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# ZXTN2038F

## SOT23 80 volt NPN silicon planar medium power transistor

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### Summary

 $V_{(BR)CEV} > 80V$  $V_{(BR)CEO} > 60V$  $I_{c(cont)} = 1A$  $V_{ce(sat)} < 500mV @ 1A$ 

### Complementary type

ZXTP2039F

### Description

This transistor combines high gain, high current operation and low saturation voltage making it ideal for power MOSFET gate driving and low loss power switching.

### Features

- Low saturation voltage for reduced power dissipation
- 1 to 2 amp high current capability
- Pb-free
- SOT23 package

### Applications

- Power MOSFET gate driving
- Low loss power switching

### Ordering information

Device	Reel size	Tape width	Quantity per reel
ZXTN2038FTA	7"	8mm	3,000
ZXTN2038FTC	13"	8mm	10,000

### Device marking

N38

# ZXTN2038F

## Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	$V_{CBO}$	80	V
Collector-emitter voltage	$V_{CEV}$	80	V
Collector-emitter voltage	$V_{CEO}$	60	V
Emitter-base voltage	$V_{EBO}$	5.0	V
Peak pulse current	$I_{CM}$	2	A
Continuous collector current (*)	$I_C$	1	A
Peak base current	$I_{BM}$	1	A
Power dissipation @ $T_A=25^{\circ}\text{C}$ (*)	$P_D$	350	mW
Operating and storage temperature	$T_j:T_{stg}$	55 to +150	$^{\circ}\text{C}$

### NOTES:

(\*) For a device surface mounted on a 15mm x 15mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

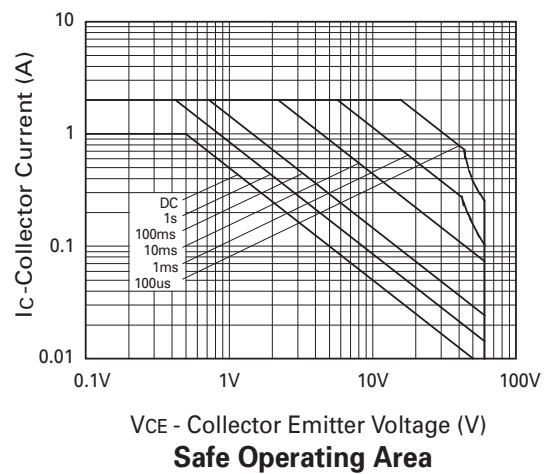
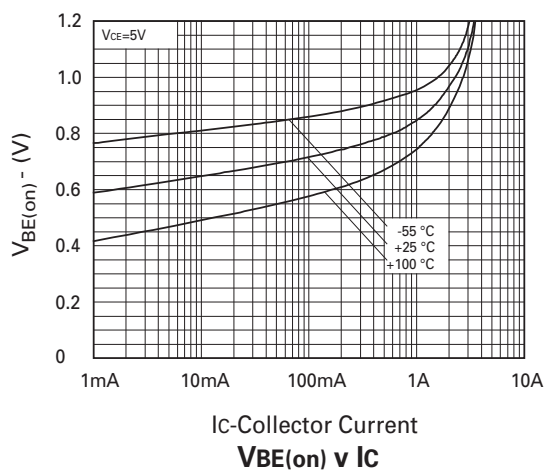
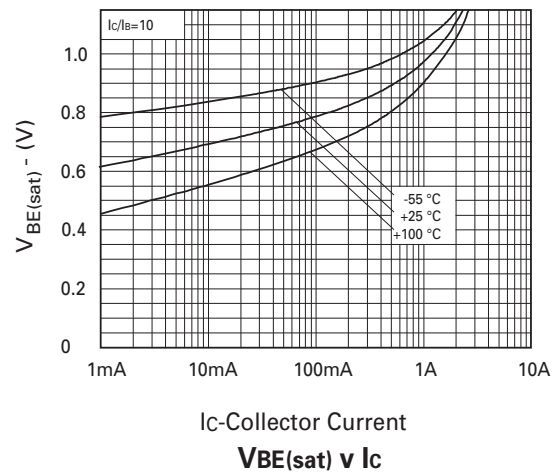
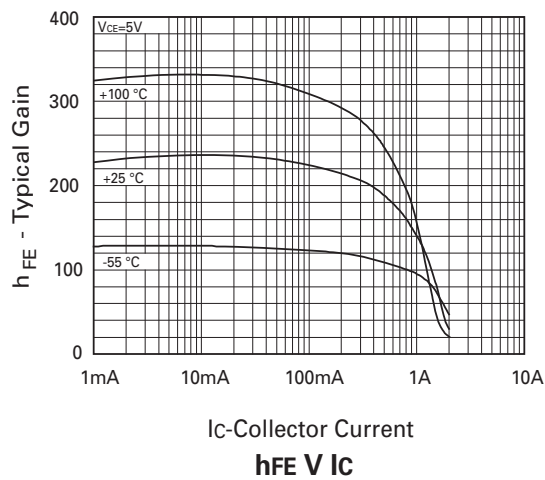
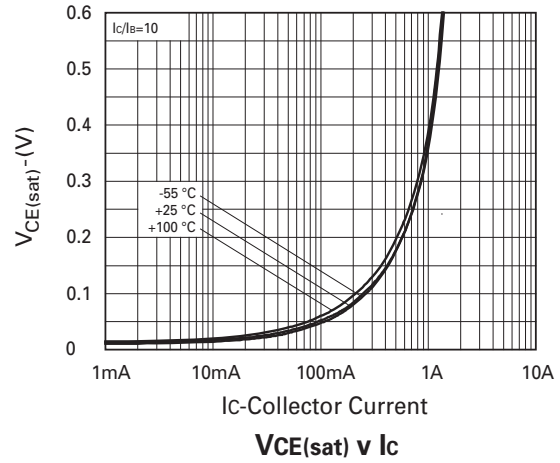
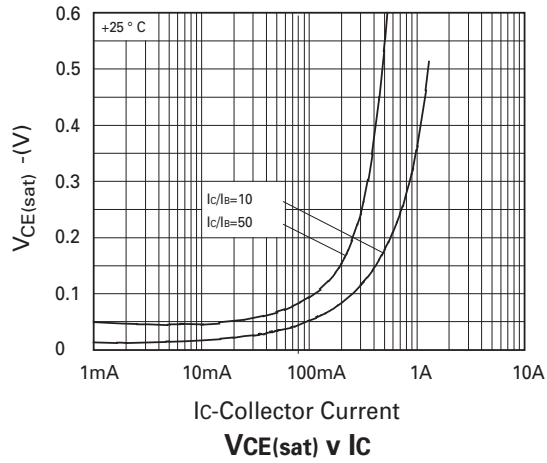
## Electrical characteristics (@T<sub>AMB</sub> = 25°C)

