

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = +25^\circ\text{C}$
60V	80m Ω @ $V_{GS}=10\text{V}$	3.5A
	150m Ω @ $V_{GS}=4.5\text{V}$	2.5A

Description

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

Applications

- DC-DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

Features and Benefits

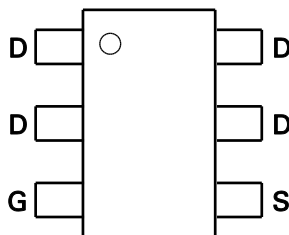
- Low On-Resistance
- Fast Switching Speed
- Low Gate Drive
- Low Threshold
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

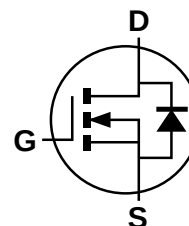
- Case: SOT26
- Case Material: Molded Plastic; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 **(e3)**
- Weight: 0.018 grams (Approximate)



Top View



Pin Out - Top View



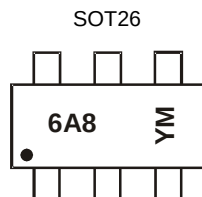
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
ZXMN6A08E6TA	Standard	SOT26	3,000 / Tape & Reel
ZXMN6A08E6TC	Standard	SOT26	10,000 / Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



6A8 = Product Type Marking Code
 YM = Date Code Marking
 Y or $\bar{Y}$ = Year (ex: C = 2015)
 M or $\bar{M}$ = Month (ex: 9 = September)

Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021	2022
Code	C	D	E	F	G	H	I	J

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

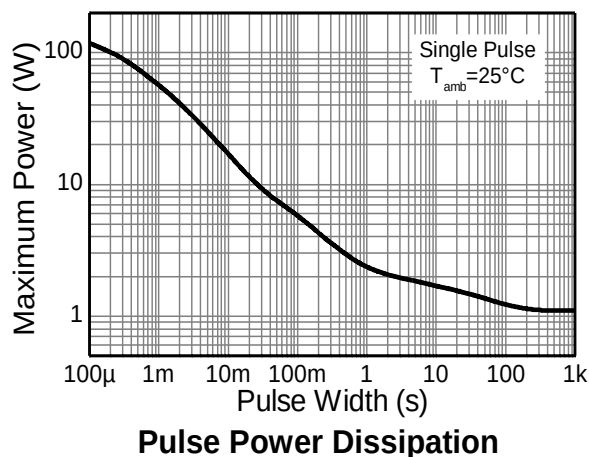
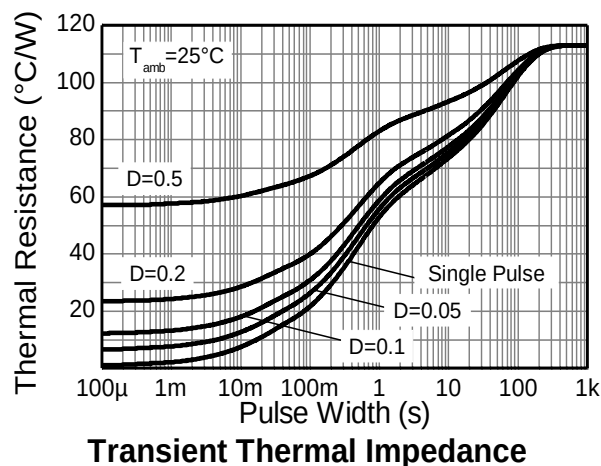
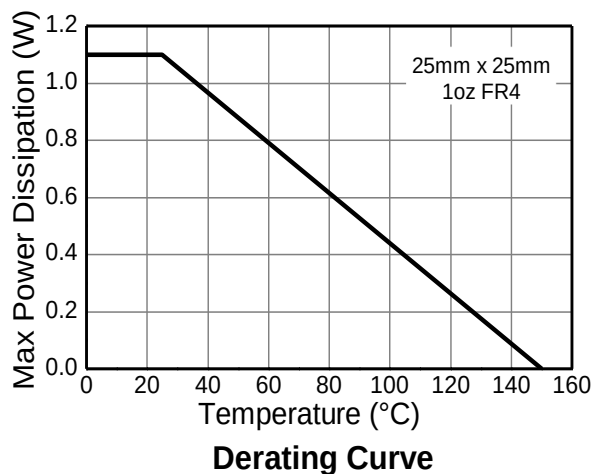
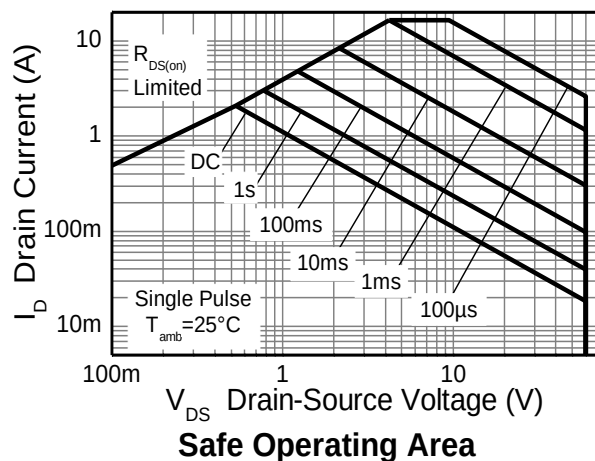
Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	60	V
Gate-Source Voltage			V _{GS}	±20	V
Continuous Drain Current	V _{GS} = 10V	(Note 6)	I _D	3.5	A
		T _A = +70°C (Note 6)		2.8	
		(Note 5)		2.8	
Pulsed Drain Current	V _{GS} = 10V	(Note 7)	I _{DM}	16	A
Continuous Source Current (Body Diode)		(Note 6)	I _S	2.6	A
Pulsed Source Current (Body Diode)		(Note 7)	I _{SM}	16	A

