

## ZXMN10A07F

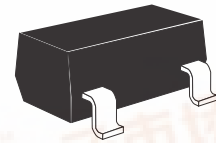
### 100V N-CHANNEL ENHANCEMENT MODE MOSFET

#### SUMMARY

$V_{(BR)DSS} = 100V$ ;  $R_{DS(ON)} = 1\Omega$   $I_D = 0.64A$

#### 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.



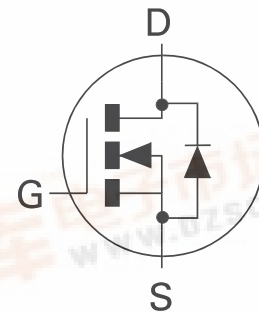
SOT23

#### FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT23 package

#### APPLICATIONS

- DC - DC Converters
- Power Management Functions
- Relay and Solenoid driving
- Motor control

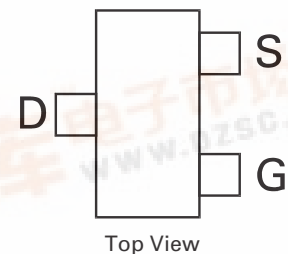


#### ORDERING INFORMATION

| DEVICE       | REEL SIZE | TAPE WIDTH | QUANTITY PER REEL |
|--------------|-----------|------------|-------------------|
| ZXMN10A07FTA | 7"        | 8mm        | 3000 units        |
| ZXMN10A07FTC | 13"       | 8mm        | 10000 units       |

#### DEVICE MARKING

- 7N1



# ZXMN10A07F

## ABSOLUTE MAXIMUM RATINGS

| PARAMETER  | SYMBOL         | LIMIT                | UNIT                  |
|--|----------------|----------------------|-----------------------|
| Drain-Source Voltage   | $V_{DSS}$      | 100                  | 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) | $I_D$          | 0.64<br>0.51<br>0.56 | A                     |
| Pulsed Drain Current (c)   | $I_{DM}$       | 2.5                  | A                     |
| Continuous Source Current (Body Diode) (b)   | $I_S$          | 2                    | A                     |
| Pulsed Source Current (Body Diode)(c)  | $I_{SM}$       | 2.5                  | A                     |
| Power Dissipation at $T_A=25^{\circ}C$ (a)<br>Linear Derating Factor   | $P_D$          | 625<br>5             | mW<br>mW/ $^{\circ}C$ |
| Power Dissipation at $T_A=25^{\circ}C$ (b)<br>Linear Derating Factor   | $P_D$          | 806<br>6.4           | mW<br>mW/ $^{\circ}C$ |
| Operating and Storage Temperature Range  | $T_j; T_{stg}$ | -55 to +150          | $^{\circ}C$           |

