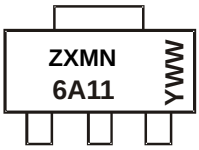
Marking Information

SOT223 (Type DN)



ZXMN6A11 = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 2= 2022)
WW or $\overline{W}W$ = Week Code (01~53)

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

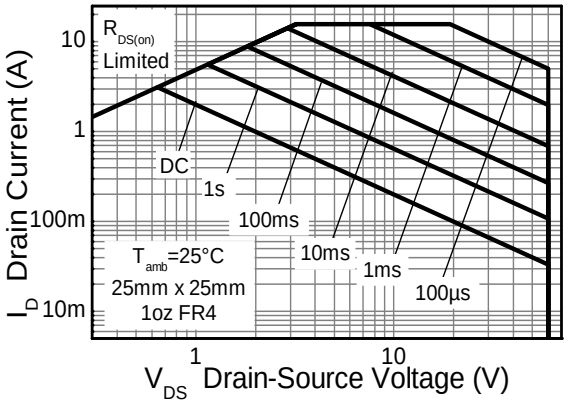
Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage			V_{GS}	±20	
Continuous Drain Current	V_{GS} = 10V	(Note 6) T_A = +70°C (Note 6) (Note 5)	I_D	4.4 3.5 3.1	A
Pulsed Drain Current	V_{GS} = 10V	(Note 7)	I_{DM}	15.6	
Continuous Source Current (Body Diode)		(Note 6)	I_S	4.4	
Pulsed Source Current (Body Diode)		(Note 7)	I_{SM}	15.6	

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

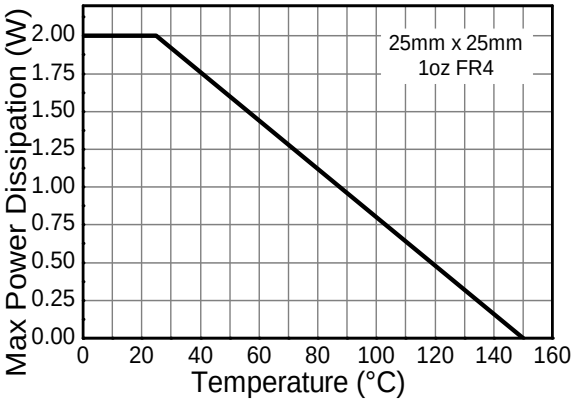
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	2.0 16	W mW/°C
	(Note 6)		3.9 31	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	62.5	°C/W
	(Note 6)		32.0	
Thermal Resistance, Junction to Lead	(Note 8)	$R_{\theta JL}$	9.8	
Operating and Storage 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 ≤ 10 seconds.
7. Same as Note 5, except the device is pulsed with D = 0.02 and pulse width 300µs.
8. Thermal resistance from junction to solder-point (at the end of the drain lead).