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

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P _D	1.1	W mW/°C
			8.8	
	(Note 6)		1.7 13.6	
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	113	°C/W
	(Note 6)		73	
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 sec.
 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.

Thermal Characteristics

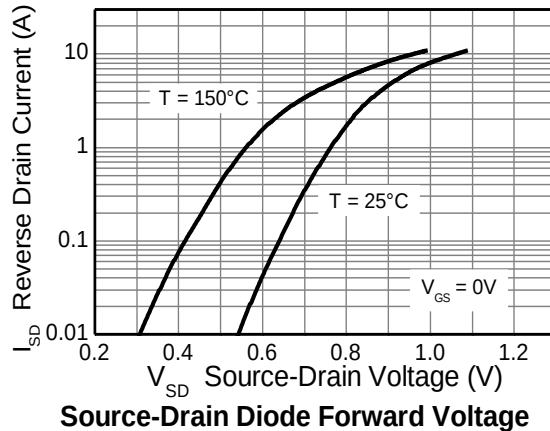
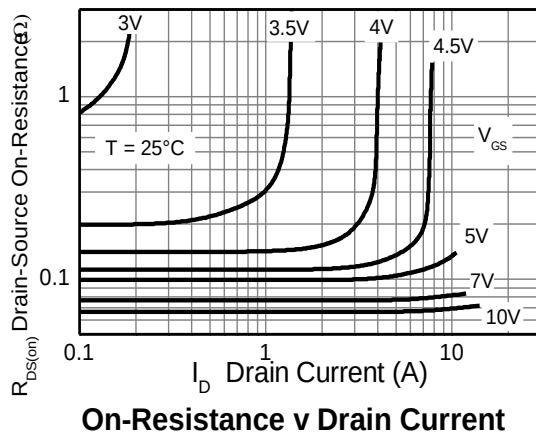
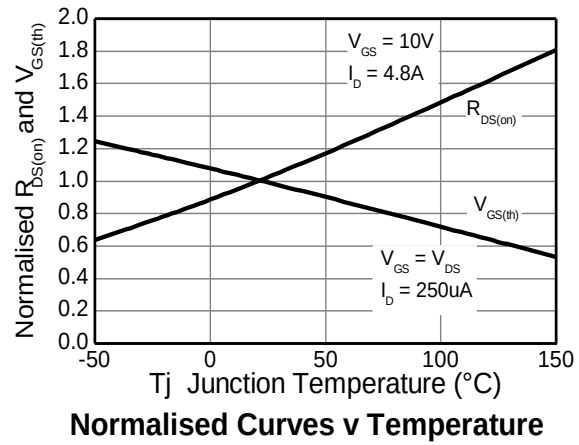
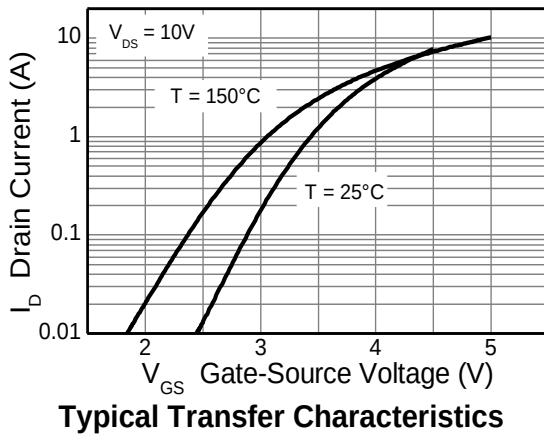
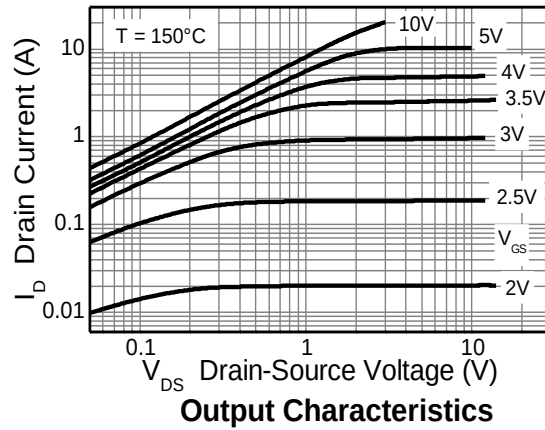
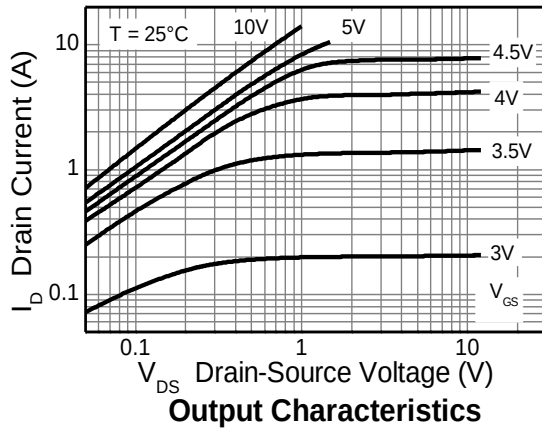


