

# ZXMN10B08E6

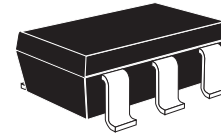
## 100V N-CANNEL ENHANCEMENT MODE MOSFET

### SUMMARY

$V_{(BR)DSS} = 100V$ ;  $R_{DS(ON)} = 0.230\Omega$   $I_D = 1.9A$

### 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.



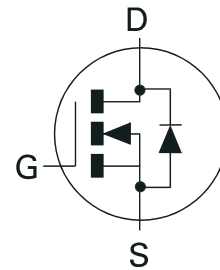
SOT23-6

### FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT23-6 package

### APPLICATIONS

- DC - DC Converters
- Power Management Functions
- Disconnect switches
- Motor control



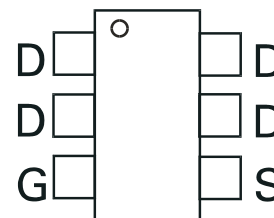
### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMN10B08E6TA	7"	8mm	3000 units
ZXMN10B08E6TC	13"	8mm	10000 units

### DEVICE MARKING

- 10B8

### PINOUT



Top View

# ZXMN10B08E6

## 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) $V_{GS}=10V$ ; $T_A=70^\circ C$ (b) $V_{GS}=10V$ ; $T_A=25^\circ C$ (a)	$I_D$	1.9 1.5 1.6	A
Pulsed Drain Current (c)	$I_{DM}$	9	A
Continuous Source Current (Body Diode) (b)	$I_S$	2.5	A
Pulsed Source Current (Body Diode) (c)	$I_{SM}$	9	A
Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor	$P_D$	1.1 8.8	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor	$P_D$	1.7 13.6	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)	$R_{\theta JA}$	113	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	73	$^\circ C/W$

### NOTES

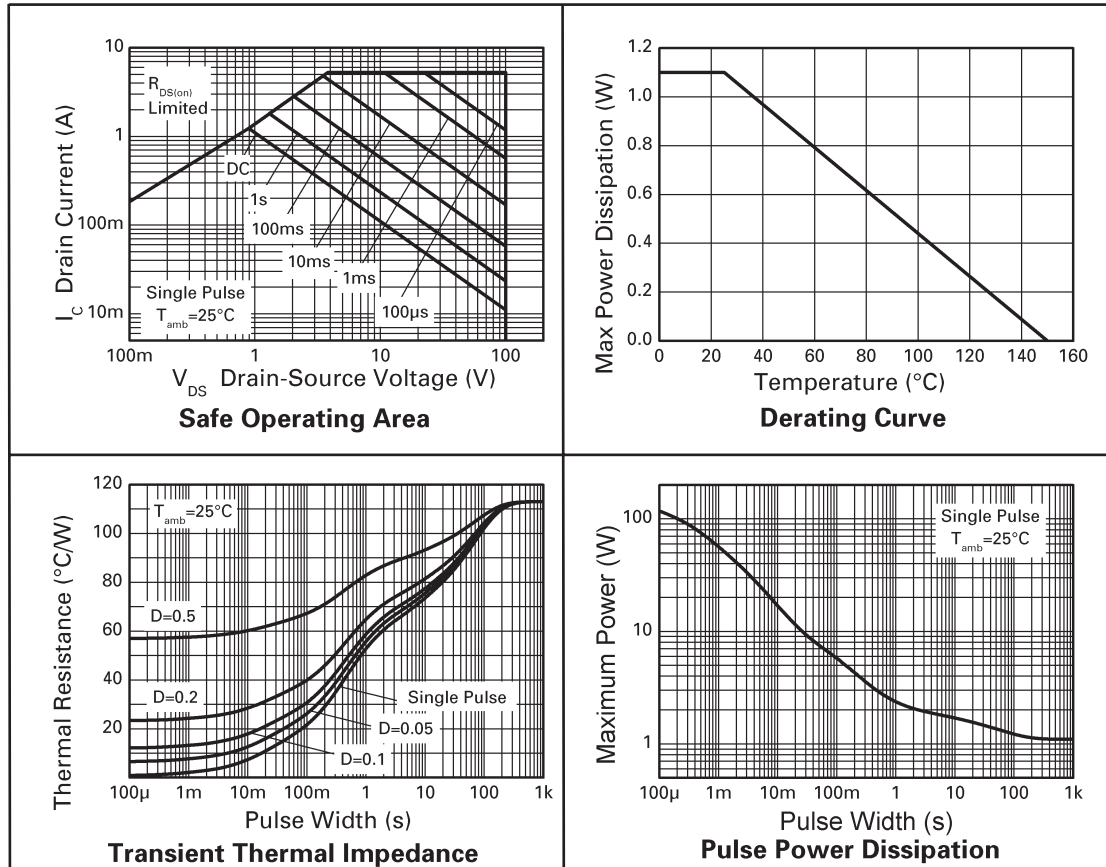
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at  $t \leq 5$  secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB,  $D = 0.02$ , pulse width 300 $\mu s$  - 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  $T_A = 25^\circ\text{C}$  unless otherwise stated).

