

ZXM62P03G

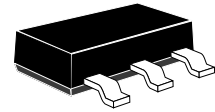
30V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$V_{(BR)DSS} = -30V$; $R_{DS(on)} = 0.15\Omega$; $I_D = -4.0A$

DESCRIPTION

This new generation of Trench MOSFETs from Zetex utilizes 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.



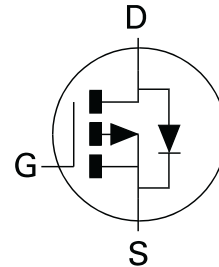
SOT223

FEATURES

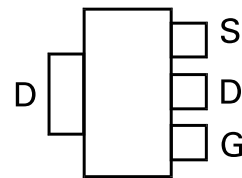
- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT223 package

APPLICATIONS

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



PINOUT



Top View

ORDERING INFORMATION

| DEVICE | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|-------------|-----------|------------|-------------------|
| ZXM62P03GTA | 7" | 12mm | 1000 units |
| ZXM62P03GTC | 13" | 12mm | 4000 units |

DEVICE MARKING

ZXM6
2P03

ZXM62P03G

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 | -4.0 -3.2 -2.9 | A |
| Pulsed Drain Current (c) | I_{DM} | -13 | A |
| Continuous Source Current (Body Diode) (b) | I_S | 2.4 | A |
| Pulsed Source Current (Body Diode)(c) | I_{SM} | -13 | 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

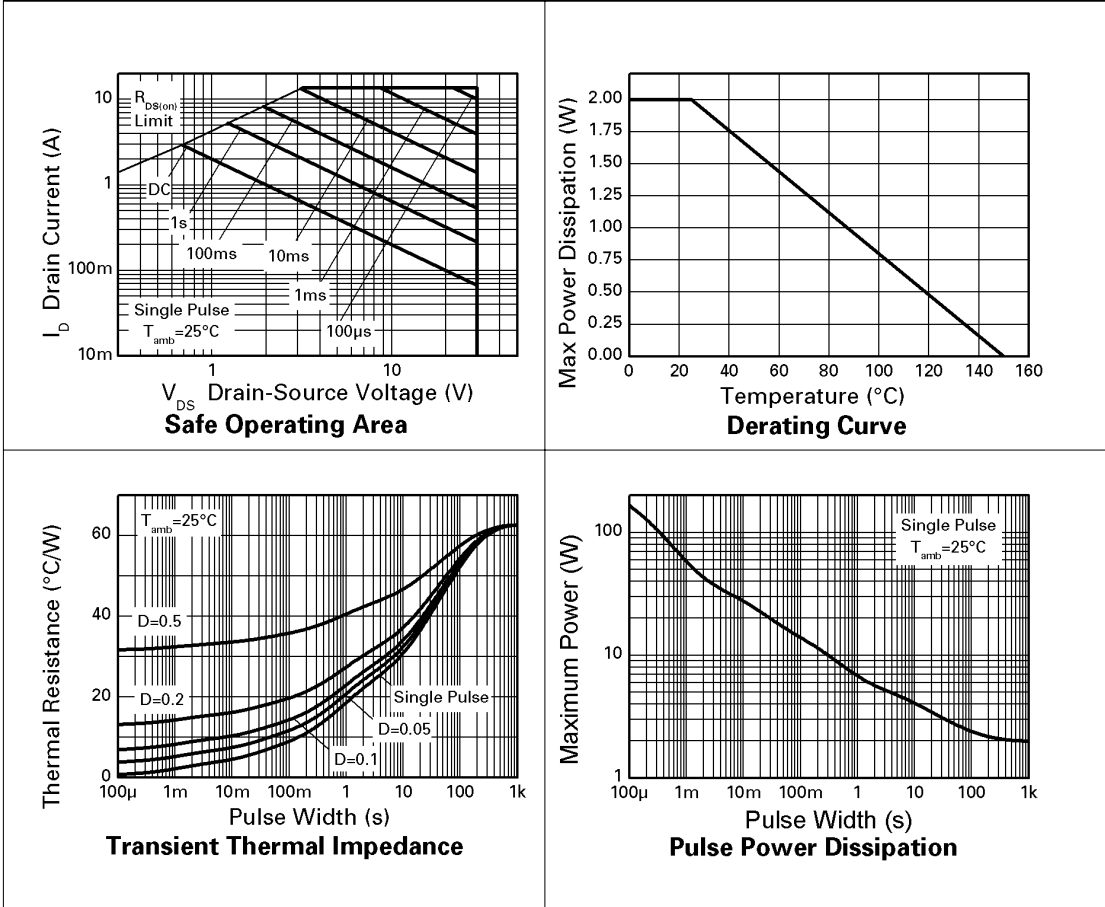
| PARAMETER | SYMBOL | VALUE | UNIT |
|-------------------------|-----------------|-------|--------------|
| Junction to Ambient (a) | $R_{\theta JA}$ | 62.5 | $^\circ C/W$ |
| Junction to Ambient (b) | $R_{\theta JA}$ | 32.2 | $^\circ C/W$ |

