

100V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D $T_A = 25^\circ C$
-100V	350m Ω @ $V_{GS} = -10V$	-1.6
	450m Ω @ $V_{GS} = -6.0V$	-1.4

Description and Applications

This MOSFET has been designed to minimize the on-state resistance and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Motor control
- DC-DC Converters
- Power management functions
- Uninterrupted power supply

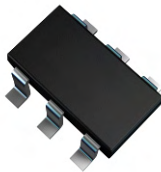
Features and Benefits

- Fast switching speed
- Low gate drive
- Low input capacitance
- **Qualified to AEC-Q101 Standards for High Reliability**

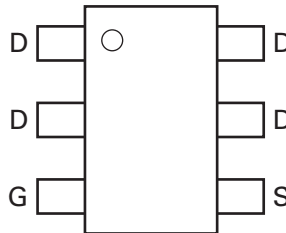
Mechanical Data

- Case: SOT23-6
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.018 grams (approximate)

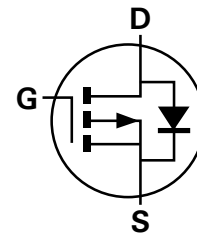
SOT23-6



Top View



Pin Out - Top View

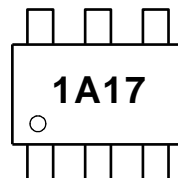


Equivalent Circuit

Ordering Information

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMP10A17E6TA	See below	7	8	3,000