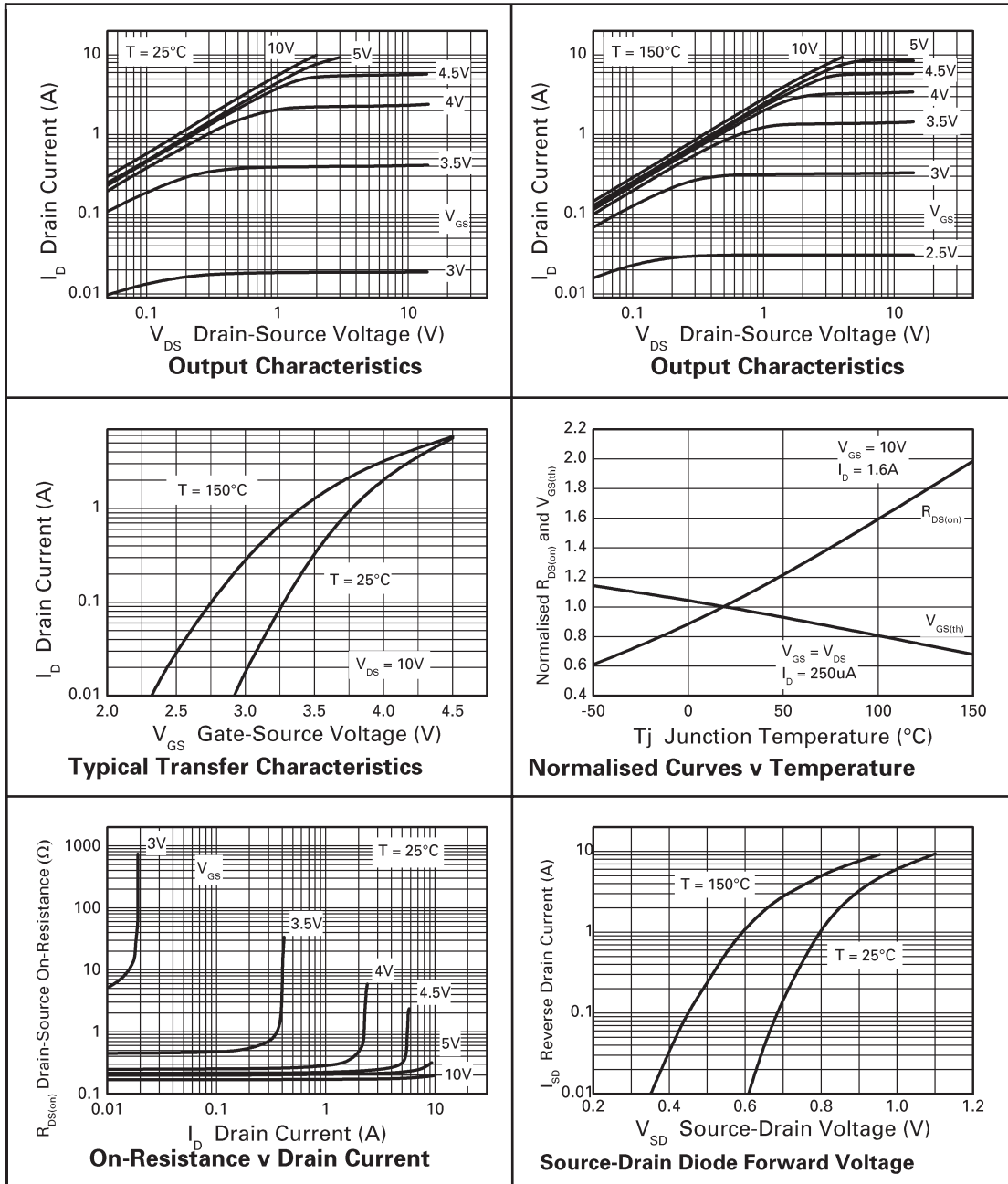
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	V(BR)DSS	100			V	ID=250μA, VGS=0V
Zero Gate Voltage Drain Current	IDSS			0.5	μA	VDS=100V, VGS=0V
Gate-Body Leakage	IGSS			100	nA	VGS=±20V, VDS=0V
Gate-Source Threshold Voltage	VGS(th)	1.0		3.0	V	ID=250μA, VDS= VGS
Static Drain-Source On-State Resistance (1)	RDS(on)			0.230 0.300 0.500	Ω Ω	VGS=10V, ID=1.6A VGS=4.5V, ID=1.4A VGS=4.3V, ID=1.1A
Forward Transconductance (1)(3)	gfs		4.8		S	VDS=15V,ID=1.6A
DYNAMIC (3)						
Input Capacitance	Ciss		497		pF	VDS=50 V, VGS=0V, f=1MHz
Output Capacitance	Coss		29		pF	
Reverse Transfer Capacitance	Crss		18		pF	
SWITCHING(2) (3)						
Turn-On Delay Time	td(on)		2.9		ns	VDD =50V, ID=1.0A RG≐6.0Ω, VGS=10V
Rise Time	tr		2.1		ns	
Turn-Off Delay Time	td(off)		12.1		ns	
Fall Time	tf		5.0		ns	
Gate Charge	Qg		5.0		nC	VDS=50V,VGS=5V, ID=1.6A
Total Gate Charge	Qg		9.2		nC	VDS=50V,VGS=10V, ID=1.6A
Gate-Source Charge	Qgs		1.7		nC	
Gate-Drain Charge	Qgd		2.5		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (1)	VSD		0.85	0.95	V	TJ=25°C, IS=2.0A, VGS=0V
Reverse Recovery Time (3)	trr		32.0		ns	TJ=25°C, IF=1.7A, di/dt= 100A/μs
Reverse Recovery Charge (3)	Qrr		40.0		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.