## THERMAL RESISTANCE

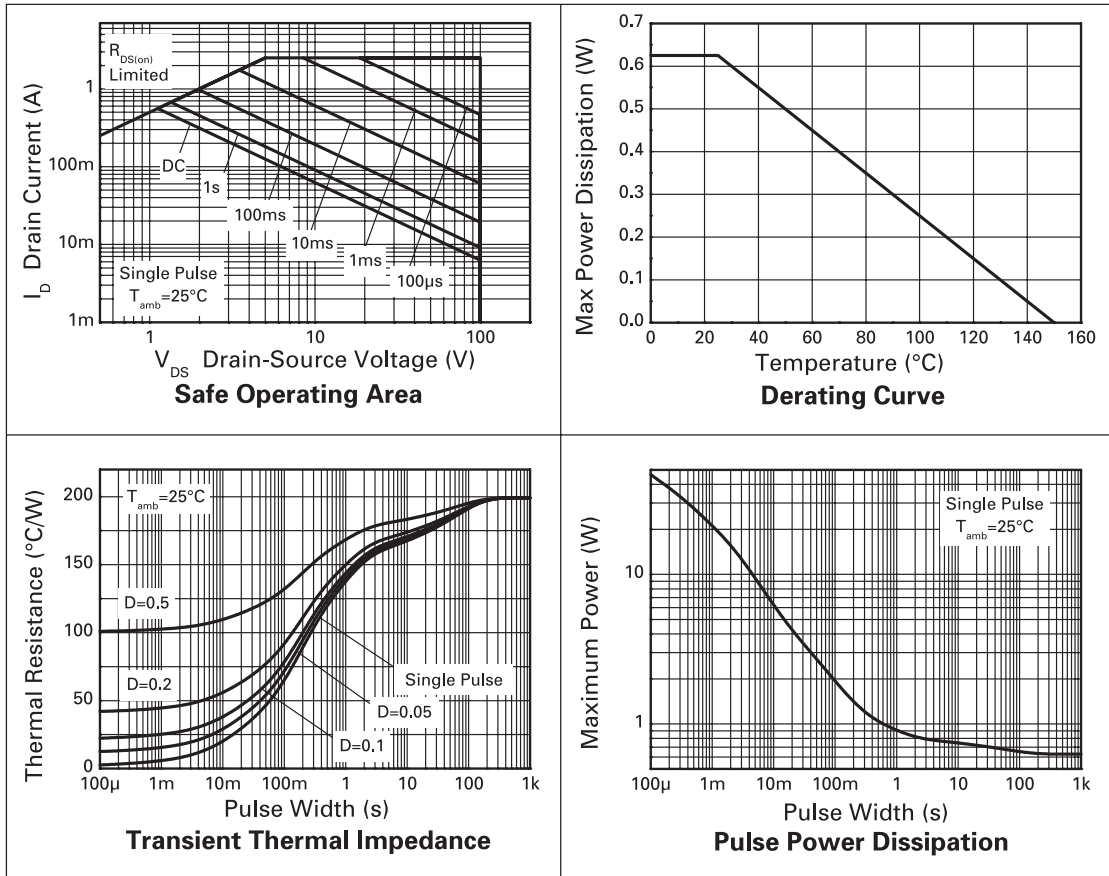
| PARAMETER               | SYMBOL          | VALUE | UNIT          |
|-------------------------|-----------------|-------|---------------|
| Junction to Ambient (a) | $R_{\theta JA}$ | 200   | $^{\circ}C/W$ |
| Junction to Ambient (b) | $R_{\theta JA}$ | 155   | $^{\circ}C/W$ |

### 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  $t \leq 5$  secs.  
 (c) Repetitive rating 25mm x 25mm FR4 PCB,  $D=0.05$ , pulse width 10 $\mu s$  - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

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## CHARACTERISTICS



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## ELECTRICAL CHARACTERISTICS (at TA = 25°C unless otherwise stated)

