
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

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 @ $T_A=25^{\circ}C^{(*)}$ | P_D | 350 | mW |
| Operating and storage temperature | $T_j:T_{stg}$ | 55 to +150 | $^{\circ}C$ |

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.

ZXTN2038F

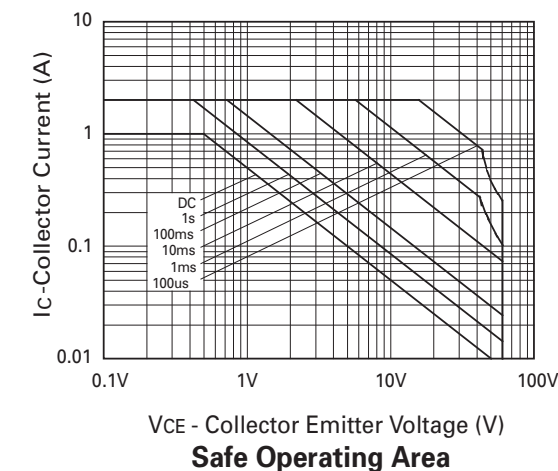
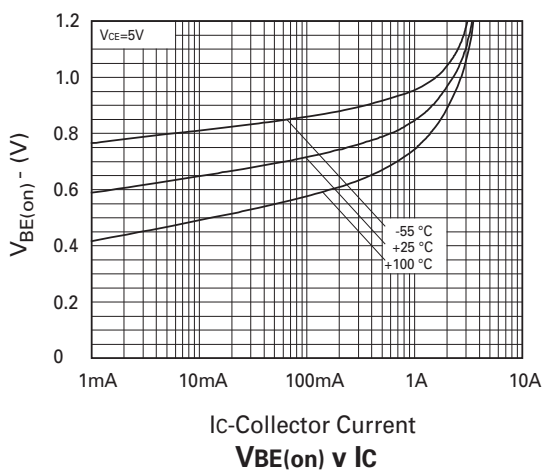
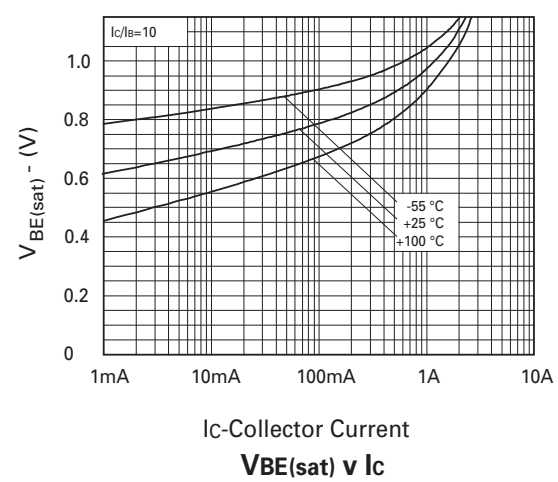
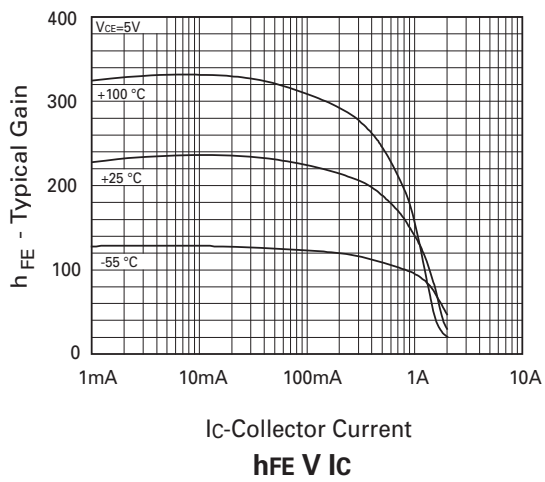
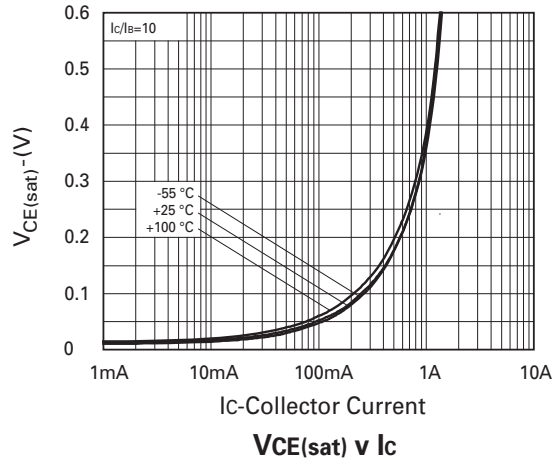
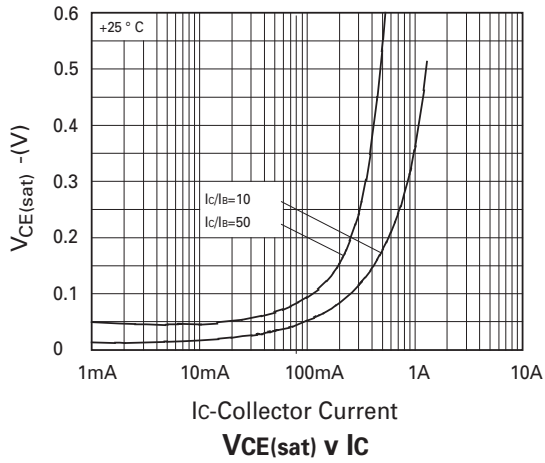
Electrical characteristics (@T_{AMB} = 25°C)

