

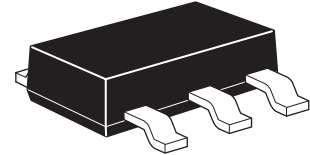
# ZXMP7A17G

## 70V P-channel enhancement mode MOSFET

### Summary

$V_{DSS}=70V : R_{DS(on)}=0.16\Omega$

$I_D=3.7A$

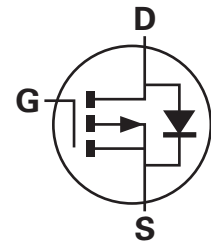


### Description

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.

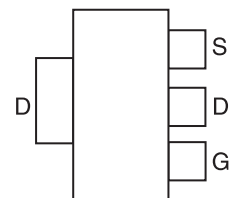
### Features

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



### Applications

- DC-DC converters
- Power management functions
- Disconnect switches
- Motor control
- Class D audio output stages



### Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMP7A17GTA	7	12	1,000
ZXMP7A17GTC	13	12	4,000

### Device marking

ZXMP  
7A17

# ZXMP7A17G

## Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-source voltage	$V_{DSS}$	-70	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous drain current @ $V_{GS}=10V$ ; $T_A=25^\circ C$ <sup>(b)</sup> @ $V_{GS}=10V$ ; $T_A=25^\circ C$ <sup>(b)</sup> @ $V_{GS}=10V$ ; $T_A=25^\circ C$ <sup>(a)</sup>	$I_D$	-3.7 -2.9 -2.6	A
Pulsed drain current <sup>(c)</sup>	$I_{DM}$	-9.6	A
Continuous source current (body diode) <sup>(b)</sup>	$I_S$	-4.8	A
Pulsed source current (body diode) <sup>(c)</sup>	$I_{SM}$	-9.6	A
Power dissipation at $T_A = 25^\circ C$ <sup>(a)</sup> Linear derating factor	$P_D$	2 16	W mW/ $^\circ C$
Power dissipation at $T_A = 25^\circ C$ <sup>(b)</sup> 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	Limit	Unit
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	62.5	$^\circ C/W$
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	32	$^\circ C/W$

### NOTES:

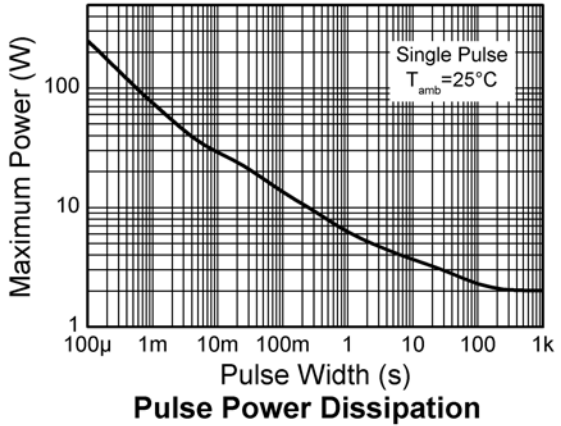
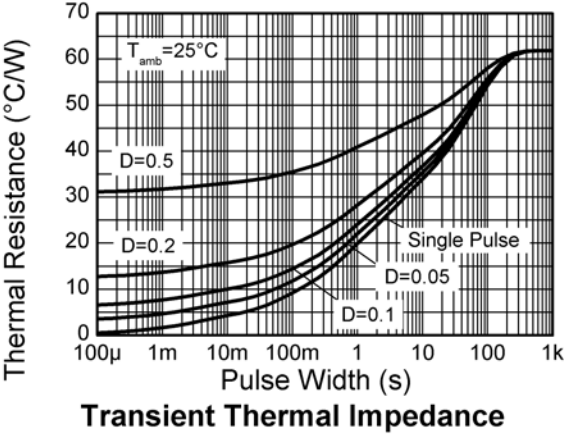
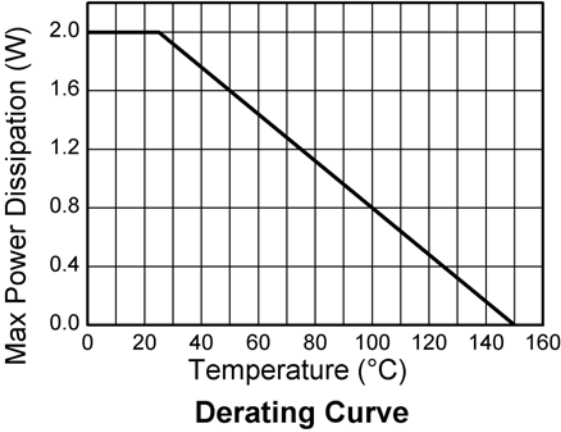
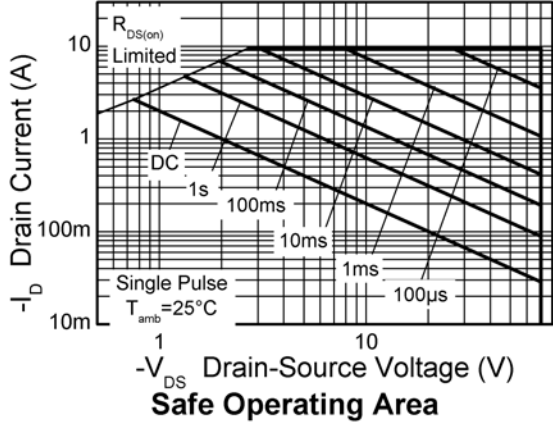
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