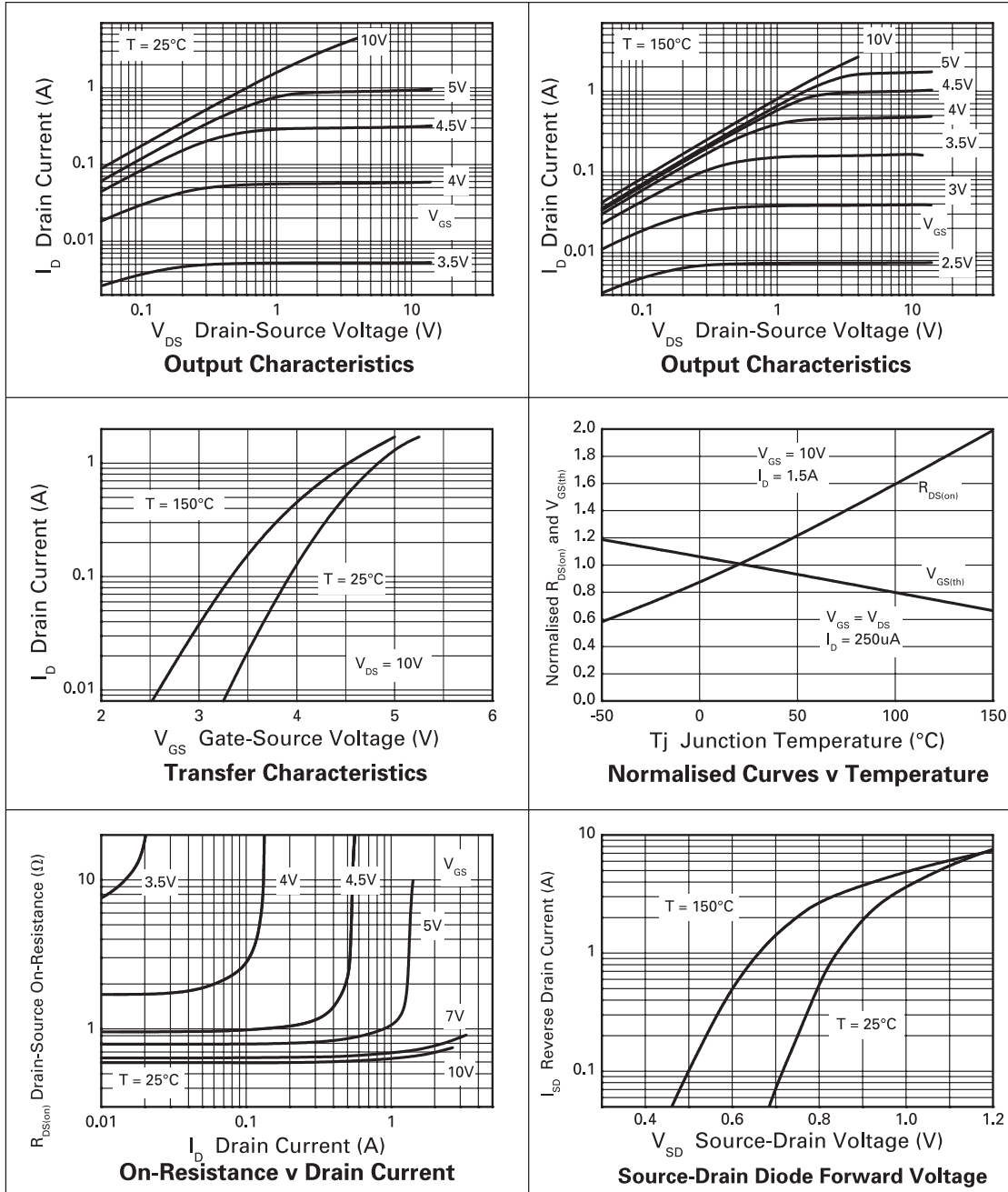
| PARAMETER                                   | SYMBOL        | MIN. | TYP. | MAX.     | UNIT                 | CONDITIONS.   |
|---|---------------|------|------|----------|----------------------|---|
| <b>STATIC</b>                               |               |      |      |          |                      |   |
| Drain-Source Breakdown Voltage              | $V_{(BR)DSS}$ | 100  |      |          | V                    | $I_D=250\mu A, V_{GS}=0V$                           |
| Zero Gate Voltage Drain Current             | $I_{DSS}$     |      |      | 1        | $\mu A$              | $V_{DS}=60V, V_{GS}=0V$                             |
| Gate-Body Leakage                           | $I_{GSS}$     |      |      | 100      | nA                   | $V_{GS}=\pm 20V, V_{DS}=0V$                         |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$  | 2.0  |      | 4.0      | V                    | $I_D=250\mu A, V_{DS}=V_{GS}$                       |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$  |      |      | 1<br>1.1 | $\Omega$<br>$\Omega$ | $V_{GS}=10V, I_D=1.5A$<br>$V_{GS}=6V, I_D=1A$       |
| Forward Transconductance (3)                | $g_{fs}$      |      | 1.6  |          | S                    | $V_{DS}=15V, I_D=1A$                                |
| <b>DYNAMIC (3)</b>                          |               |      |      |          |                      |   |
| Input Capacitance                           | $C_{iss}$     |      | 138  |          | pF                   | $V_{DS}=60V, V_{GS}=0V,$<br>$f=1MHz$                |
| Output Capacitance                          | $C_{oss}$     |      | 12   |          | pF                   |   |
| Reverse Transfer Capacitance                | $C_{rss}$     |      | 6    |          | pF                   |   |
| <b>SWITCHING(2) (3)</b>                     |               |      |      |          |                      |   |
| Turn-On Delay Time                          | $t_{d(on)}$   |      | 1.8  |          | ns                   | $V_{DD}=50V, I_D=1A$<br>$R_G=6.0\Omega, V_{GS}=10V$ |
| Rise Time                                   | $t_r$         |      | 1.5  |          | ns                   |   |
| Turn-Off Delay Time                         | $t_{d(off)}$  |      | 4.1  |          | ns                   |   |
| Fall Time                                   | $t_f$         |      | 2.1  |          | ns                   |   |
| Total Gate Charge                           | $Q_g$         |      | 2.9  |          | nC                   | $V_{DS}=50V, V_{GS}=10V,$<br>$I_D=1.0A$             |
| Gate-Source Charge                          | $Q_{gs}$      |      | 0.7  |          | nC                   |   |
| Gate-Drain Charge                           | $Q_{gd}$      |      | 1    |          | nC                   |   |
| <b>SOURCE-DRAIN DIODE</b>                   |               |      |      |          |                      |   |
| Diode Forward Voltage (1)                   | $V_{SD}$      |      |      | 0.95     | V                    | $T_J=25^\circ C, I_S=1.5A,$<br>$V_{GS}=0V$          |
| Reverse Recovery Time (3)                   | $t_{rr}$      |      | 27   |          | ns                   | $T_J=25^\circ C, I_F=1.8A,$<br>$di/dt=100A/\mu s$   |
| Reverse Recovery Charge (3)                 | $Q_{rr}$      |      | 12   |          | nC                   |   |