Parameter	Symbol	Min.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	80		V	$I_C=100\mu A$
Collector-emitter breakdown voltage	$V_{(BR)CEV}$	80		V	$I_C=100\mu A$ , $0.3V > V_{BE} > -1V$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	60		V	$I_C=10mA$ (*)
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5		V	$I_E=100\mu A$
Collector-emitter cut-off current	$I_{CES}$		100	nA	$V_{CE}=60V$
Collector-base cut-off current	$I_{CBO}$		100	nA	$V_{CB}=60V$
Emitter-base cut-off current	$I_{EBO}$		100	nA	$V_{EB}=4V$
Static forward current transfer ratio	$h_{FE}$	100 100 80 30	300		$I_C=1mA$ , $V_{CE}=5V$ $I_C=500mA$ , $V_{CE}=5V$ (*) $I_C=1A$ , $V_{CE}=5V$ (*) $I_C=2A$ , $V_{CE}=5V$ (*)
Collector-emitter saturation voltage	$V_{CE(sat)}$		0.2 0.25 0.5	V V V	$I_C=100mA$ , $I_B=2mA$ (*) $I_C=500mA$ , $I_B=50mA$ (*) $I_C=1A$ , $I_B=100mA$ (*)
Base-emitter saturation voltage	$V_{BE(sat)}$		1.1	V	$I_C=1A$ , $I_B=100mA$ (*)
Base-emitter turn-on voltage	$V_{BE(on)}$		1.0	V	$I_C=1A$ , $V_{CE}=5V$ (*)
Transition frequency	$f_T$	150			$I_C=50mA$ , $V_{CE}=10V$ $f=100MHz$
Output capacitance	$C_{obo}$		10	pF	$V_{CB}=10V$ , $f=1MHz$

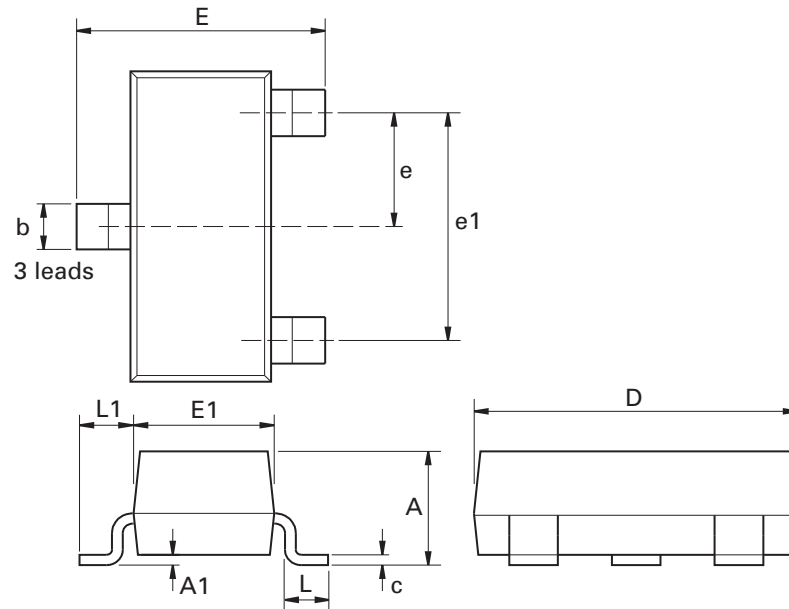
### NOTES:

(\*) Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%  
Spice parameter data is available upon request for this device

## Typical characteristics



## Packaging details - SOT23



## Package dimensions

Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
c	0.085	0.20	0.003	0.008	L	0.25	0.60	0.0098	0.0236
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
e	0.95 NOM		0.037 NOM		-	-	-	-	-

**Note:** Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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