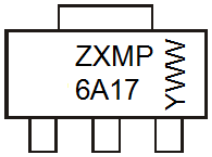
Marking Information

SOT223 (Type DN)



ZXMP6A17 = Product Type Marking Code
YWW = Date Code Marking
Y or Y= Year (ex: 1 = 2021)
WW or WW = Week (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

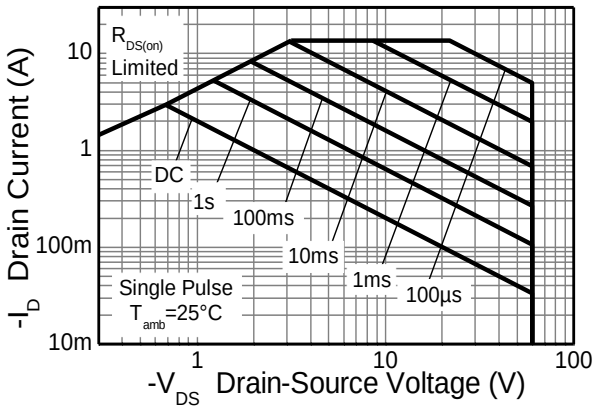
Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-60	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current	V_{GS} = 10V	(Note 6)	I_D	-4.3	A
		T_A = +70°C (Note 6)		-3.5	
		(Note 5)		-3.0	
Pulsed Drain Current	V_{GS} = 10V	(Note 7)	I_{DM}	-13.7	A
Continuous Source Current (Body Diode)		(Note 6)	I_S	-4.3	A
Pulsed Source Current (Body Diode)		(Note 7)	I_{SM}	-13.7	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

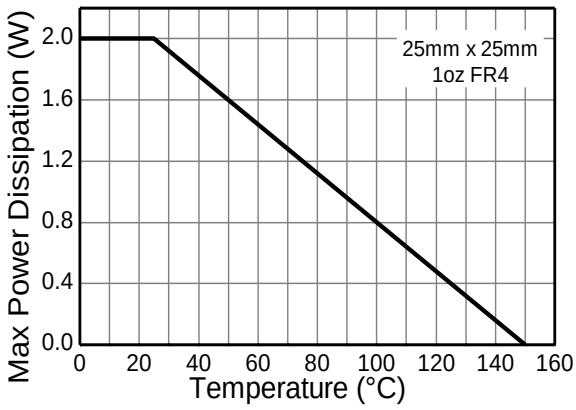
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	2.0	W
Linear Derating Factor			16	mW/°C
	(Note 6)		3.9	W
			31	mW/°C
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	62.5	°C/W
	(Note 6)		32.0	
Thermal Resistance, Junction to Lead	(Note 8)	$R_{\theta JL}$	9.8	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes:
5. 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.
6. Same as Note 5, except the device is measured at t ≤ 10sec.
7. Same as Note 5, except the device is pulsed with D = 0.02 and pulse width 300µs. The pulse current is limited by the maximum junction temperature.
8. Thermal resistance from junction to solder-point (at the end of the drain lead).

