

## Product Summary

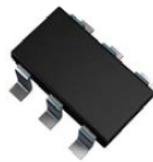
$V_{(BR)DSS}$	Max $R_{DS(ON)}$	Max $I_D$ $T_A = +25^\circ\text{C}$ (Note 7)
100V	250m $\Omega$ @ $V_{GS} = 10\text{V}$	1.9A
	300m $\Omega$ @ $V_{GS} = 6\text{V}$	1.68A

## Description and Applications

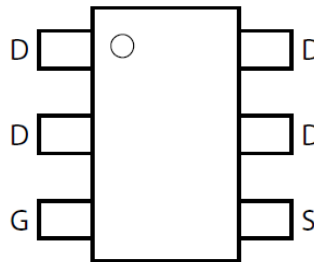
This new generation MOSFET features a unique structure, combining the benefits of low on-resistance and fast switching, making it ideal for high-efficiency power management applications such as:

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

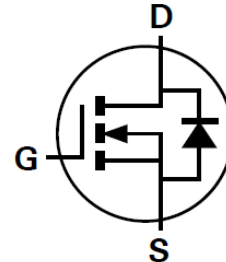
SOT26



Top View



Pinout Top-View



Device Symbol

## Features and Benefits

- Low On-Resistance
- Fast Switching Speed
- **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**
- **PPAP Available (Note 4)**

## Mechanical Data

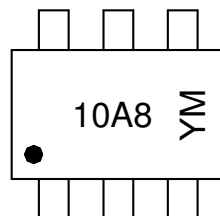
- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208  $\text{e3}$
- Weight: 0.015 grams (Approximate)

## Ordering Information (Note 4 & 5)

Part Number	Compliance	Case	Packing
ZXMN10A08E6QTA	Automotive	SOT26	3,000
ZXMN10A08E6QTC	Automotive	SOT26	10,000

- 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](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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_grade\\_definitions/](http://www.diodes.com/quality/product_grade_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



10A8 = 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	2023	2024	2025
Code	C	D	E	F	G	H	I	J	K	L	M

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<sub>A</sub> = +25°C, unless otherwise specified.)

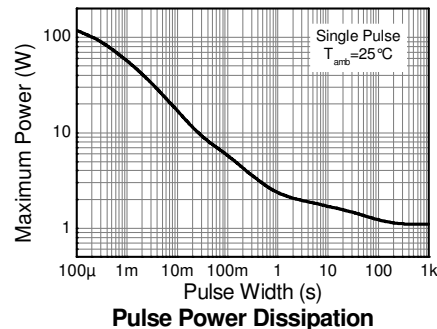
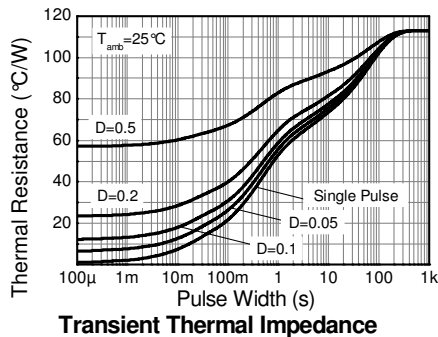
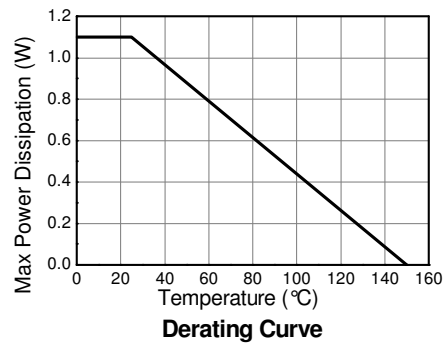
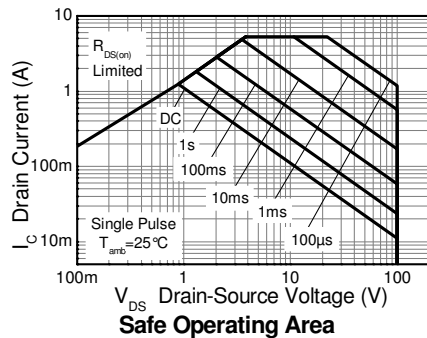
Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V <sub>DSS</sub>	100	V
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current	V <sub>GS</sub> = 10V	(Note 7)	1.9	A
		T <sub>A</sub> = +70°C (Note 7)	1.5	
		(Note 6)	1.5	
		(Note 9)	3.5	
Pulsed Drain Current		I <sub>DM</sub>	8.6	A
Continuous Source Current (Body Diode)		I <sub>S</sub>	2.5	A
Pulsed Source Current (Body Diode)		I <sub>SM</sub>	8.6	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P <sub>D</sub>	1.1	W
	(Note 7)		1.7	
	(Note 9)		6.3	
Thermal Resistance, Junction to Ambient	(Note 6)	R <sub>θJA</sub>	114	°C/W
	(Note 7)		73.5	
Thermal Resistance, Junction to Leads	(Note 9)	R <sub>θJL</sub>	19.7	°C/W
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
6. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
  7. For a device surface mounted on FR4 PCB measured at t ≤ 5 secs.
  8. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300µs - pulse width limited by maximum junction temperature.
  9. Thermal resistance from junction to solder-point (at the end of the drain lead).

