

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

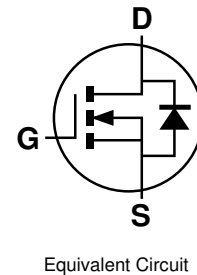
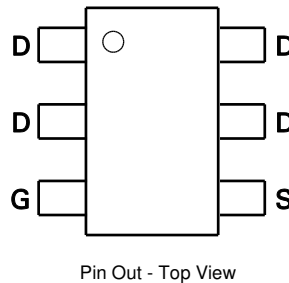
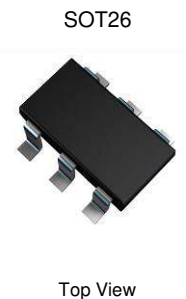
- DC-DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

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 $\text{\textcircled{3}}$
- Weight: 0.018 grams (Approximate)

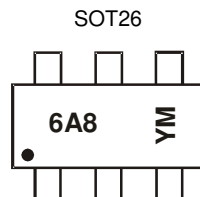


Ordering Information (Note 4)

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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

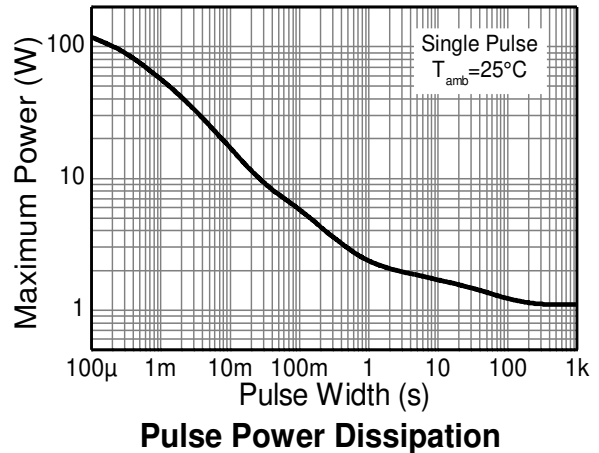
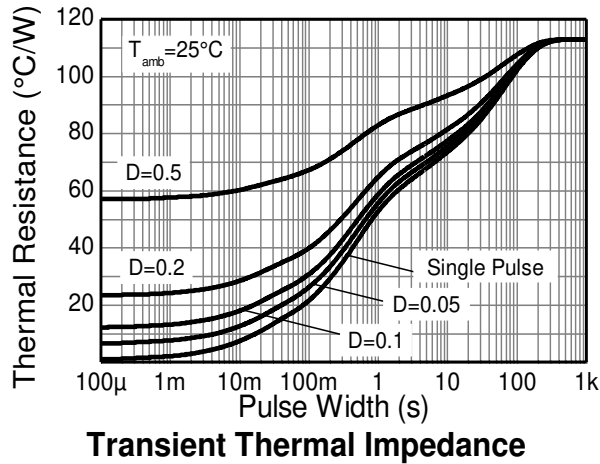
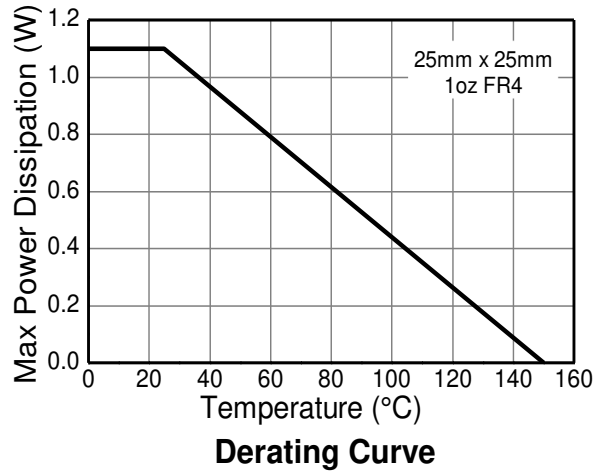
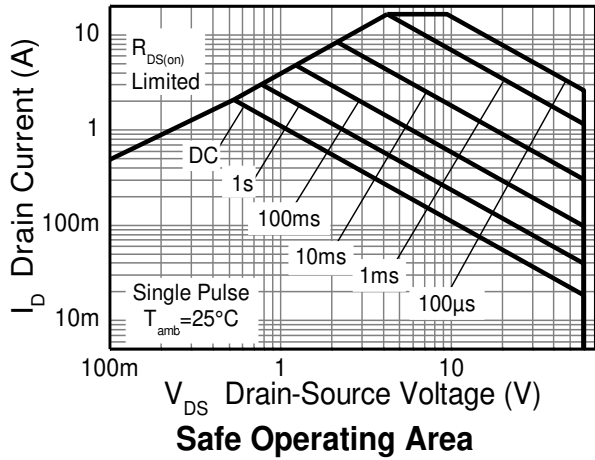
Characteristic			Symbol	Value	Unit	
Drain-Source Voltage			V_{DSS}	60	V	
Gate-Source Voltage			V_{GS}	± 20	V	
Continuous Drain Current	$V_{GS} = 10\text{V}$	(Note 6)	I_D	3.5	A	
		$T_A = +70^\circ\text{C}$ (Note 6)		2.8		
		(Note 5)		2.8		
Pulsed Drain Current	$V_{GS} = 10\text{V}$	(Note 7)	I_{DM}	16	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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	1.1	W mW/ $^\circ\text{C}$
			8.8	
	(Note 6)		1.7 13.6	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	113	$^\circ\text{C/W}$
	(Note 6)		73	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- 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 $t \leq 10$ sec.
 7. Same as Note 5, 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