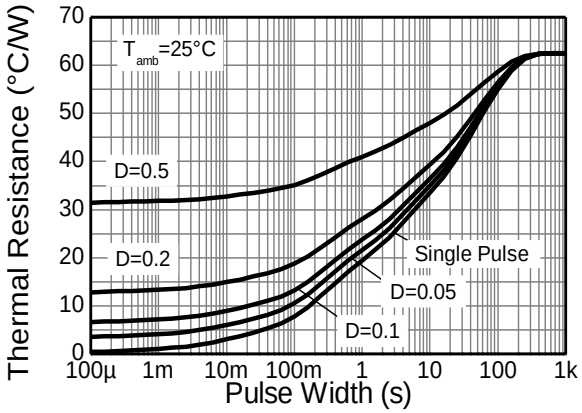
Thermal Characteristics



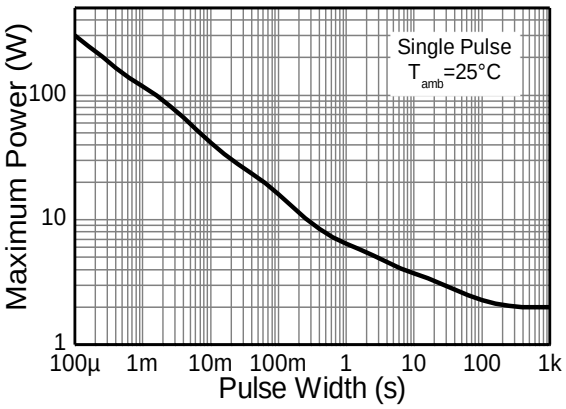
Safe Operating Area



Derating Curve



Transient Thermal Impedance



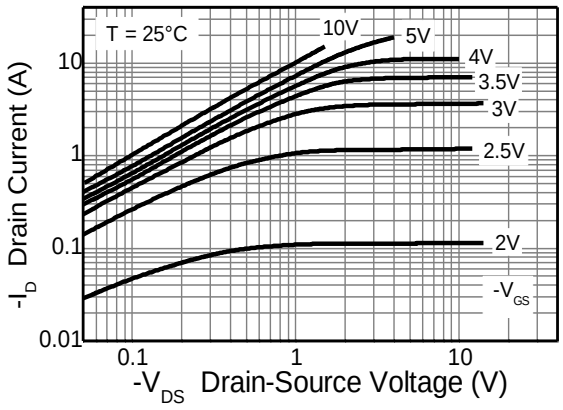
Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

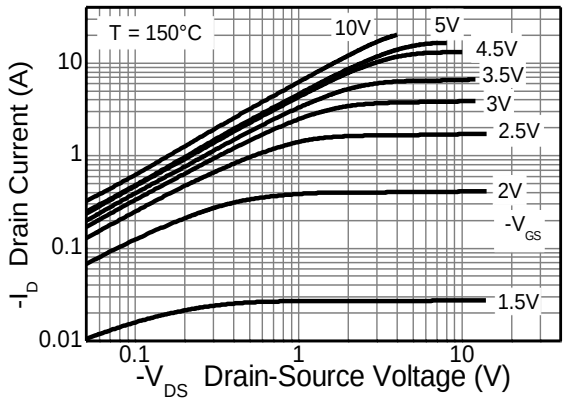
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-60	—	—	V	I_D = -250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-0.5	µA	V_{DS} = -60V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	—	—	V	I_D = -250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 9)	$R_{DS(ON)}$	—	96	125	mΩ	V_{GS} = -10V, I_D = -2.2A
			120	190		V_{GS} = -4.5V, I_D = -1.8A
Forward Transconductance (Notes 9 & 10)	g_{fs}	—	4.7	—	S	V_{DS} = -15V, I_D = -2.2A
Diode Forward Voltage (Note 9)	V_{SD}	—	-0.85	-0.95	V	I_S = -2.0A, V_{GS} = 0V, T_J = +25°C
Reverse Recovery Time (Note 10)	t_{rr}		25.1	—	ns	I_S = -1.7A, di/dt = 100A/µs, T_J = +25°C
Reverse Recovery Charge (Note 10)	Q_{rr}	—	27.2	—	nC	
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	637	—	pF	V_{DS} = -30V, V_{GS} = 0V f = 1MHz
Output Capacitance	C_{oss}	—	70.0	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	53.0	—	pF	
Total Gate Charge (Note 11)	Q_g	—	9.0	—	nC	V_{GS} = -4.5V; V_{DS} = -30V, I_D = -2.2A
Total Gate Charge (Note 11)	Q_g	—	17.7	—	nC	V_{GS} = -10V; V_{DS} = -30V, I_D = -2.2A
Gate-Source Charge (Note 11)	Q_{gs}	—	1.6	—	nC	
Gate-Drain Charge (Note 11)	Q_{gd}	—	4.4	—	nC	
Turn-On Delay Time (Note 11)	$t_{D(on)}$	—	2.6	—	ns	V_{DD} = -30V, V_{GS} = -10V, I_D = -1A, $R_G \cong$ 6.0Ω
Turn-On Rise Time (Note 11)	t_r	—	3.4	—	ns	
Turn-Off Delay Time (Note 11)	$t_{D(off)}$	—	26.2	—	ns	
Turn-Off Fall Time (Note 11)	t_f	—	11.3	—	ns	