**Thermal Characteristics**

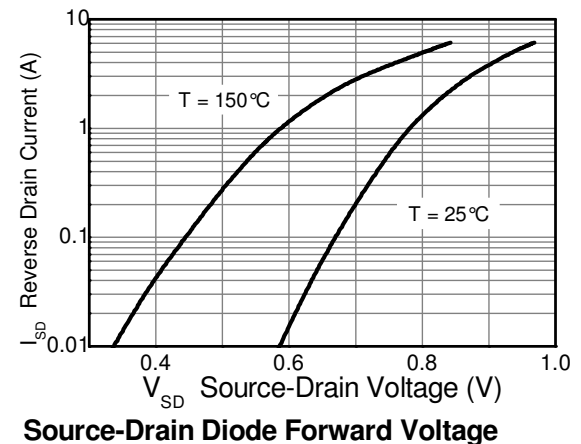
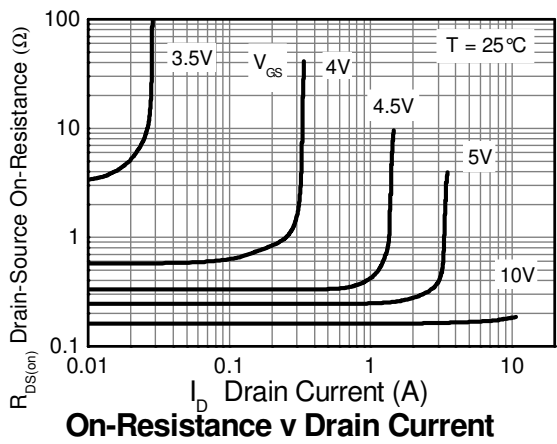
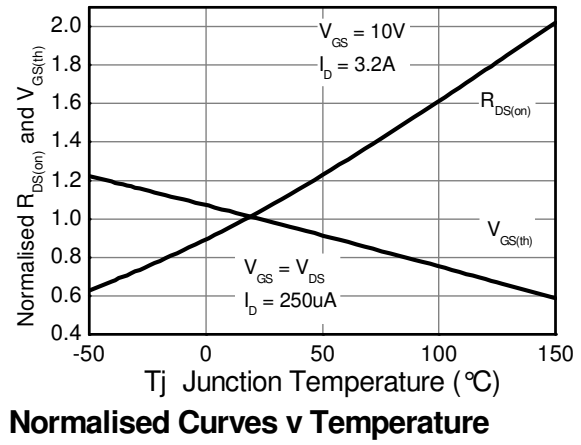
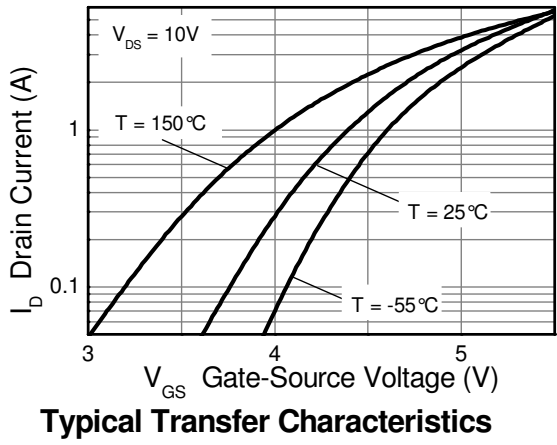
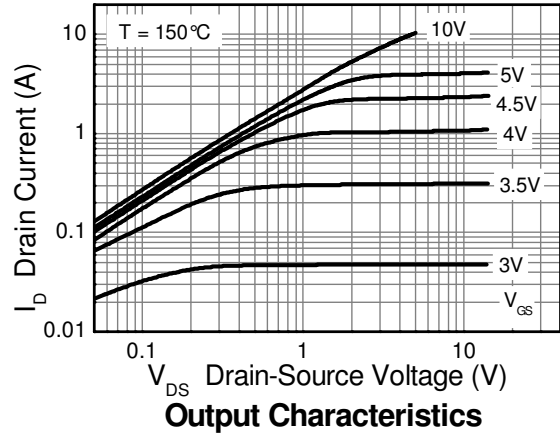
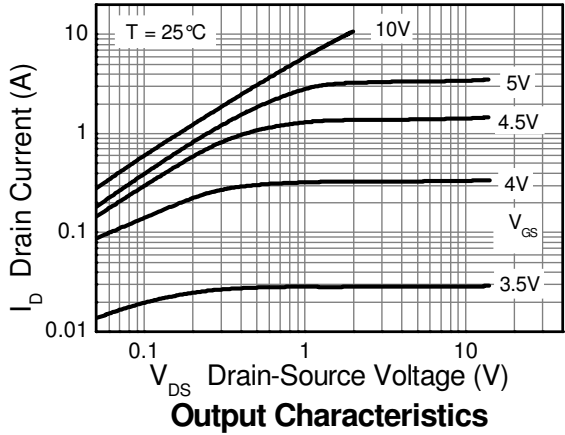