| 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:

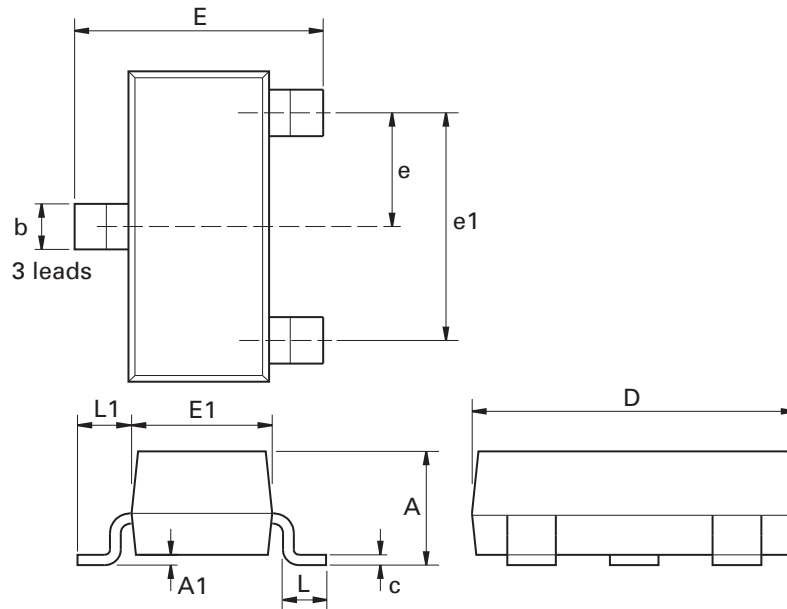
(*) Measured under pulsed conditions. Pulse width=300 μ S. Duty cycle \leq 2%
Spice parameter data is available upon request for this device

Typical characteristics



ZXTN2038F

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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| | |
|-----------------------------------|--|
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| "Active" | Product status recommended for new designs |
| "Last time buy (LTB)" | Device will be discontinued and last time buy period and delivery is in effect |
| "Not recommended for new designs" | Device is still in production to support existing designs and production |
| "Obsolete" | Production has been discontinued |

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| | |
|-----------------------|---|
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