ZXTN2038F
SOT23 80 volt NPN silicon planar medium power transistor

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

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°C(*)	P_D	350	mW
Operating and storage temperature	T_j:T_{stg}	55 to +150	°C

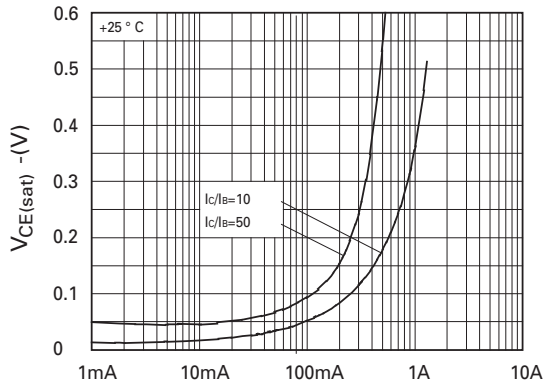
NOTES:
(*) For a device surface mounted on a 15mm x 15mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

Electrical characteristics (@T_{AMB} = 25°C)

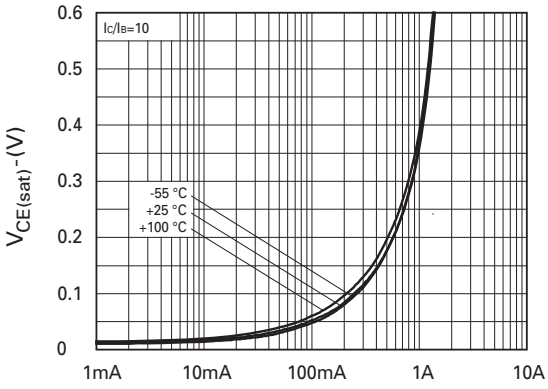
Parameter	Symbol	Min.	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	80		V	I_C=100μA
Collector-emitter breakdown voltage	$V_{(BR)CEV}$	80		V	I_C=100μA, 0.3V > V_{BE} > -1V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	60		V	I_C=10mA (*)
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5		V	I_E=100μA
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

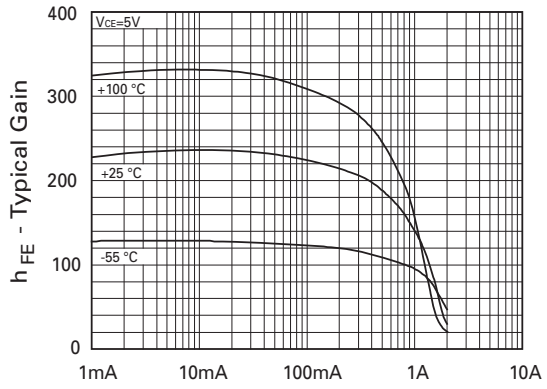
Typical characteristics



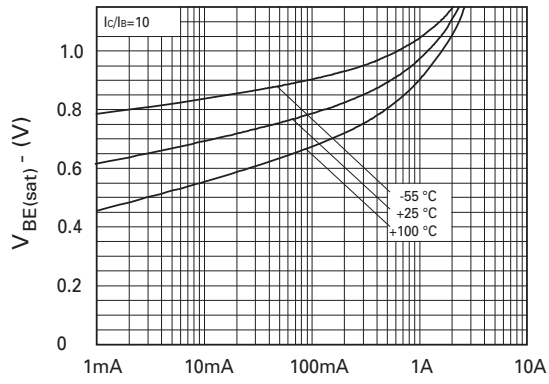
VCE(sat) v IC



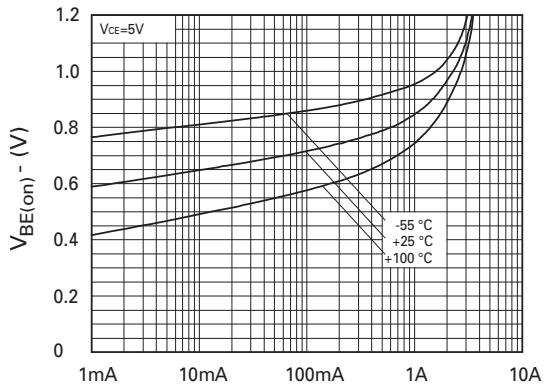
VCE(sat) v IC



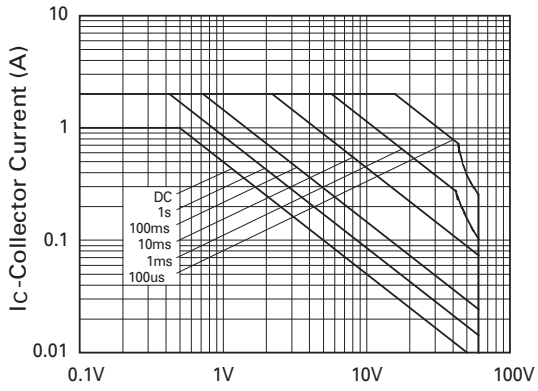
hFE V IC



VBE(sat) v IC

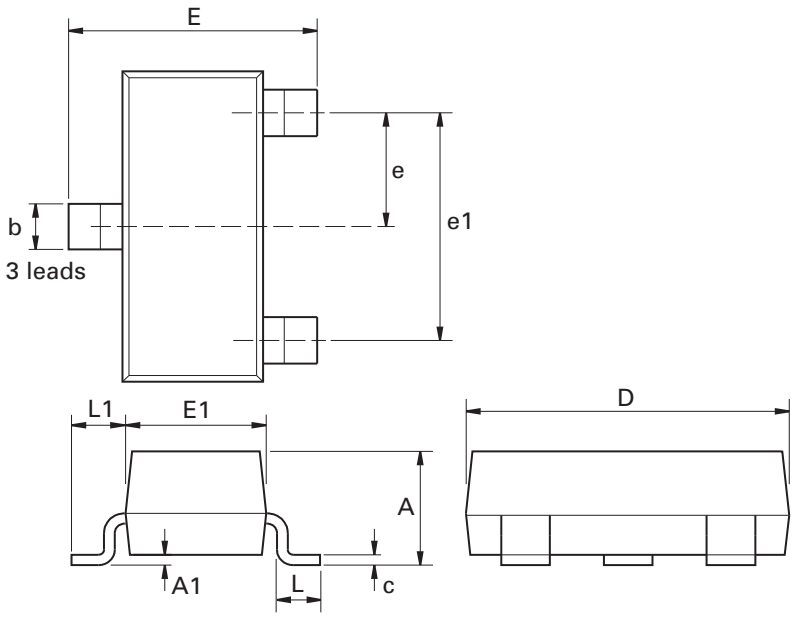


VBE(on) v IC



Safe Operating Area

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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