



# THE DATASHEET OF ZXM64P035GTA



# ZXM64P035G

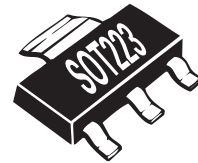
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## 35V P-CHANNEL ENHANCEMENT MODE MOSFET

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### SUMMARY

$V_{(BR)DSS} = -35V$ ;  $R_{DS(on)} = 0.075\Omega$ ;  $I_D = -5.3A$



### DESCRIPTION

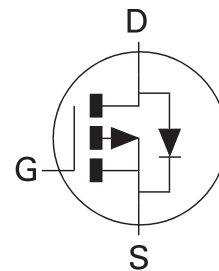
This new generation of high cell density planar MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.

### FEATURES

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

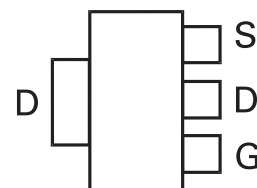
### APPLICATIONS

- 50W Class D Audio Output Stage
- Motor Control



### ORDERING INFORMATION

| DEVICE       | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|--------------|-----------|------------|-------------------|
| ZXM64P035GTA | 7"        | 12mm       | 1000 units        |
| ZXM64P035GTC | 13"       | 12mm       | 4000 units        |



Top View

### DEVICE MARKING

- ZXM6  
4P035

# ZXM64P035G

## ABSOLUTE MAXIMUM RATING

| PARAMETER  | SYMBOL         | LIMIT                | UNIT                |
|--|----------------|----------------------|---------------------|
| Drain-Source Voltage   | $V_{DSS}$      | -35                  | V                   |
| Gate-Source Voltage  | $V_{GS}$       | $\pm 20$             | V                   |
| Continuous Drain Current ( $V_{GS} = -10V$ ; $T_A = 25^\circ C$ )(b)<br>( $V_{GS} = -10V$ ; $T_A = 70^\circ C$ )(b)<br>( $V_{GS} = -10V$ ; $T_A = 25^\circ C$ )(a) | $I_D$          | -5.3<br>-4.3<br>-3.8 | A                   |
| Pulsed Drain Current (c)   | $I_{DM}$       | -19                  | A                   |
| Continuous Source Current (Body Diode) (b)   | $I_S$          | -2.3                 | A                   |
| Pulsed Source Current (Body Diode)(c)  | $I_{SM}$       | -19                  | A                   |
| Power Dissipation at $T_A = 25^\circ C$ (a)<br>Linear Derating Factor  | $P_D$          | 2.0<br>16            | W<br>mW/ $^\circ C$ |
| Power Dissipation at $T_A = 25^\circ C$ (b)<br>Linear Derating Factor  | $P_D$          | 3.9<br>31            | W<br>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).