Marking Information



1A17 = Product Type Marking Code

Maximum Ratings @T_A = 25°C unless otherwise specified

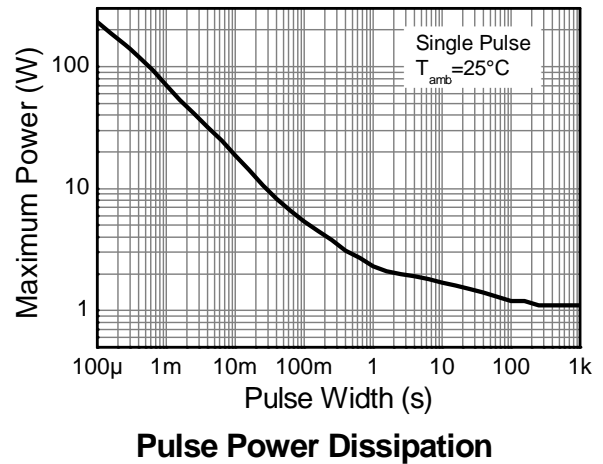
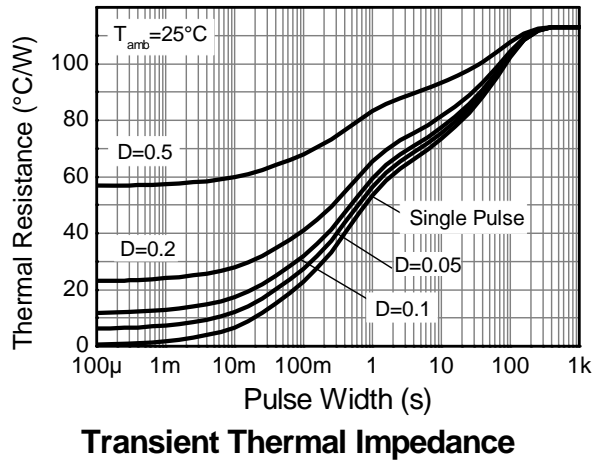
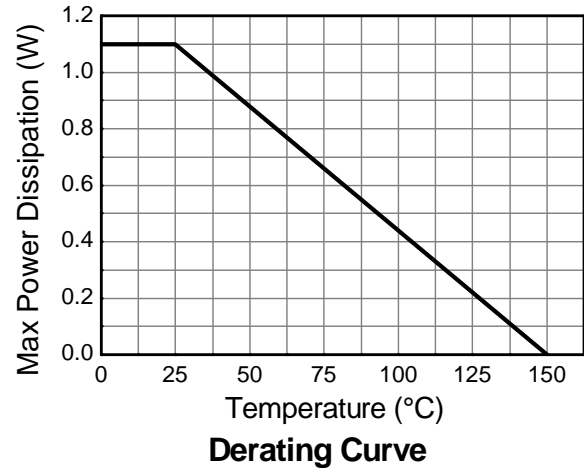
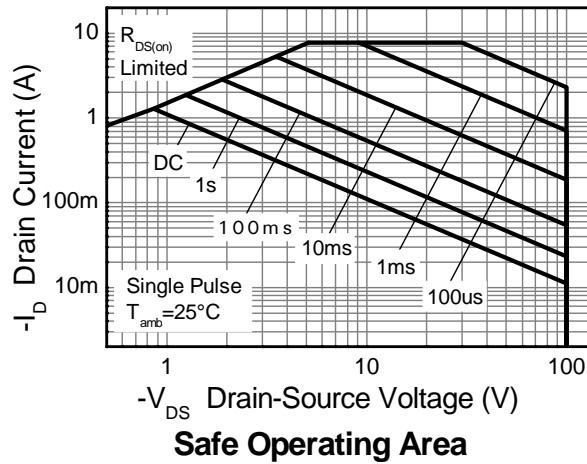
Characteristic			Symbol	Value	Unit
Drain-Source voltage			V _{DSS}	-100	V
Gate-Source voltage			V _{GS}	±20	V
Continuous Drain current	V _{GS} = 10V	(Note 2)	I _D	-1.6	A
		T _A = 70°C (Note 2)		-1.3	
		(Note 1)		-1.3	
Pulsed Drain current	V _{GS} = 10V	(Note 3)	I _{DM}	-7.7	A
Continuous Source current (Body diode)		(Note 2)	I _S	-2.1	A
Pulsed Source current (Body diode)		(Note 3)	I _{SM}	-7.7	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Power dissipation Linear derating factor	(Note 1)	P _D	1.1	W mW/°C
			8.8	
	(Note 2)		1.7 13.7	
Thermal Resistance, Junction to Ambient	(Note 1)	R _{θJA}	113	°C/W
	(Note 2)		73	
Operating and storage temperature range		T _J , T _{STG}	-55 to 150	°C