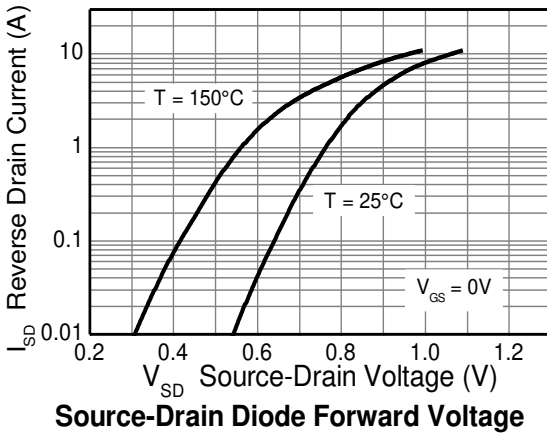
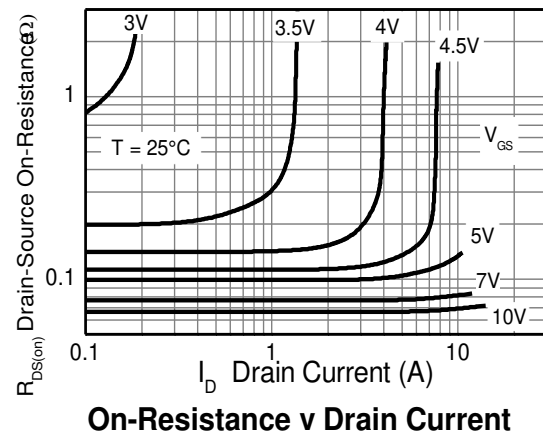
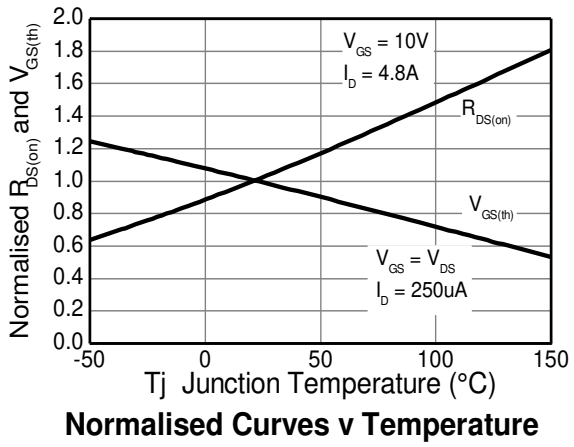
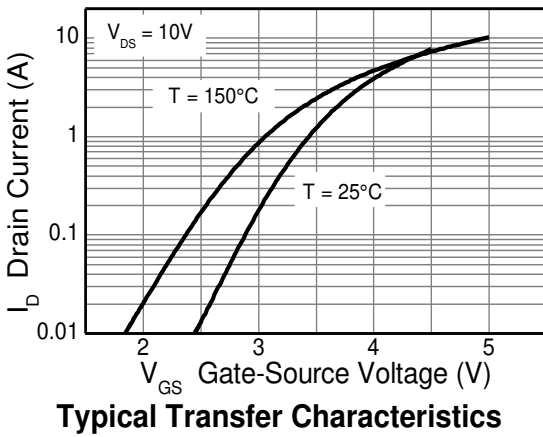
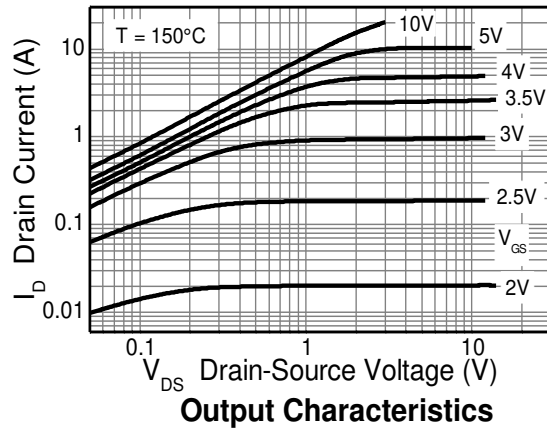
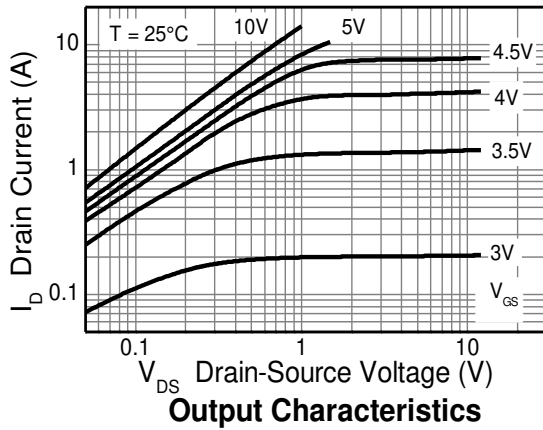