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

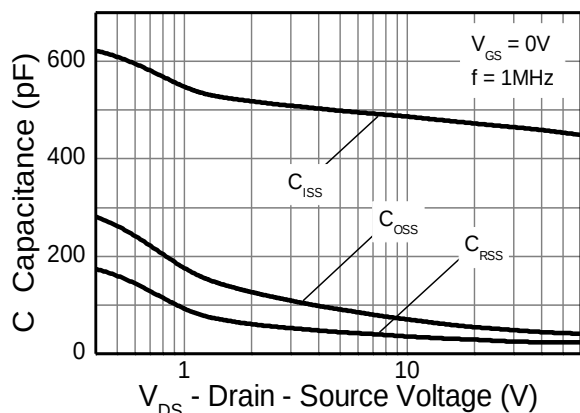
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	I _D = 250μA, V _{GS} = 0V	
Zero Gate Voltage Drain Current	I _{DSS}	—	—	0.5	μA	V _{DS} = 60V, V _{GS} = 0V	
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 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 8)	R _{DS(ON)}	—	0.067	0.080	Ω	V _{GS} = 10V, I _D = 4.8A	
			0.100	0.150		V _{GS} = 4.5V, I _D = 4.2A	
Forward Transconductance (Notes 8 & 9)	g _{fs}	—	6.6	—	S	V _{DS} = 15V, I _D = 4.8A	
Diode Forward Voltage (Note 8)	V _{SD}	—	0.88	1.2	V	I _S = 4A, V _{GS} = 0V, T _J = +25°C	
Reverse Recovery Time (Note 9)	t _{rr}	—	19.2	—	ns	I _F = 1.4A, di/dt = 100A/μs, T _J = +25°C	
Reverse Recovery Charge (Note 9)	Q _{rr}	—	30.3	—	nC		
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	—	459	—	pF	V _{DS} = 40V, V _{GS} = 0V f = 1MHz	
Output Capacitance	C _{oss}	—	44.2	—	pF		
Reverse Transfer Capacitance	C _{rss}	—	24.1	—	pF		
Total Gate Charge (Note 10)	Q _g	—	3.7	—	nC	V _{GS} = 4.5V	V _{DS} = 30V I _D = 1.4A
Total Gate Charge (Note 10)	Q _g	—	5.8	—	nC	V _{GS} = 10V	
Gate-Source Charge (Note 10)	Q _{gs}	—	1.4	—	nC		
Gate-Drain Charge (Note 10)	Q _{gd}	—	1.9	—	nC		
Turn-On Delay Time (Note 10)	t _{D(on)}	—	2.6	—	ns	V _{DD} = 30V, V _{GS} = 10V I _D = 1.5A, R _G ≅ 6.0Ω	
Turn-On Rise Time (Note 10)	t _r	—	2.1	—	ns		
Turn-Off Delay Time (Note 10)	t _{D(off)}	—	12.3	—	ns		
Turn-Off Fall Time (Note 10)	t _f	—	4.6	—	ns		

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

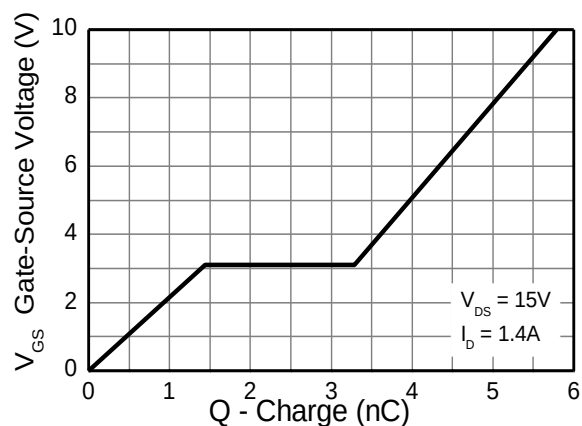
Typical Characteristics



Typical Characteristics (cont.)