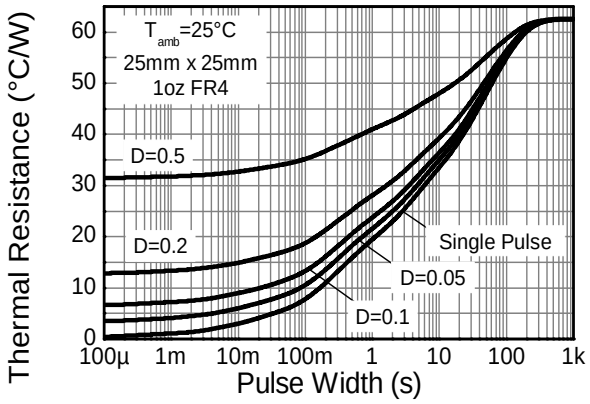
Thermal Characteristics



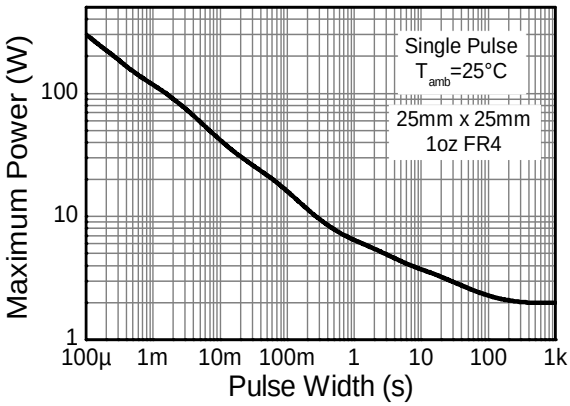
Safe Operating Area



Derating Curve



Transient Thermal Impedance



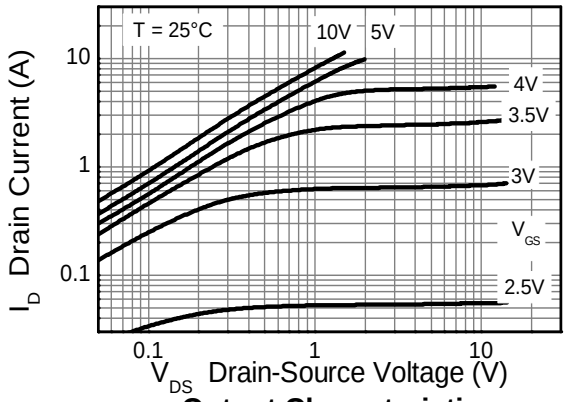
Pulse Power Dissipation

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

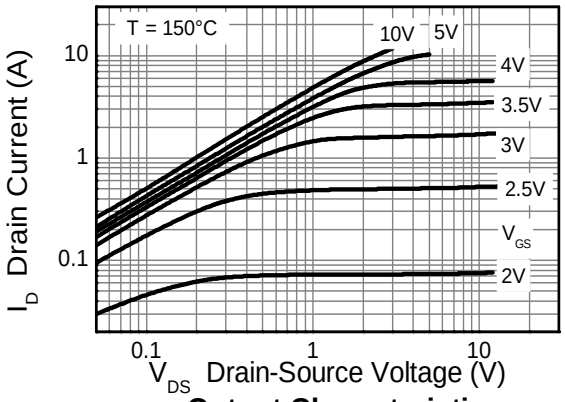
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	I_D = 250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0	µA	V_{DS} = 60V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	—	3.0	V	I_D = 250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 6)	$R_{DS(on)}$	—	0.105	0.120	Ω	V_{GS} = 10V, I_D = 2.5A
		—	0.150	0.180		V_{GS} = 4.5V, I_D = 2A
Forward Transconductance (Notes 6 & 7)	g_{fs}	—	4.9	—	S	V_{DS} = 15V, I_D = 2.5A
Diode Forward Voltage (Note 6)	V_{SD}	—	0.85	0.95	V	I_S = 2.8A, V_{GS} = 0V, T_J = +25°C
Reverse Recovery Time (Note 7)	t_{rr}	—	21.5	—	ns	I_S = 2.8A, di/dt = 100A/µs
Reverse Recovery Charge (Note 7)	Q_{rr}	—	20.5	—	nC	T_J = +25°C
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	330	—	pF	V_{DS} = 40V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	35.2	—		
Reverse Transfer Capacitance	C_{rss}	—	17.1	—		
Gate Charge (Note 8)	Q_g	—	3.0	—	nC	V_{GS} = 4.5V; V_{DS} = 15V, I_D = 2.5A
Total Gate Charge (Note 8)	Q_g	—	5.7	—		V_{GS} = 10V; V_{DS} = 15V, I_D = 2.5A
Gate-Source Charge (Note 8)	Q_{gs}	—	1.25	—		
Gate-Drain Charge (Note 8)	Q_{gd}	—	0.86	—		
Turn-On Delay Time (Note 8)	$t_{D(on)}$	—	1.95	—	ns	V_{DD} = 30V, I_D = 2.5A, R_G = 6Ω, V_{GS} = 10V
Turn-On Rise Time (Note 8)	t_r	—	3.5	—		
Turn-Off Delay Time (Note 8)	$t_{D(off)}$	—	8.2	—		
Turn-Off Fall Time (Note 8)	t_f	—	4.6	—		