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.



ZXM62P03G



ZXM62P03G

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) | $R_{DS(on)}$ | | | 0.15 0.23 | Ω Ω | $V_{GS} = -10\text{V}$, $I_D = -1.6\text{A}$ $V_{GS} = -4.5\text{V}$, $I_D = -0.8\text{A}$ |
| Forward Transconductance (1)(3) | g_{fs} | 1.1 | | | S | $V_{DS} = -10\text{V}$, $I_D = -0.8\text{A}$ |
| DYNAMIC (3) | | | | | | |
| Input Capacitance | C_{iss} | | 330 | | pF | $V_{DS} = -25\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$ |
| Output Capacitance | C_{oss} | | 120 | | pF | |
| Reverse Transfer Capacitance | C_{rss} | | 45 | | pF | |
| SWITCHING(2) (3) | | | | | | |
| Turn-On Delay Time | $t_{d(on)}$ | | 2.8 | | ns | $V_{DD} = -15\text{V}$, $I_D = -1.6\text{A}$ $R_G = 6.2\Omega$, $V_{GS} = -10\text{V}$ |
| Rise Time | t_r | | 6.4 | | ns | |
| Turn-Off Delay Time | $t_{d(off)}$ | | 13.9 | | ns | |
| Fall Time | t_f | | 10.3 | | ns | |
| Total Gate Charge | Q_g | | | 10.2 | nC | $V_{DS} = -24\text{V}$, $V_{GS} = -10\text{V}$, $I_D = -1.6\text{A}$ |
| Gate-Source Charge | Q_{gs} | | | 1.5 | nC | |
| Gate-Drain Charge | Q_{gd} | | | 3 | nC | |
| SOURCE-DRAIN DIODE | | | | | | |
| Diode Forward Voltage (1) | V_{SD} | | | -0.95 | V | $T_J = 25^\circ\text{C}$, $I_S = -1.6\text{A}$, $V_{GS} = 0\text{V}$ |
| Reverse Recovery Time (3) | t_{rr} | | 19.9 | | ns | $T_J = 25^\circ\text{C}$, $I_F = -1.6\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$ |
| Reverse Recovery Charge (3) | Q_{rr} | | 13 | | nC | |