- Notes:
1. For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 2. Same as note (1), except the device is measured at t ≤ 5 sec.
 3. Same as note (1), except the device is pulsed with D= 0.02 and pulse width 300 μs. The pulse current is limited by the maximum junction temperature.

Thermal Characteristics

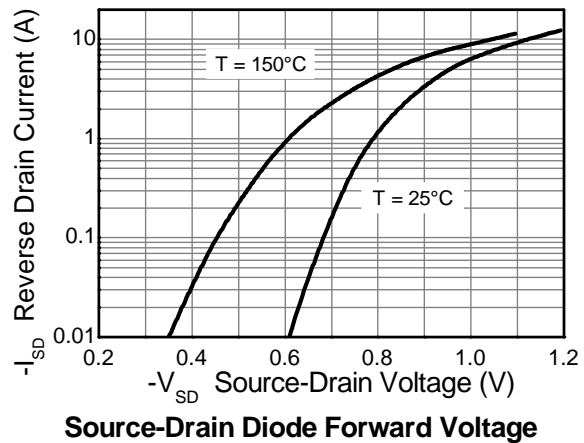
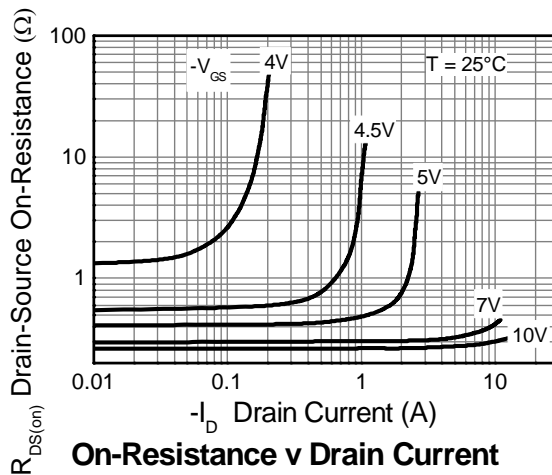
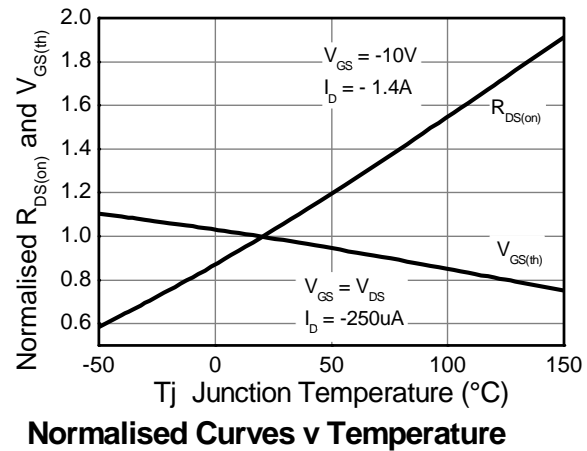
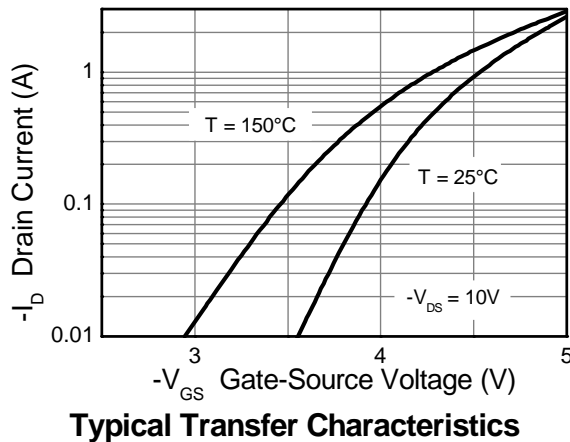
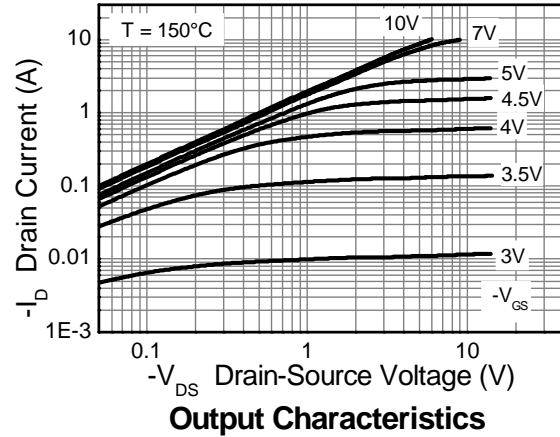
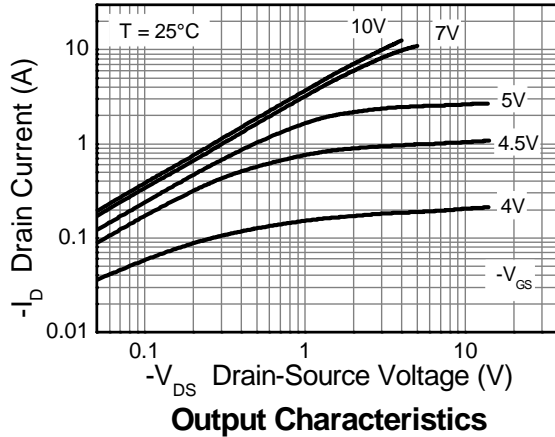