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

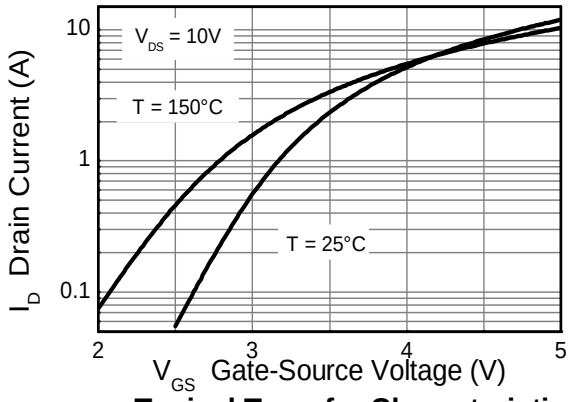
Typical Characteristics



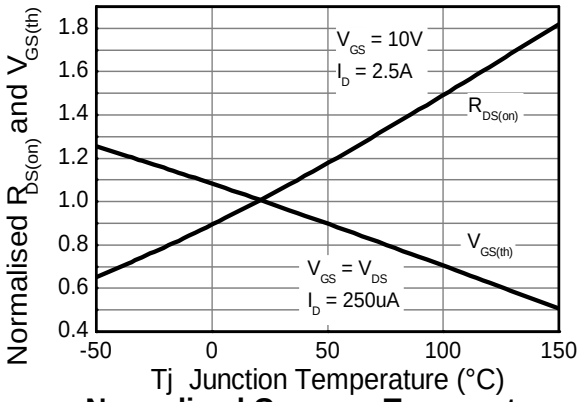
Output Characteristics



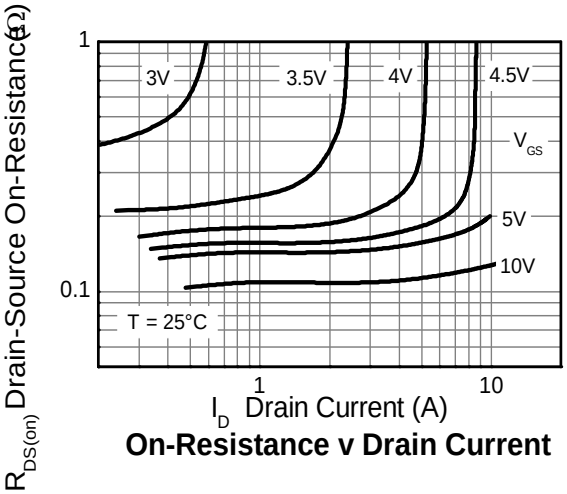
Output Characteristics



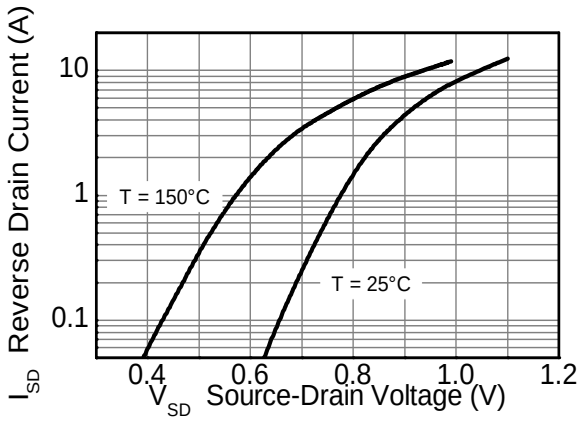
Typical Transfer Characteristics



Normalised Curves v Temperature

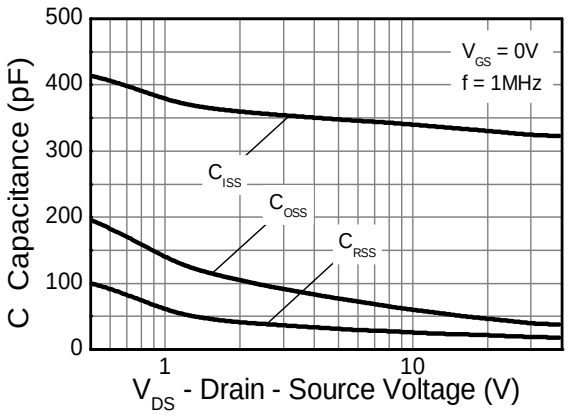


On-Resistance v Drain Current

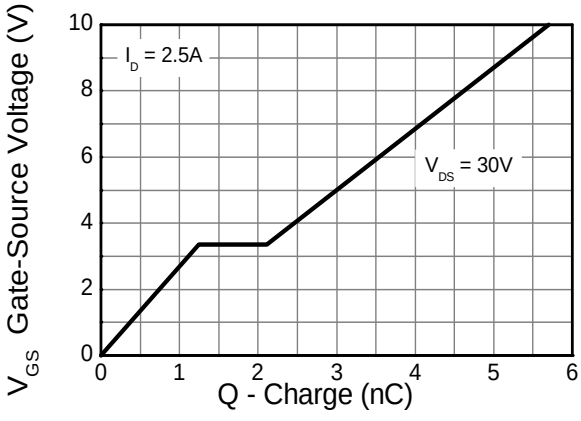


Source-Drain Diode Forward Voltage

Typical Characteristics (continued)