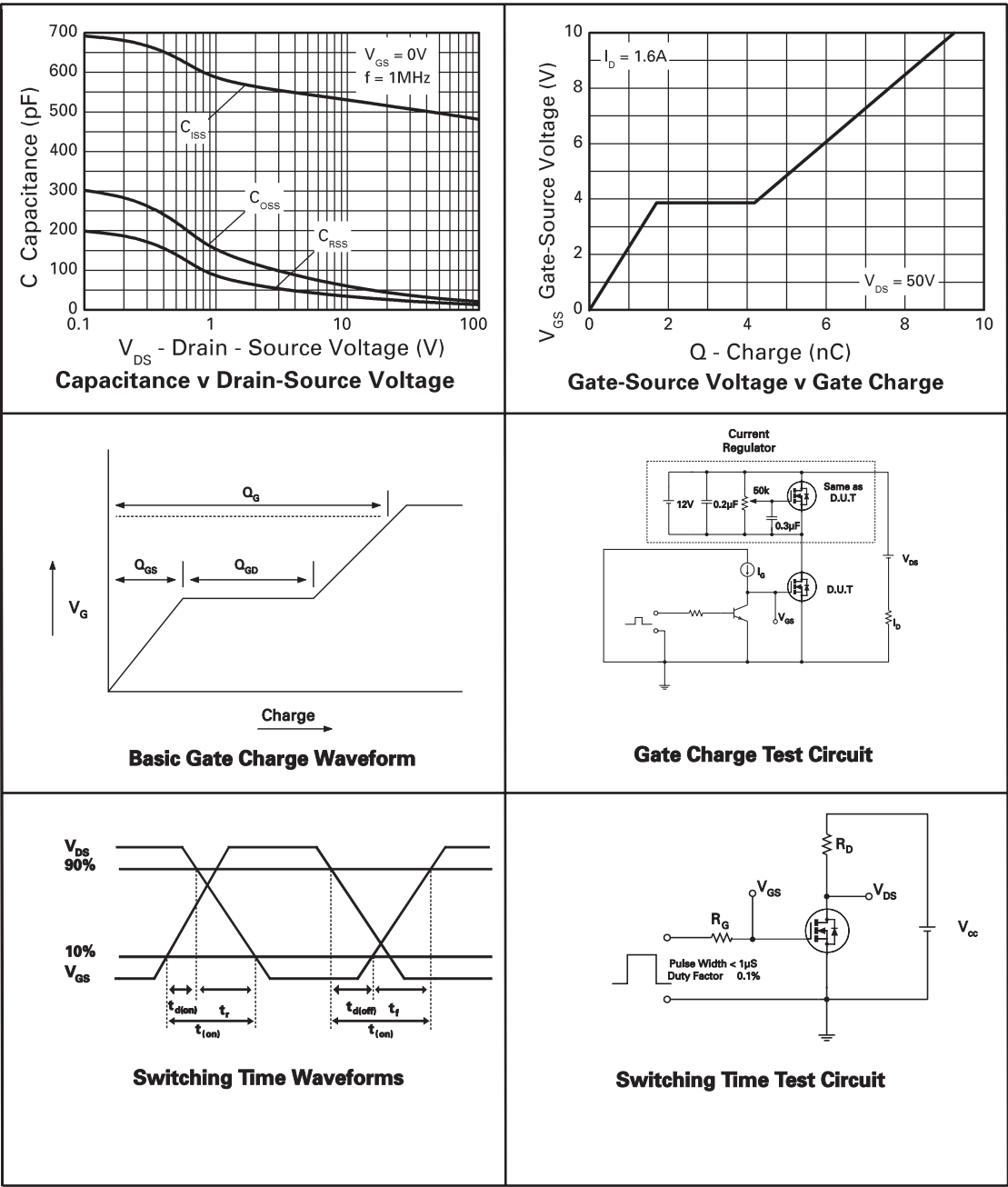
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## TYPICAL CHARACTERISTICS