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

(c) Repetitive rating 25mm x 25mm FR4 PCB,  $D=0.05$  pulse width= $10\mu s$  - pulse width limited by maximum junction temperature.

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## Characteristics



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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
<b>Static</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	-70			V	$I_D = -250\mu A, V_{GS} = 0V$
Zero gate voltage drain current	$I_{DSS}$			-1	$\mu A$	$V_{DS} = -70V, V_{GS} = 0V$
Gate-body leakage	$I_{GSS}$			100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
Gate-source threshold voltage	$V_{GS(th)}$	-1.0			V	$I_D = -250\mu A, V_{DS} = V_{GS}$
Static drain-source on-state resistance <sup>(*)</sup>	$R_{DS(on)}$			0.16	$\Omega$	$V_{GS} = -10V, I_D = -2.1A$
				0.25	$\Omega$	$V_{GS} = -4.5V, I_D = -1.7A$
Forward transconductance <sup>(*)(‡)</sup>	$g_{fs}$		4.4		S	$V_{DS} = -15V, I_D = -2.1A$
<b>Dynamic<sup>(‡)</sup></b>						
Input capacitance	$C_{iss}$		635		pF	$V_{DS} = -40V, V_{GS} = 0V$ $f = 1MHz$
Output capacitance	$C_{oss}$		52		pF	
Reverse transfer capacitance	$C_{rss}$		42.5		pF	
<b>Switching<sup>(†)(‡)</sup></b>						
Turn-on-delay time	$t_{d(on)}$		2.5		ns	$V_{DD} = -35V, I_D = -1A$ $R_G = 6.0\Omega, V_{GS} = -10V$
Rise time	$t_r$		3.4		ns	
Turn-off delay time	$t_{d(off)}$		27.9		ns	
Fall time	$t_f$		8		ns	
Total gate charge	$Q_g$		9.6		nC	$V_{DS} = -35V, V_{GS} = -5V$ $I_D = -2.1A$
Total gate charge	$Q_g$		18		nC	$V_{DS} = -35V, V_{GS} = -10V$ $I_D = -2.1A$
Gate-source charge	$Q_{gs}$		1.77		nC	
Gate drain charge	$Q_{gd}$		3.66		nC	
<b>Source-drain diode</b>						
Diode forward voltage <sup>(*)</sup>	$V_{SD}$		-0.85	-0.95	V	$T_j = 25^\circ C, I_S = -2.0A,$ $V_{GS} = 0V$
Reverse recovery time <sup>(‡)</sup>	$t_{rr}$		29.8		ns	$T_j = 25^\circ C, I_S = -2.1A,$ $di/dt = 100A/\mu s$
Reverse recovery charge <sup>(‡)</sup>	$Q_{rr}$		38.5		nC	