### NOTES

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

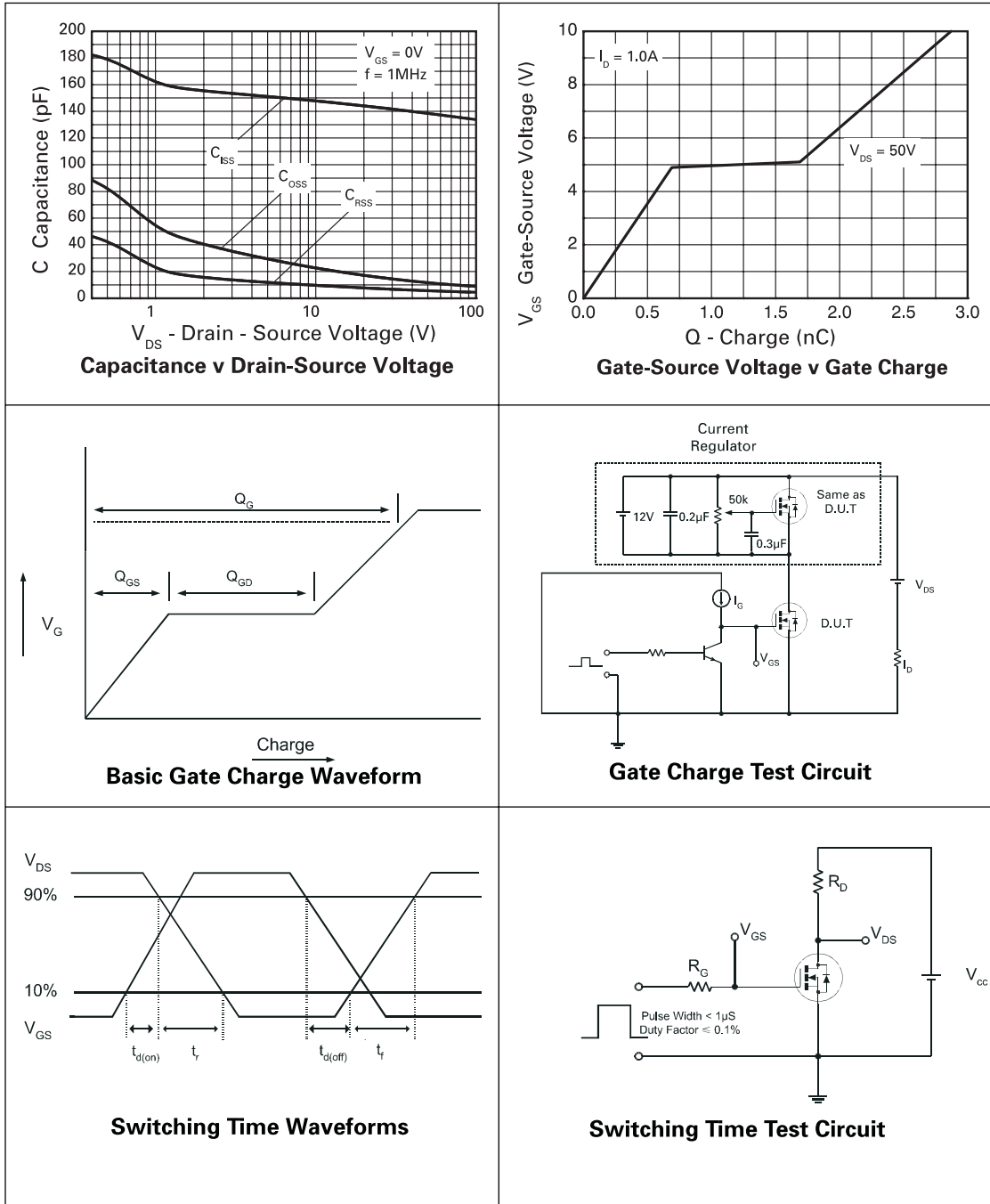
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## TYPICAL CHARACTERISTICS



