

ZXM62N03G

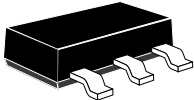
30V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = 30V$; $R_{DS(on)} = 0.11\Omega$; $I_D = 4.7A$

DESCRIPTION

This new generation of High Density MOSFETs from Zetex utilises a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



SOT223

FEATURES

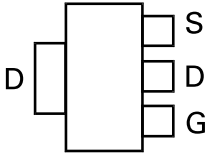
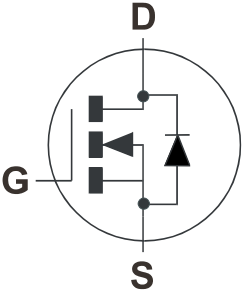
- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT223 package

APPLICATIONS

- DC-DC Converters
- Audio Output Stage
- Relay and Solenoid driving
- Motor Control

ORDERING INFORMATION

| DEVICE | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|-------------|-----------|------------|-------------------|
| ZXM62N03GTA | 7" | 12mm | 1000 units |
| ZXM62N03GTC | 13" | 12mm | 4000 units |



Top View

DEVICE MARKING

- ZXM6
2N03

ZXM62N03G

ABSOLUTE MAXIMUM RATING

| PARAMETER | SYMBOL | LIMIT | UNIT |
|---|---------------|-------------------|---------------------|
| Drain-Source Voltage | V_{DSS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current ($V_{GS}=10V$; $T_A=25^\circ C$)(b) ($V_{GS}=10V$; $T_A=70^\circ C$)(b) ($V_{GS}=10V$; $T_A=25^\circ C$)(a) | I_D | 4.7 3.8 3.4 | A |
| Pulsed Drain Current (c) | I_{DM} | 16 | A |
| Continuous Source Current (Body Diode) (b) | I_S | 2.6 | A |
| Pulsed Source Current (Body Diode)(c) | I_{SM} | 16 | A |
| Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor | P_D | 2.0 16 | W mW/ $^\circ C$ |
| Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor | P_D | 3.9 31 | W mW/ $^\circ C$ |
| Operating and Storage Temperature Range | $T_j:T_{stg}$ | -55 to +150 | $^\circ C$ |

THERMAL RESISTANCE

| PARAMETER | SYMBOL | VALUE | UNIT |
|-------------------------|-----------------|-------|--------------|
| Junction to Ambient (a) | $R_{\theta JA}$ | 62.5 | $^\circ C/W$ |
| Junction to Ambient (b) | $R_{\theta JA}$ | 32 | $^\circ C/W$ |

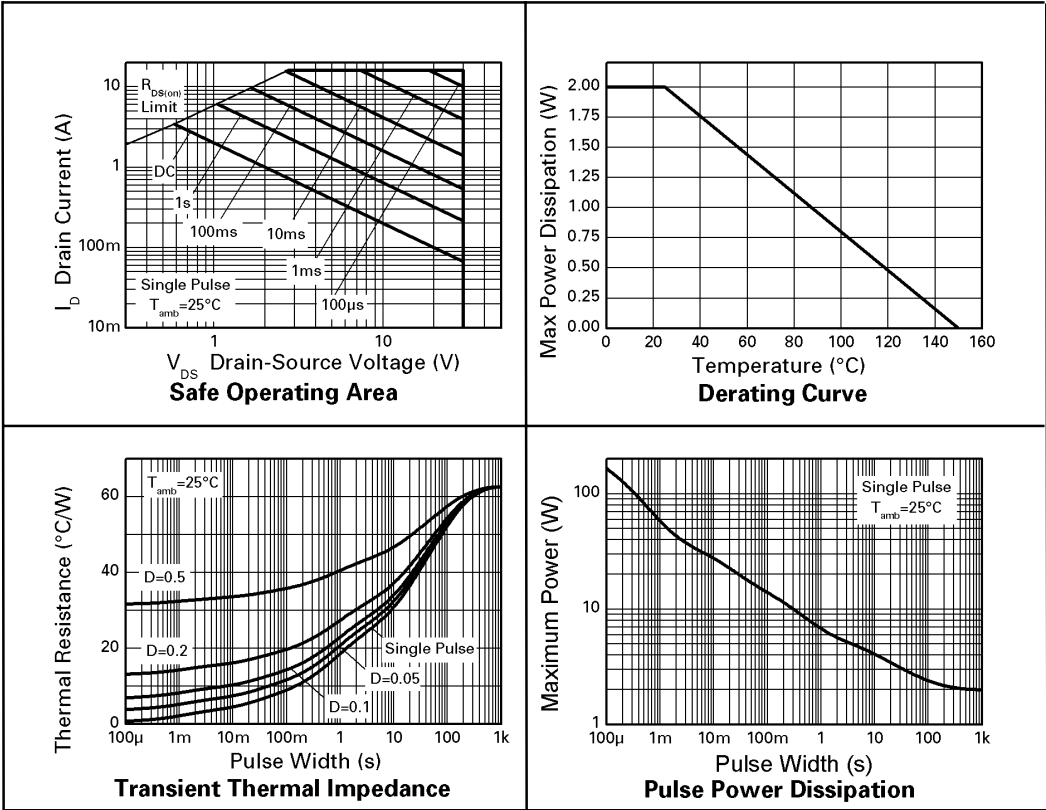
NOTES

- (a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
- (b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ secs.
- (c) Repetitive rating 25mm x 25mm FR4 PCB, $D=0.05$ pulse width limited by maximum junction temperature.