### NOTES:

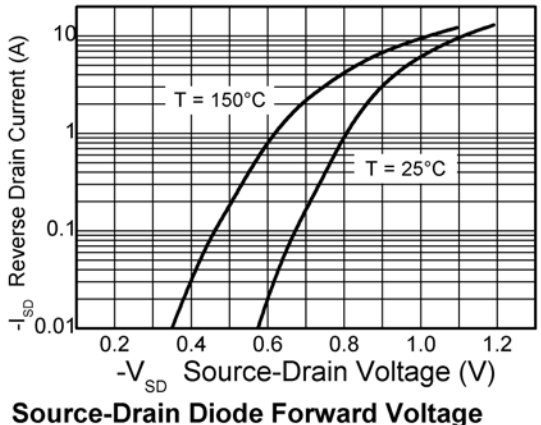
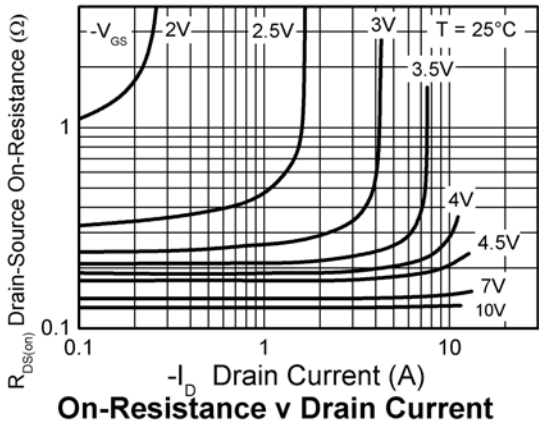
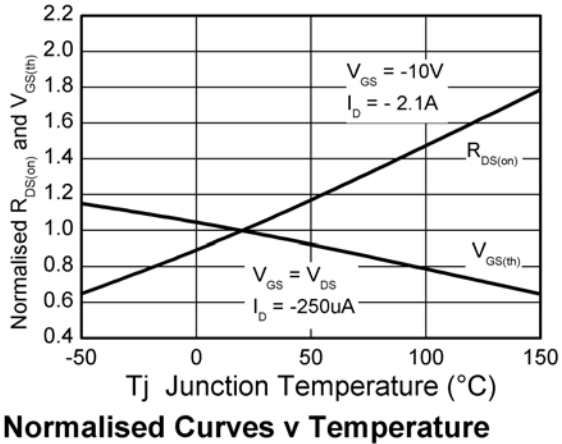
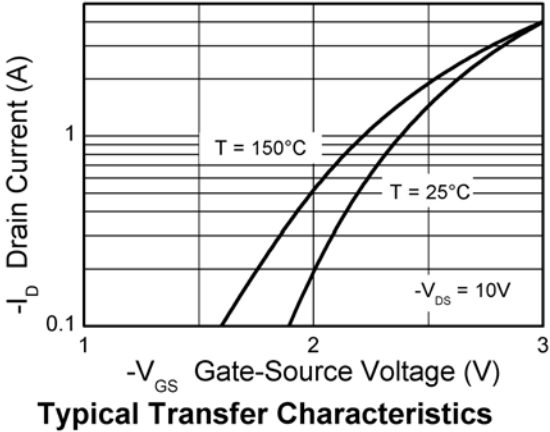
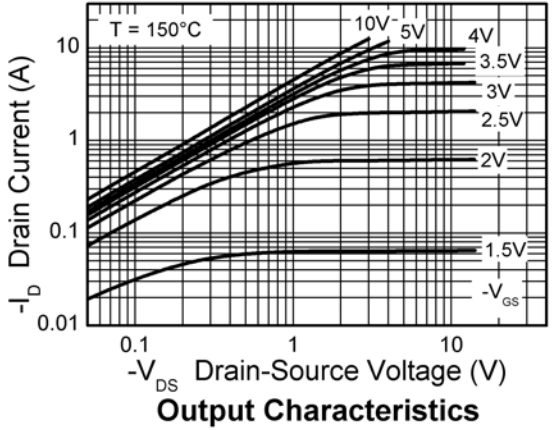
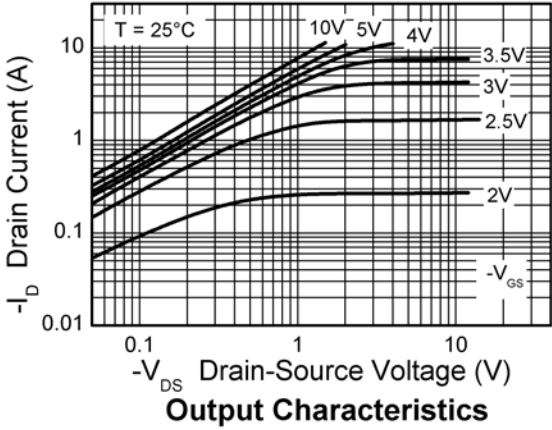
(\*) Measured under pulsed conditions. Pulse width  $\leq 300\mu s$ ; duty cycle  $\leq 2\%$ .