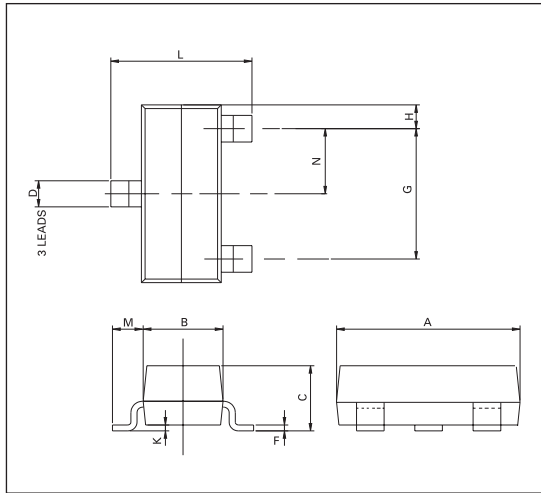
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## TYPICAL CHARACTERISTICS

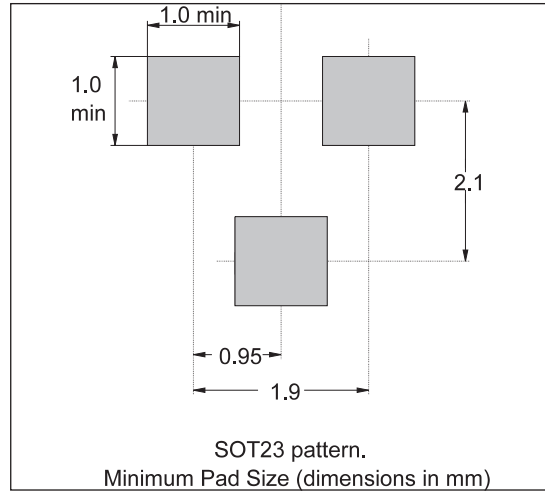


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## PACKAGE OUTLINE



## PAD LAYOUT



## PACKAGE DIMENSIONS

| DIM | MILLIMETRES |      | DIM | MILLIMETRES |      |
|-----|-------------|------|-----|-------------|------|
|     | MIN         | MAX  |     | MIN         | MAX  |
| A   | 2.67        | 3.05 | H   | 0.33        | 0.51 |
| B   | 1.20        | 1.40 | K   | 0.01        | 0.10 |
| C   | —           | 1.10 | L   | 2.10        | 2.50 |
| D   | 0.37        | 0.53 | M   | 0.45        | 0.64 |
| F   | 0.085       | 0.15 | N   | 0.95 NOM    |      |
| G   | 1.90 NOM    |      | φ   | 10° TYP     |      |

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