Electrical Characteristics @T_A = 25°C unless otherwise specified

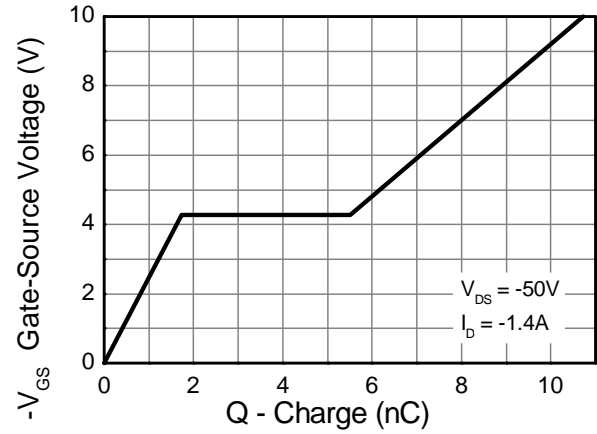
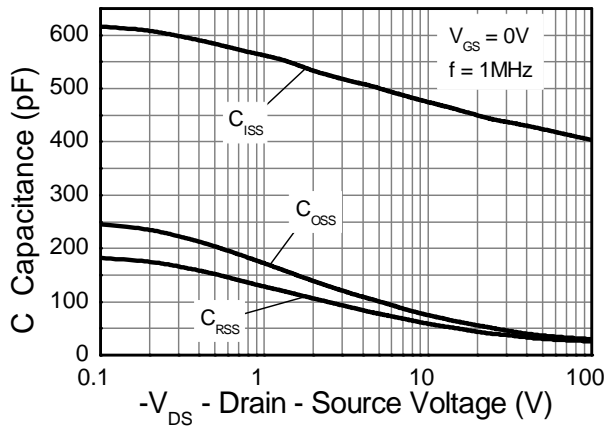
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	-100	—	—	V	I _D = -250μA, V _{GS} = 0V	
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-0.5	μA	V _{DS} = -100V, V _{GS} = 0V	
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V	
ON CHARACTERISTICS							
Gate Threshold Voltage	V _{GS(th)}	-2.0	—	-4.0	V	I _D = -250μA, V _{DS} = V _{GS}	
Static Drain-Source On-Resistance (Note 4)	R _{DS (ON)}	—	—	0.350	Ω	V _{GS} = -10V, I _D = -1.4A	
				0.450		V _{GS} = -6V, I _D = -1.2A	
Forward Transconductance (Notes 4 & 5)	g _{fs}	—	2.8	—	S	V _{DS} = -15V, I _D = -1.4A	
Diode Forward Voltage (Note 4)	V _{SD}	—	-0.85	-0.95	V	I _S = -1.7A, V _{GS} = 0V	
Reverse recovery time (Note 5)	t _{rr}		33	—	ns	I _S = -1.5A, di/dt= 100A/μs	
Reverse recovery charge (Note 5)	Q _{rr}	—	48	—	nC		
DYNAMIC CHARACTERISTICS (Note 5)							
Input Capacitance	C _{iss}	—	424	—	pF	V _{DS} = -50V, V _{GS} = 0V f= 1MHz	
Output Capacitance	C _{oss}	—	36.6	—	pF		
Reverse Transfer Capacitance	C _{rss}	—	29.8	—	pF		
Total Gate Charge (Note 6)	Q _g	—	7.1	—	nC	V _{GS} = -6.0V	V _{DS} = -50V I _D = -1.4A
Total Gate Charge (Note 6)	Q _g	—	10.7	—	nC	V _{GS} = -10V	
Gate-Source Charge (Note 6)	Q _{gs}	—	1.7	—	nC		
Gate-Drain Charge (Note 6)	Q _{gd}	—	3.8	—	nC		
Turn-On Delay Time (Note 6)	t _{D(on)}	—	3.0	—	ns	V _{DD} = -50V, V _{GS} = -10V I _D = -1A, R _G ≅ 6.0Ω	
Turn-On Rise Time (Note 6)	t _r	—	3.5	—	ns		
Turn-Off Delay Time (Note 6)	t _{D(off)}	—	13.4	—	ns		
Turn-Off Fall Time (Note 6)	t _f	—	7.2	—	ns		

- Notes:
4. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%
 5. For design aid only, not subject to production testing.
 6. Switching characteristics are independent of operating junction temperatures.