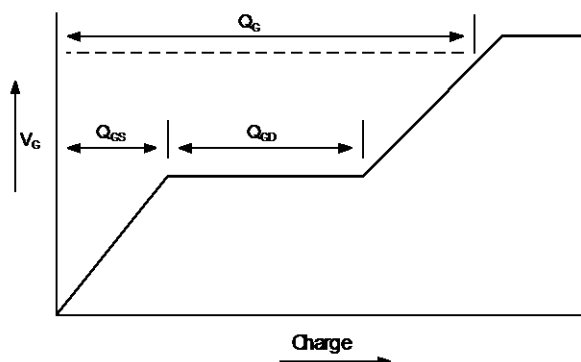


Capacitance v Drain-Source Voltage

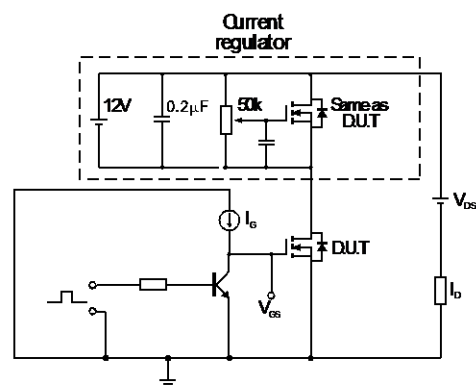


Gate-Source Voltage v Gate Charge

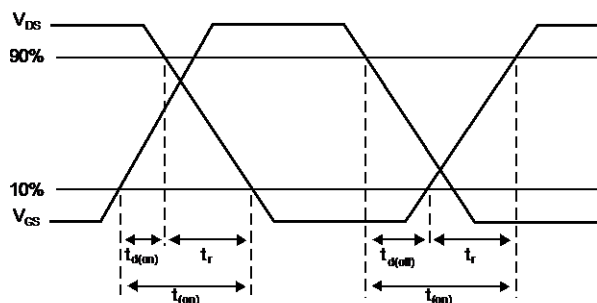
Test Circuits



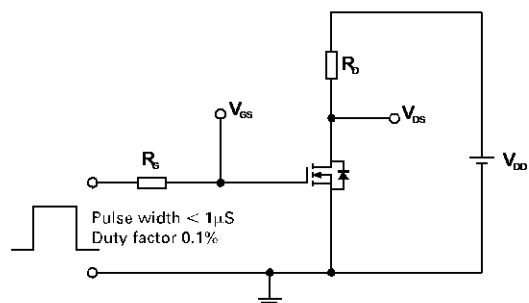
Basic gate charge waveform



Gate charge test circuit



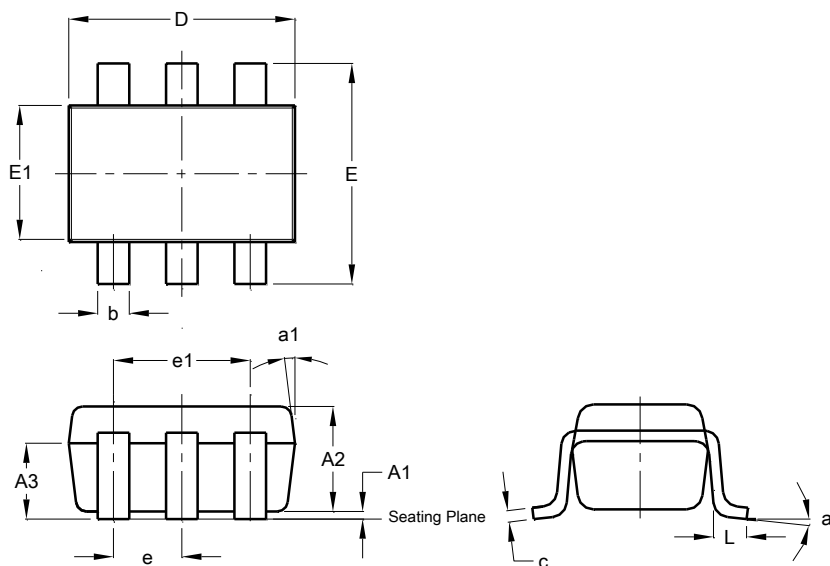
Switching time waveforms



Switching time test circuit

Package Outline Dimensions

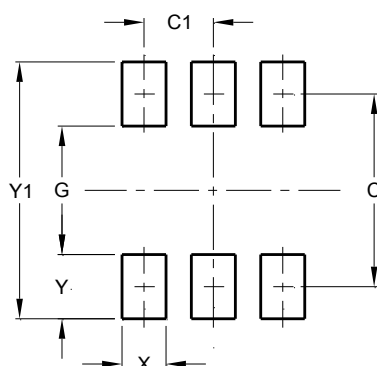
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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