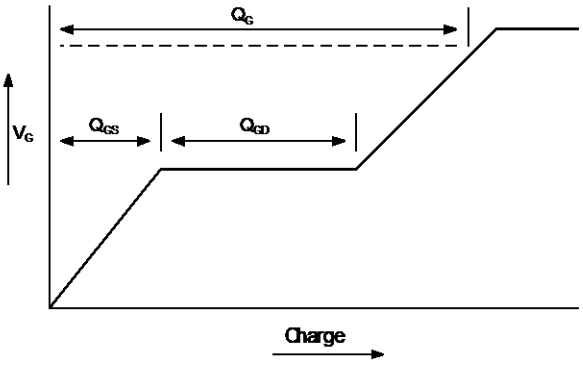


Capacitance v Drain-Source Voltage

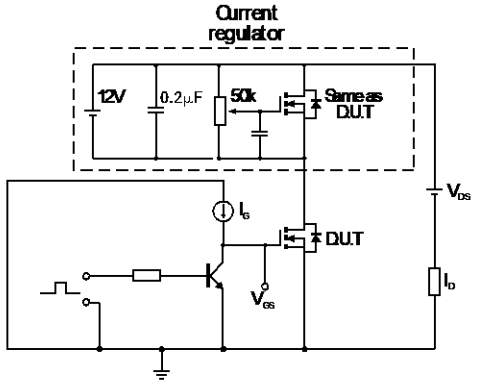


Gate-Source Voltage v Gate Charge

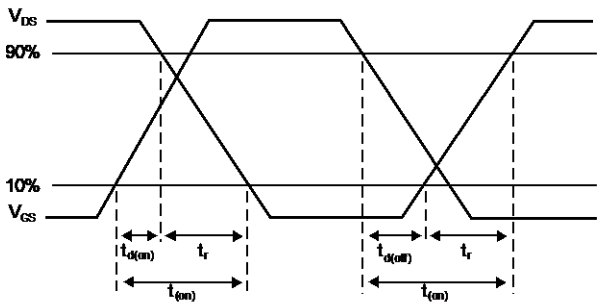
Test Circuit



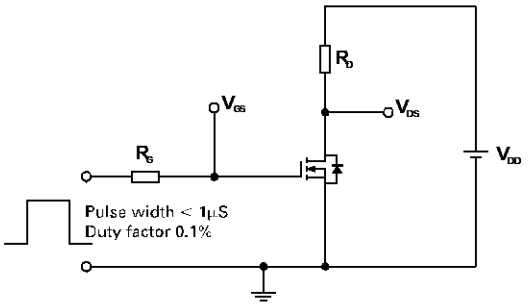
Basic gate charge waveform



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.

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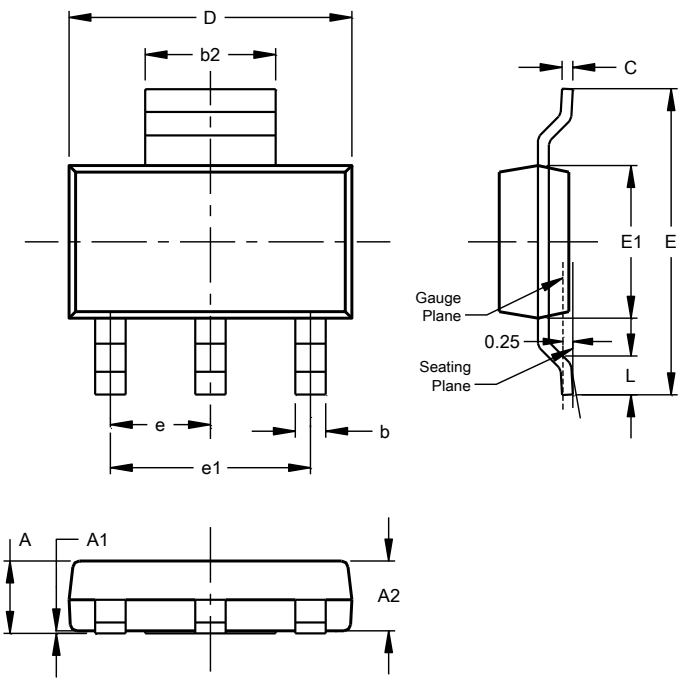
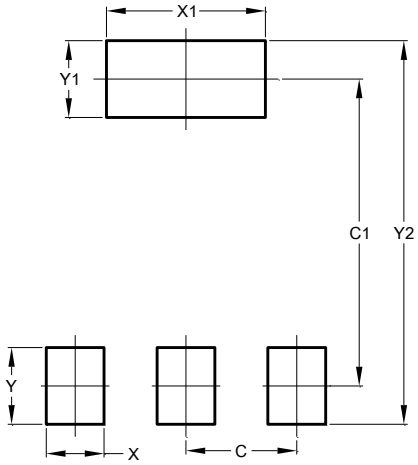


SOT223 (Type DN)			
Dim	**Min**	**Max**	**Typ**
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

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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