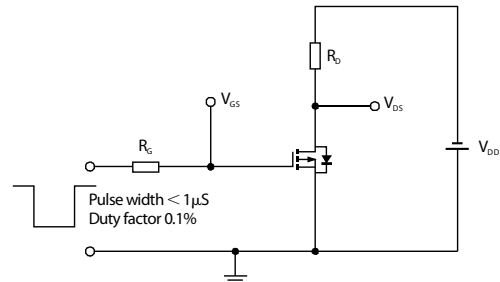
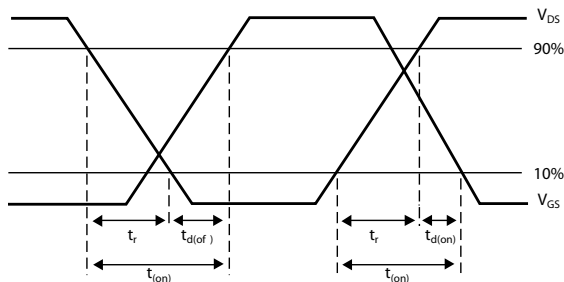
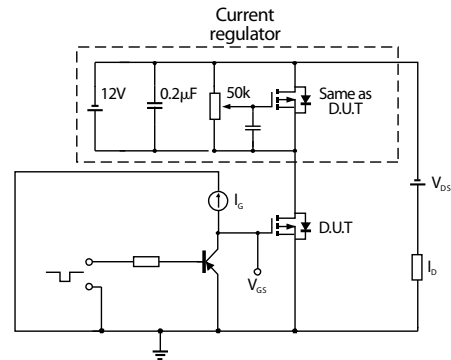
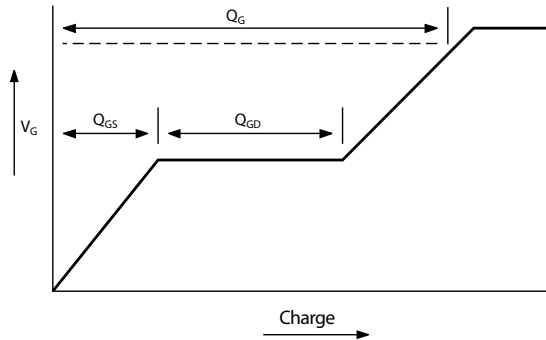
Typical Characteristics



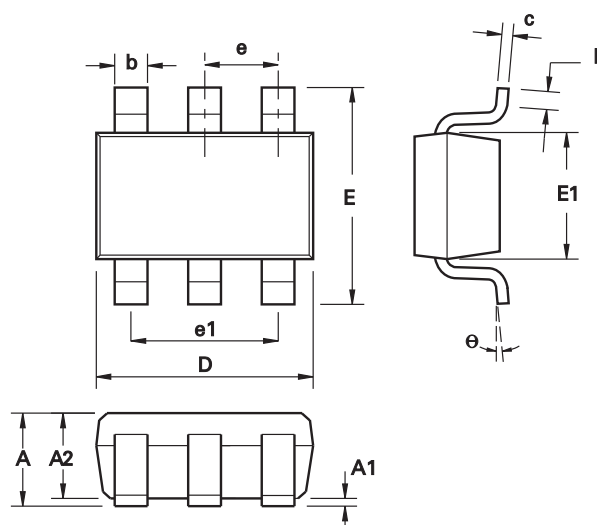
Typical Characteristics - continued



Test Circuits

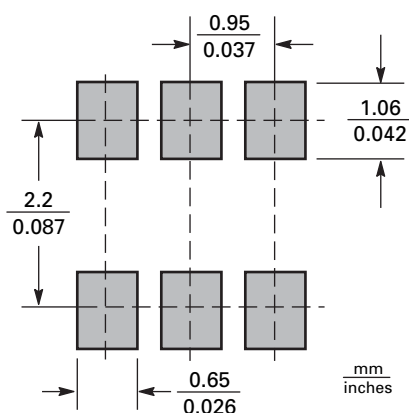


Package Outline Dimensions



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.45	0.354	0.0570
A1	0.00	0.15	0.00	0.0059
A2	0.90	1.30	0.0354	0.0511
b	0.20	0.50	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.70	3.10	0.1062	0.1220
E	2.20	3.20	0.0866	0.1181
E1	1.30	1.80	0.0511	0.0708
L	0.10	0.60	0.0039	0.0236
e	0.95 REF		0.0374 REF	
e1	1.90 REF		0.0748 REF	
θ	0°	30°	0°	30°

Suggested Pad Layout



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