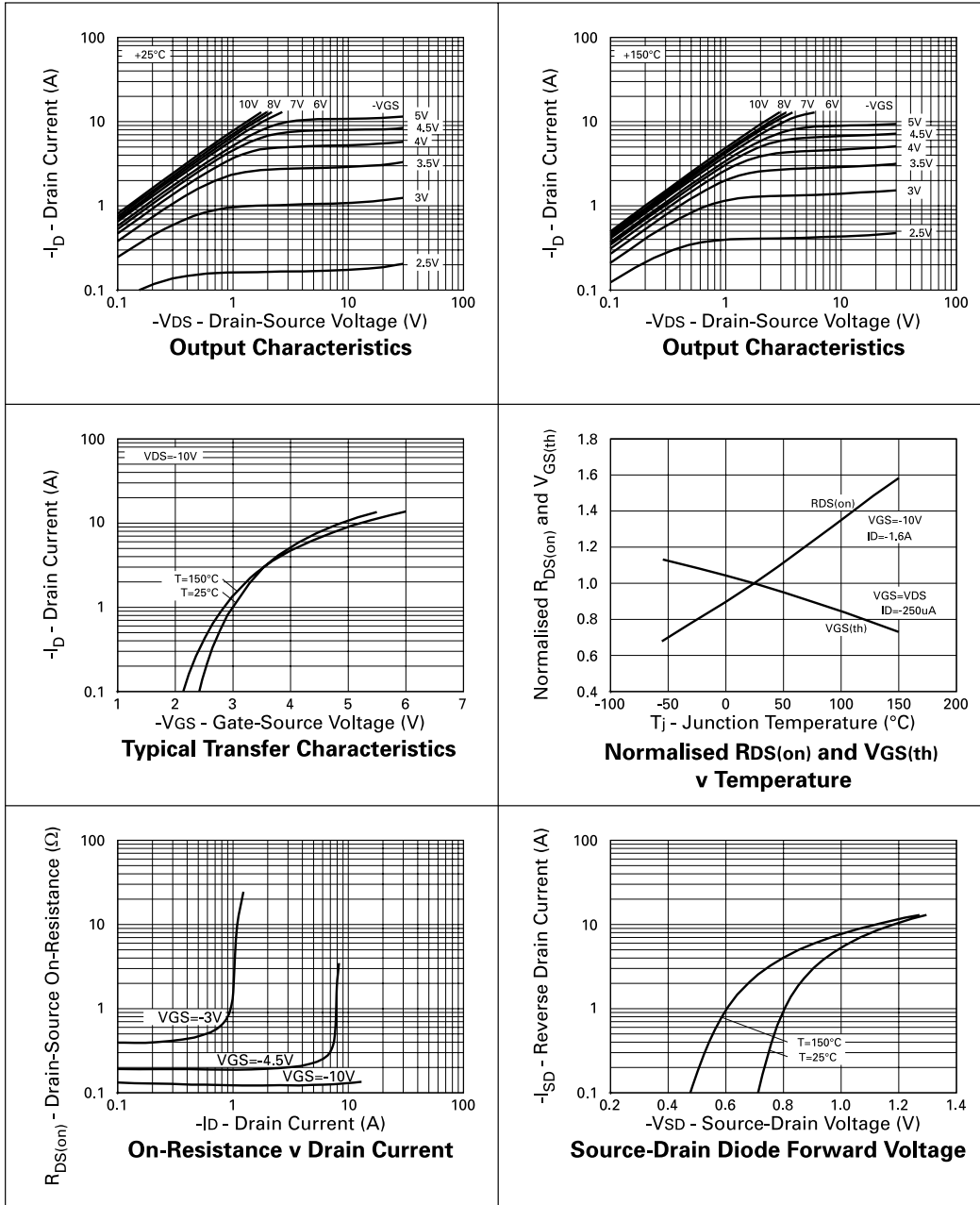
NOTES

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



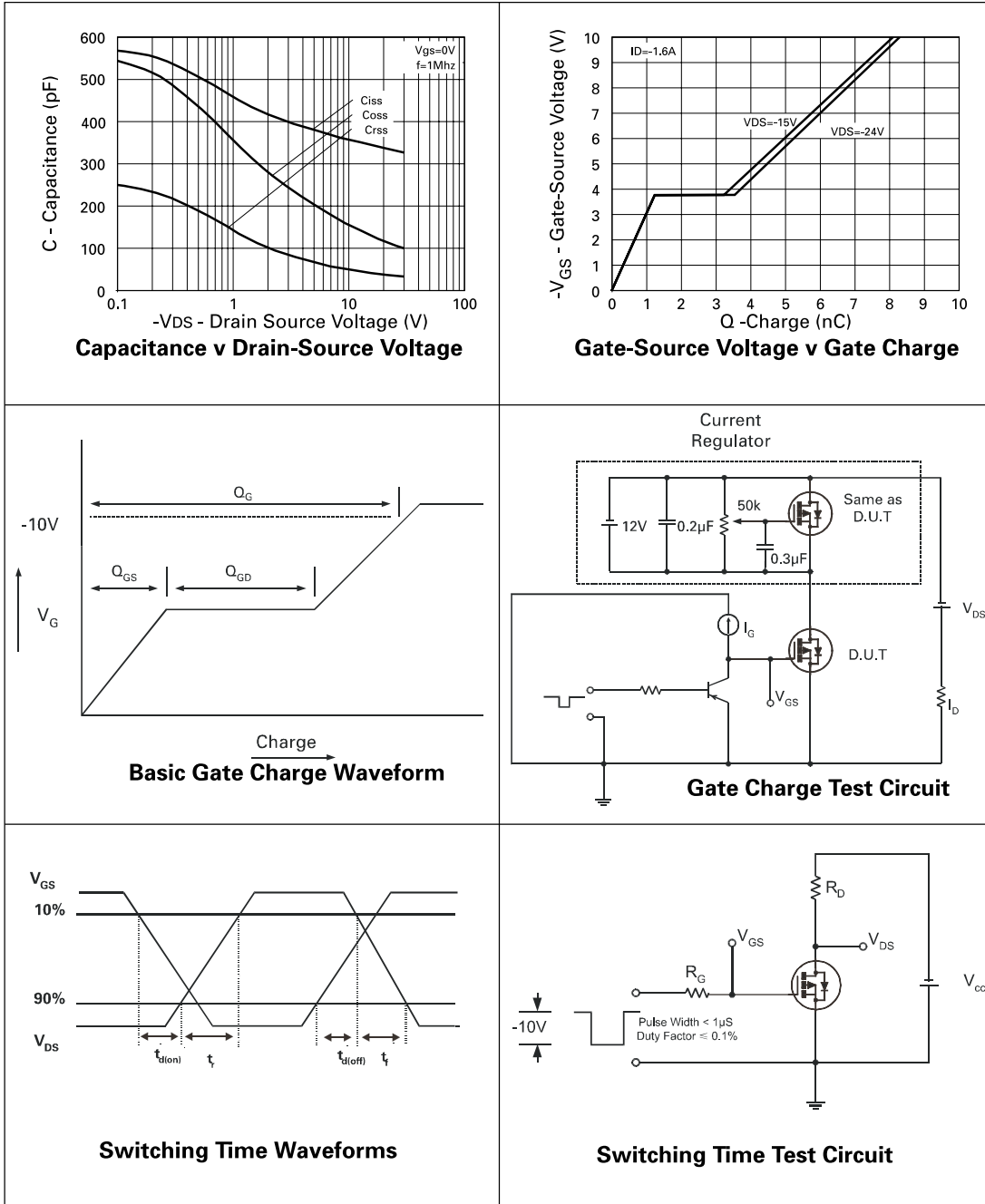
ZXM62P03G

TYPICAL CHARACTERISTICS



ZXM62P03G

TYPICAL CHARACTERISTICS

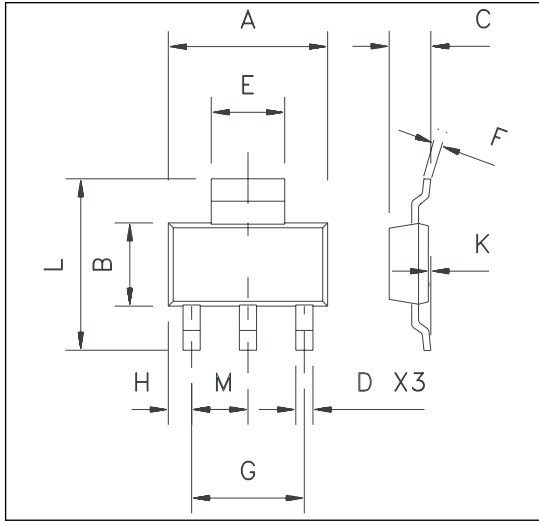


ZXM62P03G

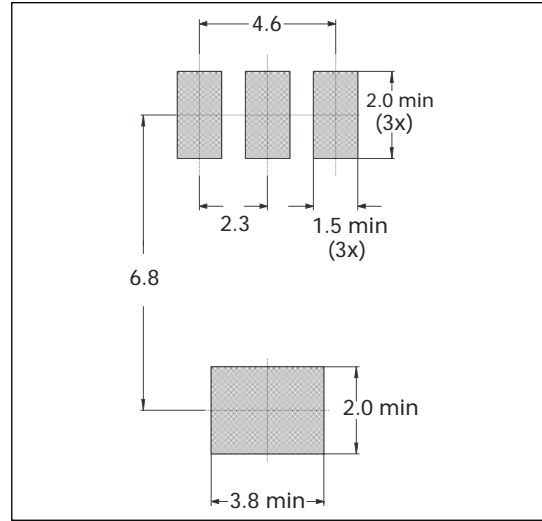
Notes

ZXM62P03G

PACKAGE OUTLINE



PAD LAYOUT DETAILS



PACKAGE DIMENSIONS

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

© Zetex plc 2002

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

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to www.zetex.com



ISSUE 2 - DECEMBER 2002