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

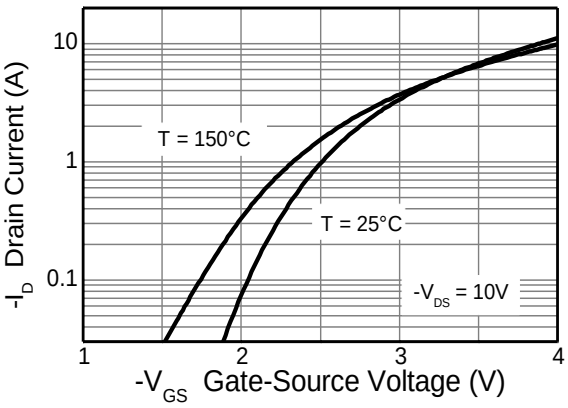
Typical Characteristics



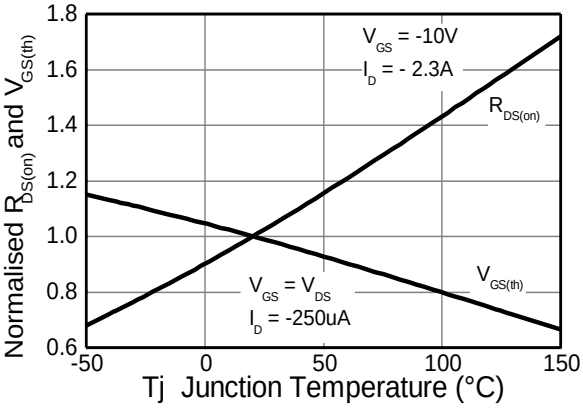
Output Characteristics



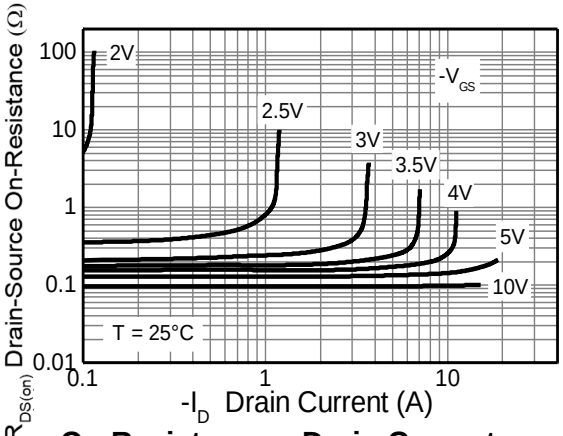
Output Characteristics



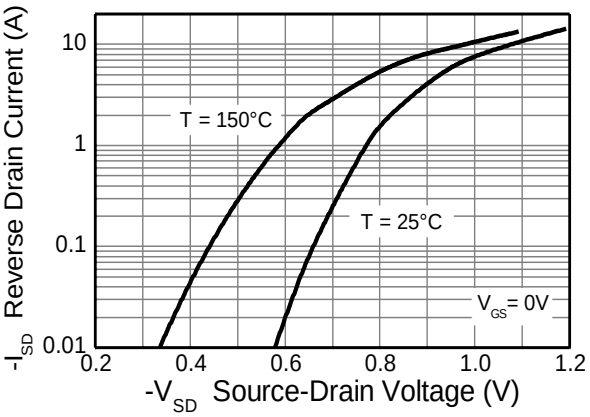
Typical Transfer Characteristics



Normalised Curves v Temperature

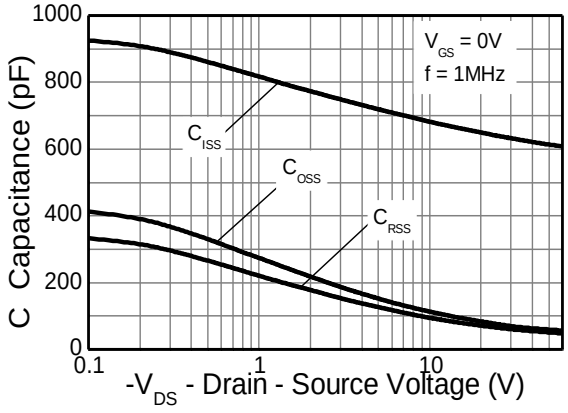


On-Resistance v Drain Current

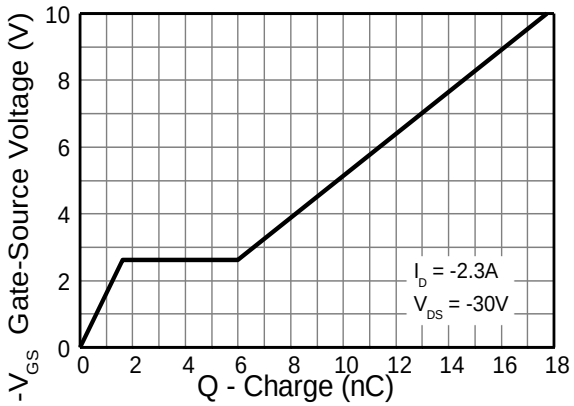


Source-Drain Diode Forward Voltage

Typical Characteristics (continued)