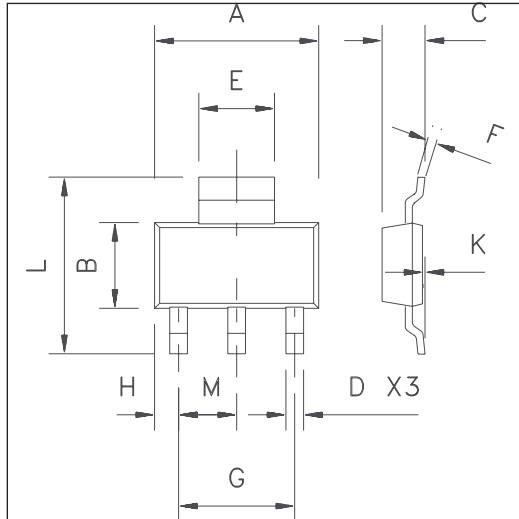
| PARAMETER                                   | SYMBOL        | MIN. | TYP. | MAX.           | UNIT                 | CONDITIONS.   |
|---|---------------|------|------|----------------|----------------------|---|
| <b>STATIC</b>                               |               |      |      |                |                      |   |
| Drain-Source Breakdown Voltage              | $V_{(BR)DSS}$ | -35  |      |                | V                    | $I_D = -250\mu\text{A}$ , $V_{GS} = 0\text{V}$  |
| Zero Gate Voltage Drain Current             | $I_{DSS}$     |      |      | -1             | $\mu\text{A}$        | $V_{DS} = -35\text{V}$ , $V_{GS} = 0\text{V}$   |
| Gate-Body Leakage                           | $I_{GSS}$     |      |      | $\pm 100$      | 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) | $R_{DS(on)}$  |      |      | 0.075<br>0.105 | $\Omega$<br>$\Omega$ | $V_{GS} = -10\text{V}$ , $I_D = -2.4\text{A}$<br>$V_{GS} = -4.5\text{V}$ , $I_D = -1.2\text{A}$ |
| Forward Transconductance (1)(3)             | $g_{fs}$      | 2.3  |      |                | S                    | $V_{DS} = -10\text{V}$ , $I_D = -1.2\text{A}$   |
| <b>DYNAMIC (3)</b>                          |               |      |      |                |                      |   |
| Input Capacitance                           | $C_{iss}$     |      | 825  |                | pF                   | $V_{DS} = -25\text{V}$ , $V_{GS} = 0\text{V}$ ,<br>$f = 1\text{MHz}$                            |
| Output Capacitance                          | $C_{oss}$     |      | 250  |                | pF                   |   |
| Reverse Transfer Capacitance                | $C_{rss}$     |      | 80   |                | pF                   |   |
| <b>SWITCHING(2) (3)</b>                     |               |      |      |                |                      |   |
| Turn-On Delay Time                          | $t_{d(on)}$   |      | 4.4  |                | ns                   | $V_{DD} = -15\text{V}$ , $I_D = -2.4\text{A}$<br>$R_G = 6.0\Omega$ , $V_{GS} = -10\text{V}$     |
| Rise Time                                   | $t_r$         |      | 6.2  |                | ns                   |   |
| Turn-Off Delay Time                         | $t_{d(off)}$  |      | 40   |                | ns                   |   |
| Fall Time                                   | $t_f$         |      | 29.2 |                | ns                   |   |
| Total Gate Charge                           | $Q_g$         |      |      | 46             | nC                   | $V_{DS} = -24\text{V}$ , $V_{GS} = -10\text{V}$ ,<br>$I_D = -2.4\text{A}$                       |
| Gate-Source Charge                          | $Q_{gs}$      |      |      | 9              | nC                   |   |
| Gate-Drain Charge                           | $Q_{gd}$      |      |      | 11.5           | nC                   |   |
| <b>SOURCE-DRAIN DIODE</b>                   |               |      |      |                |                      |   |
| Diode Forward Voltage (1)                   | $V_{SD}$      |      |      | -0.95          | V                    | $T_J = 25^\circ\text{C}$ , $I_S = -2.4\text{A}$ ,<br>$V_{GS} = 0\text{V}$                       |
| Reverse Recovery Time (3)                   | $t_{rr}$      |      | 30.2 |                | ns                   | $T_J = 25^\circ\text{C}$ , $I_F = -2.4\text{A}$ ,<br>$di/dt = 100\text{A}/\mu\text{s}$          |
| Reverse Recovery Charge (3)                 | $Q_{rr}$      |      | 27.8 |                | nC                   |   |

### NOTES

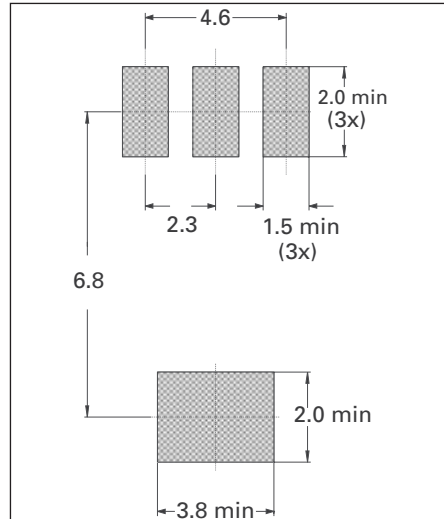
- (1) Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

# ZXM64P035G

## PACKAGE DIMENSIONS



## PAD LAYOUT DETAILS



| 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 |       |

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