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ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$ unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS. |
|---|---------------|------|------|--------------|----------------------|---|
| STATIC | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | 30 | | | V | $I_D=250\mu\text{A}, V_{GS}=0\text{V}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | | | 1 | μA | $V_{DS}=30\text{V}, V_{GS}=0\text{V}$ |
| Gate-Body Leakage | I_{GSS} | | | 100 | nA | $V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$ |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | 1.0 | | | V | $I_D=250\mu\text{A}, V_{DS}=V_{GS}$ |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ | | | 0.11 0.15 | Ω Ω | $V_{GS}=10\text{V}, I_D=2.2\text{A}$ $V_{GS}=4.5\text{V}, I_D=1.1\text{A}$ |
| Forward Transconductance (1)(3) | g_{fs} | 1.1 | | | S | $V_{DS}=15\text{V}, I_D=1.1\text{A}$ |
| DYNAMIC (3) | | | | | | |
| Input Capacitance | C_{iss} | | 380 | | pF | $V_{DS}=25\text{V}, V_{GS}=0\text{V},$ $f=1\text{MHz}$ |
| Output Capacitance | C_{oss} | | 90 | | pF | |
| Reverse Transfer Capacitance | C_{rss} | | 30 | | pF | |
| SWITCHING(2) (3) | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | | 2.9 | | ns | $V_{DD}=15\text{V}, I_D=2.2\text{A}$ $R_G=6.0\Omega, V_{GS}=10\text{V}$ |
| Rise Time | t_r | | 5.6 | | ns | |
| Turn-Off Delay Time | $t_{d(off)}$ | | 11.7 | | ns | |
| Fall Time | t_f | | 6.4 | | ns | |
| Total Gate Charge | Q_g | | | 9.6 | nC | $V_{DS}=24\text{V}, V_{GS}=10\text{V},$ $I_D=2.2\text{A}$ |
| Gate-Source Charge | Q_{gs} | | | 1.7 | nC | |
| Gate-Drain Charge | Q_{gd} | | | 2.8 | nC | |
| SOURCE-DRAIN DIODE | | | | | | |
| Diode Forward Voltage (1) | V_{SD} | | | 0.95 | V | $T_J=25^\circ\text{C}, I_S=2.2\text{A},$ $V_{GS}=0\text{V}$ |
| Reverse Recovery Time (3) | t_{rr} | | 18.8 | | ns | $T_J=25^\circ\text{C}, I_F=2.2\text{A},$ $di/dt= 100\text{A}/\mu\text{s}$ |
| Reverse Recovery Charge (3) | Q_{rr} | | 11.4 | | nC | |