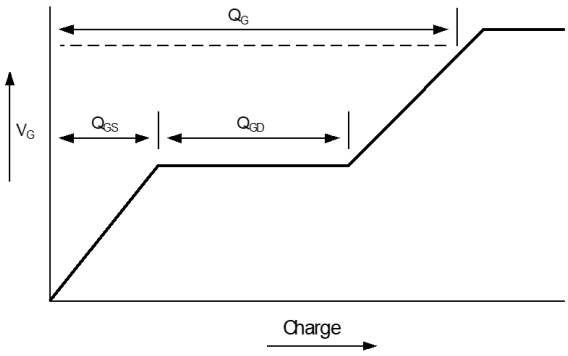


Capacitance v Drain-Source Voltage

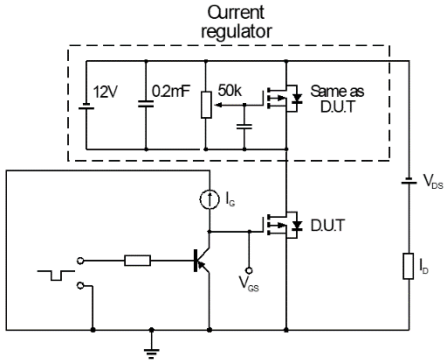


Gate-Source Voltage v Gate Charge

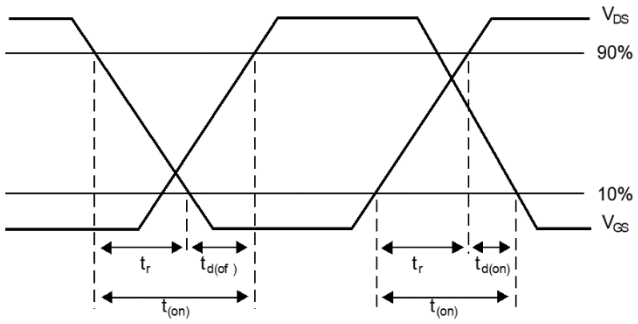
Test Circuits



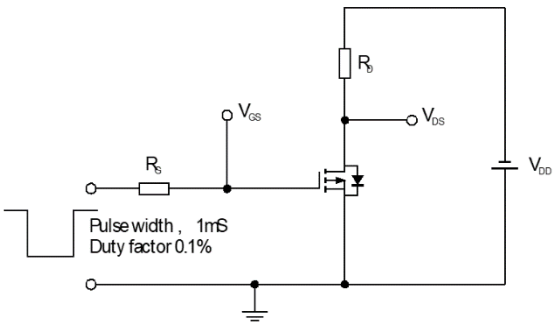
Basic gate charge waveform



Gate charge test circuit



Switching time waveforms

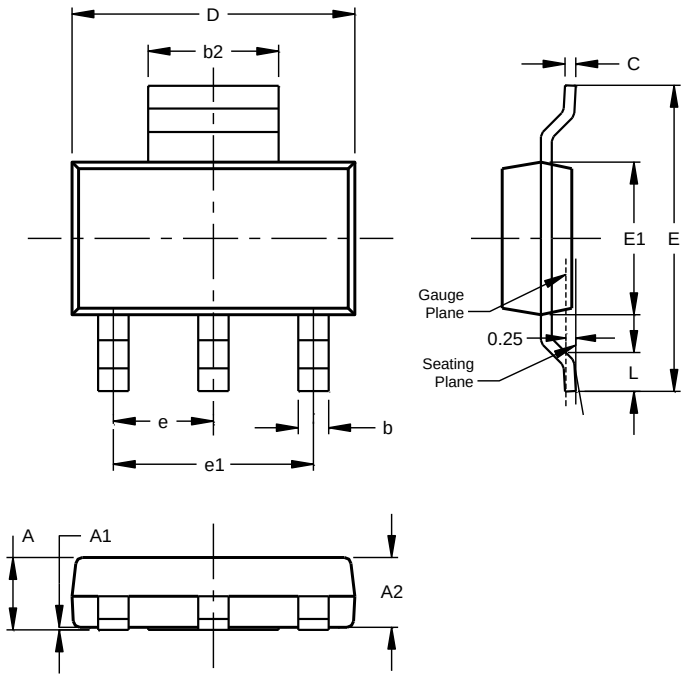


Switching time test circuit

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223 (Type DN)

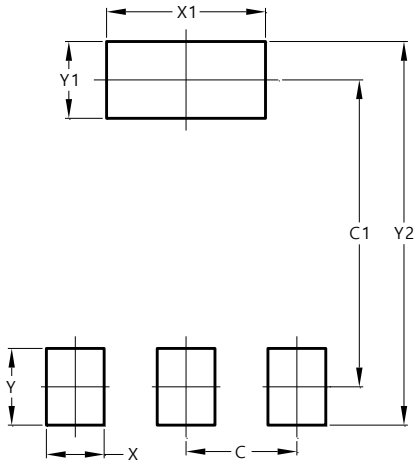


SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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