(†) Switching characteristics are independent of operating junction temperature.

(‡) For design aid only, not subject to production testing.

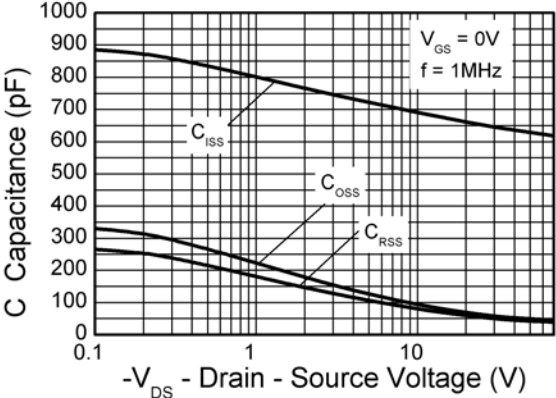
# ZXMP7A17G

## Typical characteristics

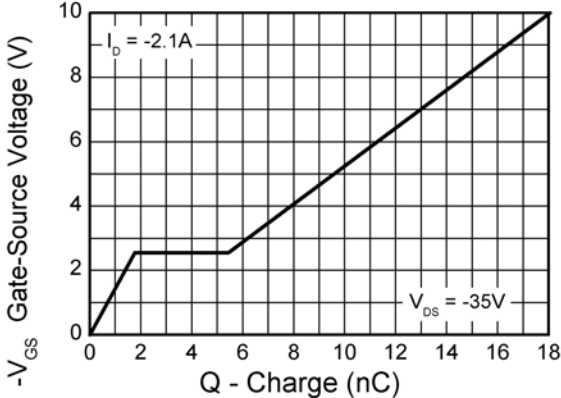


# ZXMP7A17G

## Typical characteristics



Capacitance v Drain-Source Voltage



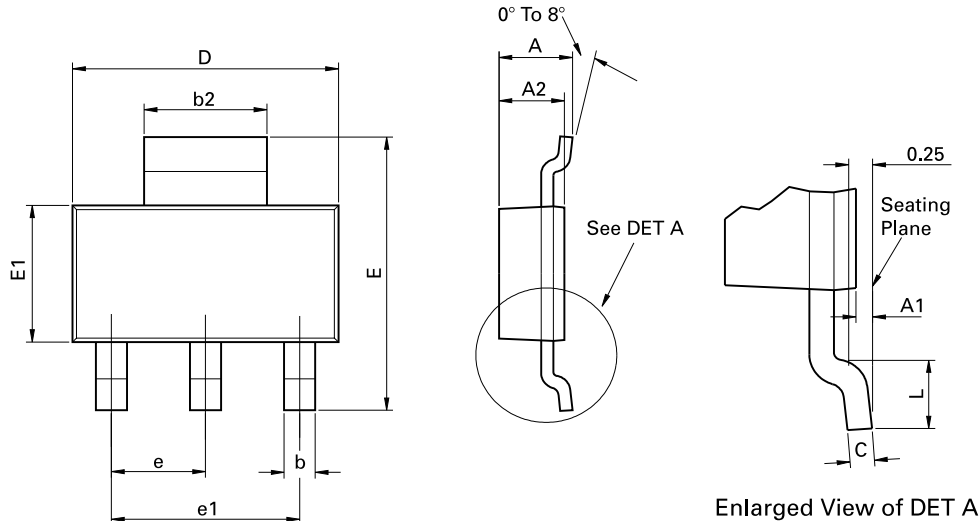
Gate-Source Voltage v Gate Charge

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## Package outline - SOT223



Conforms to JEDEC TO-261 AA Issue B

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-
D	6.30	6.70	0.248	0.264	-	-	-	-	-

**Note:** Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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