NOTES

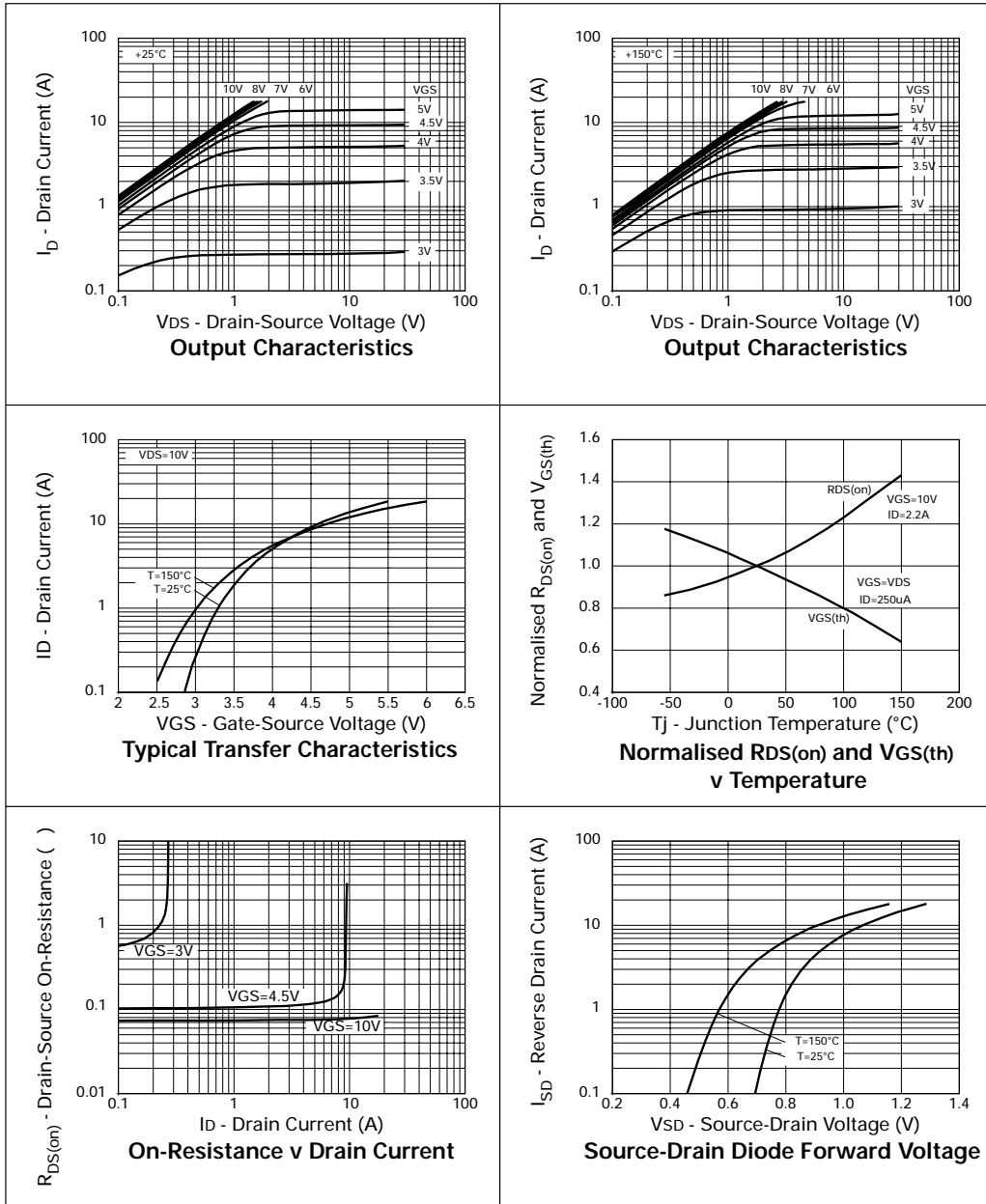
- (1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.



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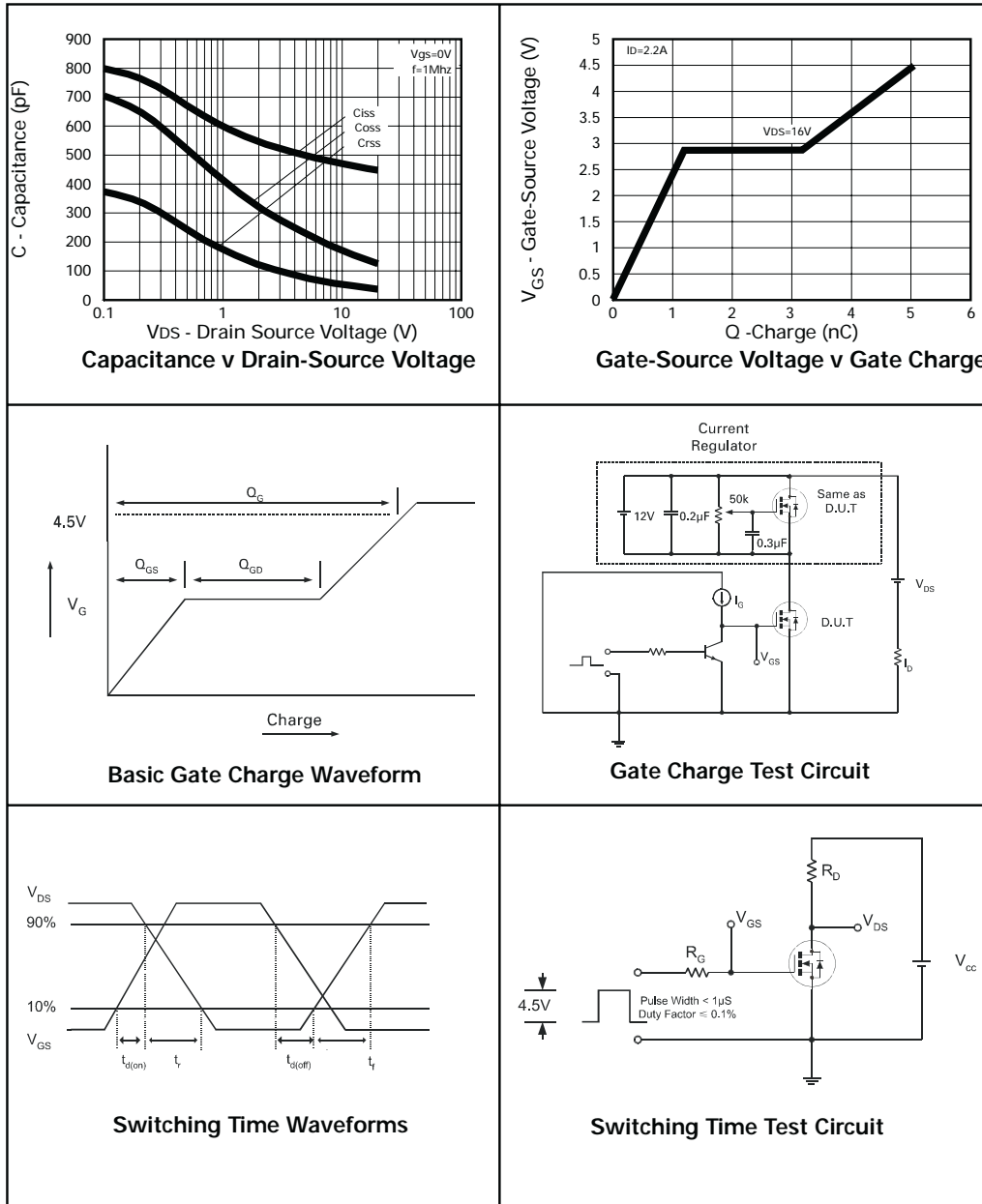
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TYPICAL CHARACTERISTICS