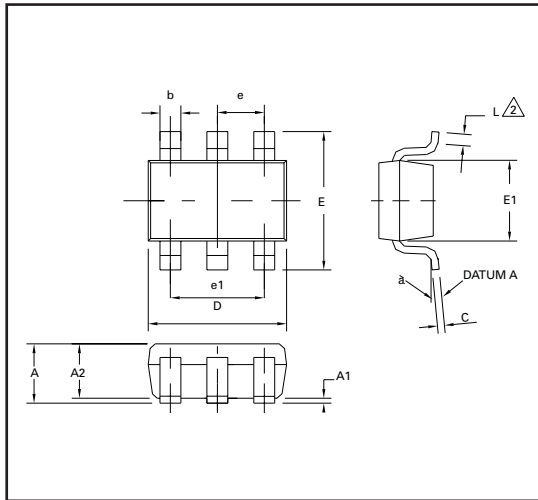
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## TYPICAL CHARACTERISTICS

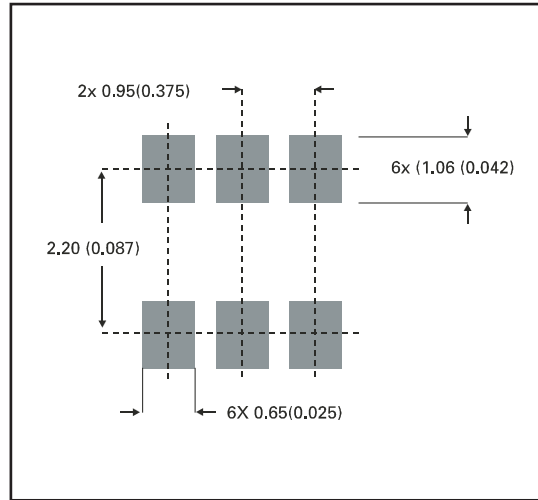


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## PACKAGE OUTLINE



## PAD LAYOUT DETAILS



CONTROLLING DIMENSIONS IN MILLIMETRES APPROX CONVERSIONS INCHES.

## PACKAGE DIMENSIONS

DIM	Millimetres		Inches		DIM	Millimetres		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.90	1.45	0.35	0.057	E	2.60	3.00	0.102	0.118
A1	0.00	0.15	0	0.006	E1	1.50	1.75	0.059	0.069
A2	0.90	1.30	0.035	0.051	L	0.10	0.60	0.004	0.002
b	0.35	0.50	0.014	0.019	e	0.95 REF		0.037 REF	
C	0.09	0.20	0.0035	0.008	e1	1.90 REF		0.074 REF	
D	2.80	3.00	0.110	0.118	L	0°	10°	0°	10°

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