725	mW
Thermal Resistance, Junction to Ambient (Note 3) @ T_A = 25°C	$R_{\theta JA}$	172	°C/W
Thermal Resistance, Junction to Lead @ T_A = 25°C	$R_{\theta JL}$	79	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 3. For a device surface mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
4. For device mounted on FR4 PCB measured at t ≤ 2 Secs.

Thermal Characteristics and Derating information

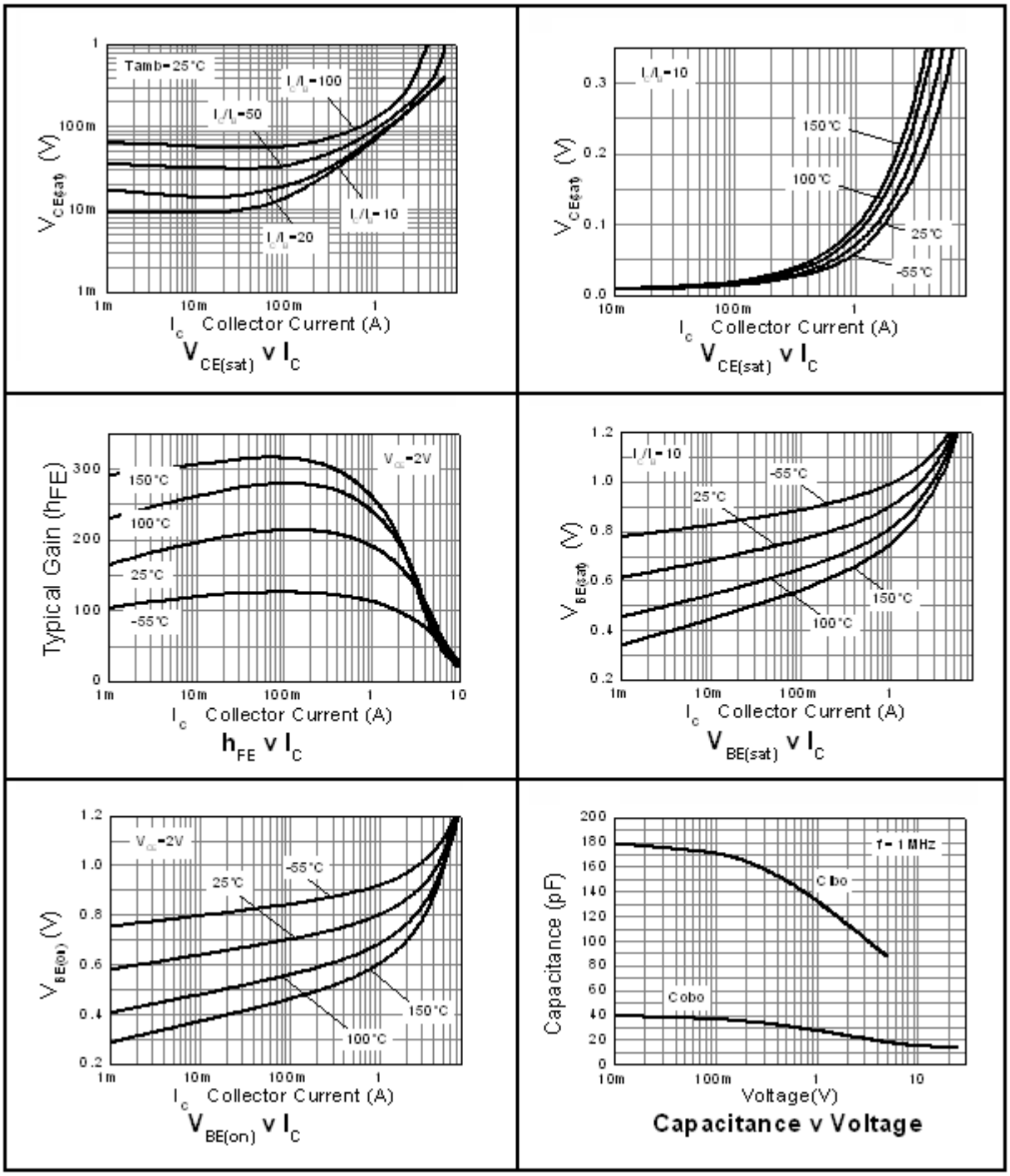


Electrical Characteristics @T_A = 25°C unless otherwise specified

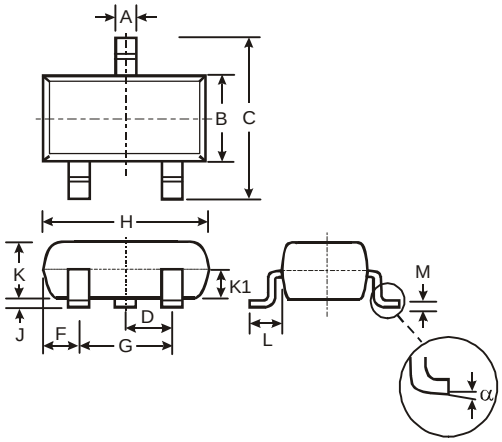
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	35	110		V	I_C = 100 µA
Collector-Emitter Breakdown Voltage (Note 5)	$V_{(BR)CEO}$	25	35		V	I_C = 10 mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	7	8.1		V	I_E = 100 µA
Collector Cutoff Current	I_{CBO}		< 1	50 0.5	nA µA	V_{CB} = 28V V_{CB} = 28V, T_{amb}=100 °C
Emitter Cutoff Current	I_{EBO}		< 1	50	nA	V_{EB} = 5.6V
Static Forward Current Transfer Ratio (Note 5)	h_{FE}	200 175 155 50	320 280 250 85	500		I_C = 100mA, V_{CE} = 2V I_C = 1A, V_{CE} = 2V I_C = 2A, V_{CE} = 2V I_C = 6A, V_{CE} = 2V
Collector-Emitter Saturation Voltage (Note 5)	$V_{CE(sat)}$		70 200	120 300	mV mV	I_C =1A, I_B = 100mV I_C = 3A, I_B = 300mV
Base-Emitter Turn-On Voltage (Note 5)	$V_{BE(on)}$		780	850	mV	I_C = 1A, V_{CE} = 2V
Base-Emitter Saturation Voltage (Note 5)	$V_{BE(sat)}$		900	1000	mV	I_C = 1A, I_B = 100mV

Notes: 5. Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤ 2%

Typical Characteristics

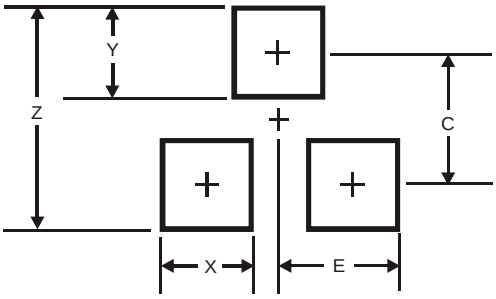


Package Outline Dimensions



SOT-23			
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	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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