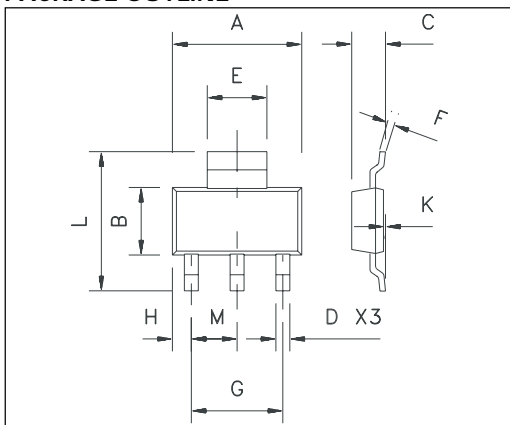
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TYPICAL CHARACTERISTICS



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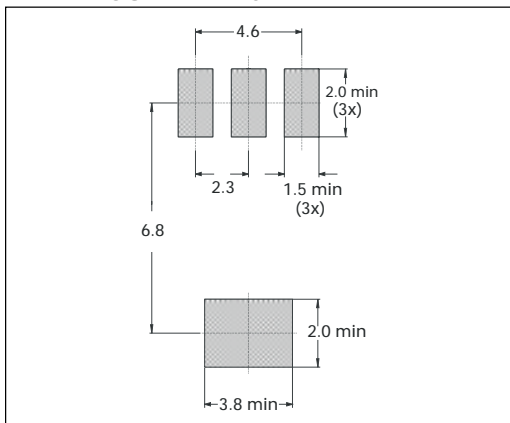
PACKAGE OUTLINE



PACKAGE DIMENSIONS

| DIM | Millimetres | | Inches | |
|-----|-------------|------|------------|-------|
| | Min | Max | Min | Max |
| A | 6.3 | 6.7 | 0.248 | 0.264 |
| B | 3.3 | 3.7 | 0.130 | 0.146 |
| C | - | 1.7 | - | 0.067 |
| D | 0.6 | 0.8 | 0.024 | 0.031 |
| E | 2.9 | 3.1 | 0.114 | 0.122 |
| F | 0.24 | 0.32 | 0.009 | 0.13 |
| G | NOM 4.6 | | NOM 0.181 | |
| H | 0.85 | 1.05 | 0.033 | 0.041 |
| K | 0.02 | 0.10 | 0.0008 | 0.004 |
| L | 6.7 | 7.3 | 0.264 | 0.287 |
| M | NOM 2.3 | | NOM 0.0905 | |

PAD LAYOUT DETAILS



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Europe

Zetex plc
Fields New Road
Chadderton
Oldham, OL9 8NP
United Kingdom
Telephone: (44) 161 622 4422
Fax: (44) 161 622 4420
uk.sales@zetex.com

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49
europe.sales@zetex.com

Americas

Zetex Inc
700 Veterans Memorial Hwy
Hauppauge, NY11788
USA
Telephone: (631) 360 2222
Fax: (631) 360 8222
usa.sales@zetex.com

Asia Pacific

Zetex (Asia) Ltd
3701-04 Metroplaza, Tower 1
Hing Fong Road
Kwai Fong
Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494
asia.sales@zetex.com

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