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

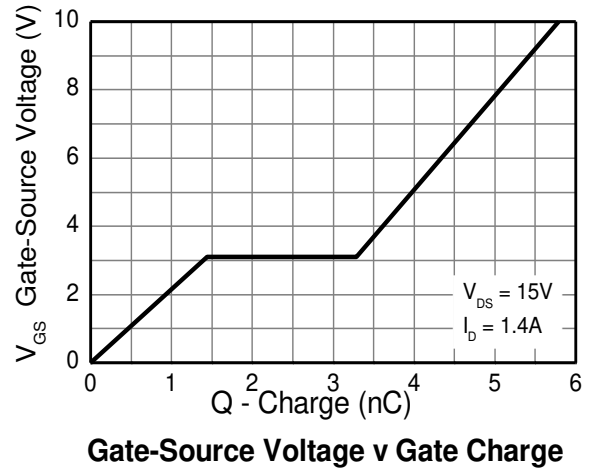
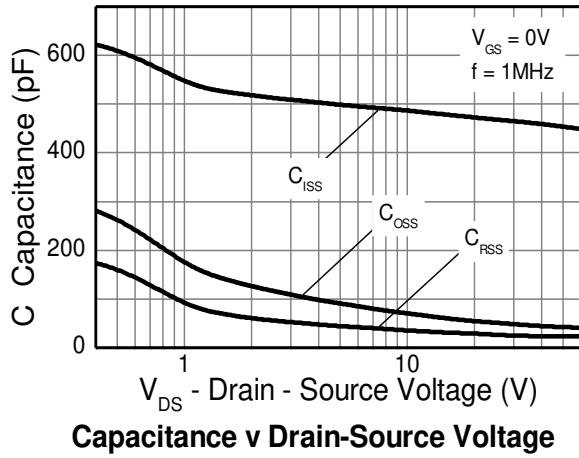
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	I _D = 250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	0.5	μA	V _{DS} = 60V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 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	T _J = +25°C
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
Total Gate Charge (Note 10)	Q _g	—	5.8	—	nC	V _{GS} = 10V V _{DS} = 30V I _D = 1.4A
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.

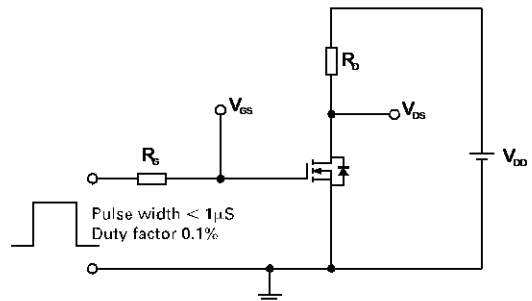
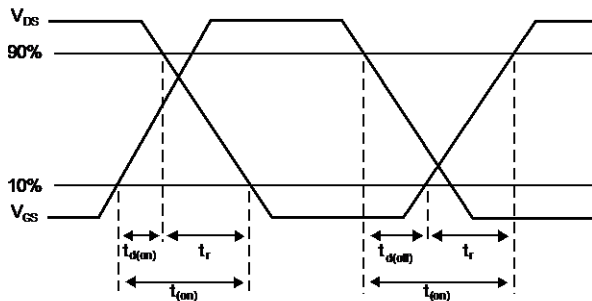
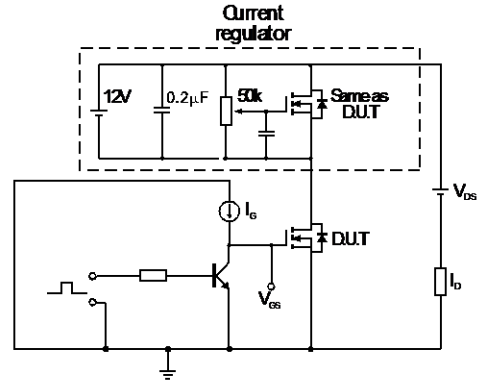
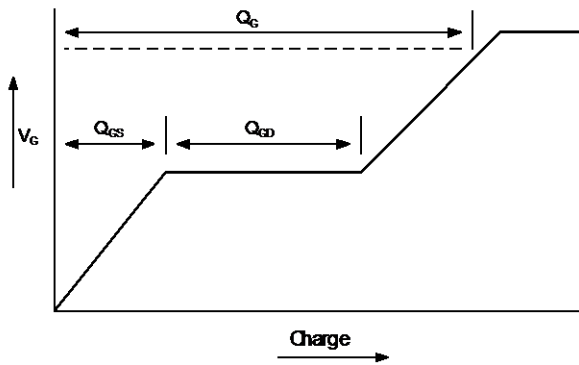
Typical Characteristics



Typical Characteristics (cont.)

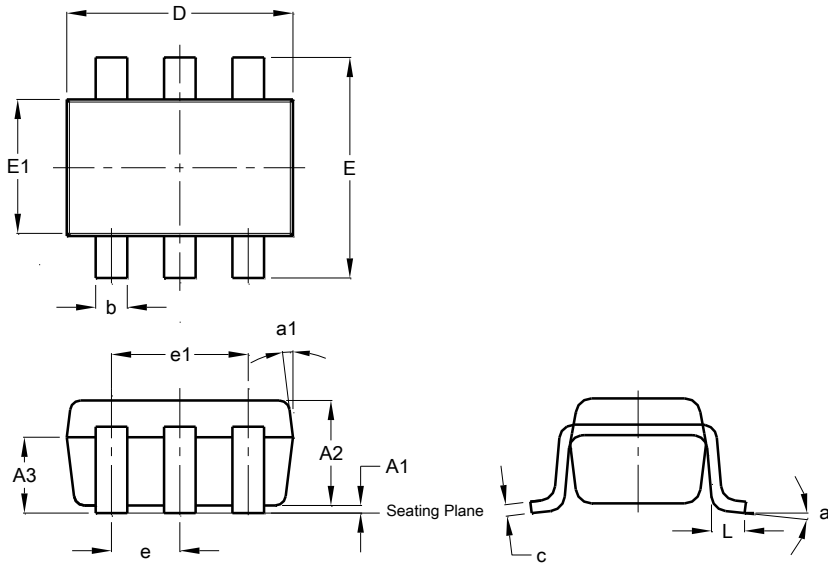


Test Circuits



Package Outline Dimensions

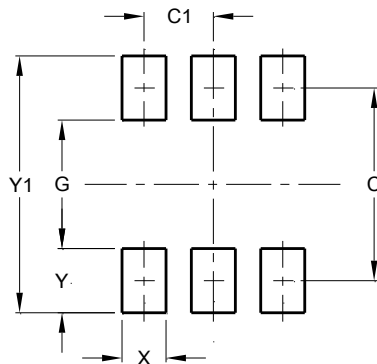
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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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