**Electrical Characteristics** (@T<sub>A</sub> = +25 °C, unless otherwise specified.)

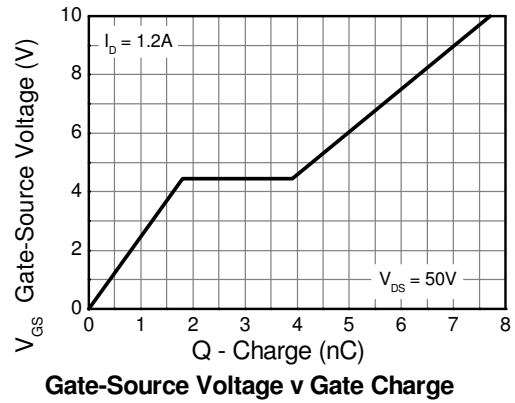
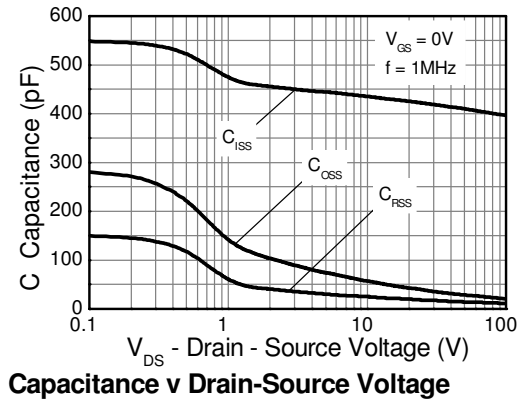
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	—	—	V	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	0.5	μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	2.0	—	4.0	V	I <sub>D</sub> = 250μA, V <sub>DS</sub> = V <sub>GS</sub>
Static Drain-Source On-Resistance (Note 10)	R <sub>DS(on)</sub>	—	—	0.25	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 3.2A
				0.30		V <sub>GS</sub> = 6V, I <sub>D</sub> = 2.6A
Forward Transconductance (Notes 10 & 12)	g <sub>fs</sub>	—	5.0	—	S	V <sub>DS</sub> = 15V, I <sub>D</sub> = 3.2A
Diode Forward Voltage (Note 10)	V <sub>SD</sub>	—	0.87	0.95	V	I <sub>S</sub> = 3.2A, V <sub>GS</sub> = 0V
Reverse Recovery Time (Note 12)	t <sub>rr</sub>	—	27	—	ns	I <sub>S</sub> = 1.2A, di/dt = 100A/μs
Reverse Recovery Charge (Note 12)	Q <sub>rr</sub>	—	32	—	nC	
<b>DYNAMIC CHARACTERISTICS (Note 12)</b>						
Input Capacitance	C <sub>iSS</sub>	—	405	—	pF	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V f = 1MHz
Output Capacitance	C <sub>oSS</sub>	—	28.2	—	pF	
Reverse Transfer Capacitance	C <sub>rSS</sub>	—	14.2	—	pF	
Gate Charge (Note 11)	Q <sub>g</sub>	—	4.2	—	nC	V <sub>GS</sub> = 5V, V <sub>DS</sub> = 50V I <sub>D</sub> = 1.2A
Total Gate Charge (Note 11)	Q <sub>g</sub>	—	7.7	—	nC	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 50V I <sub>D</sub> = 1.2A
Gate-Source Charge (Note 11)	Q <sub>gs</sub>	—	1.8	—	nC	
Gate-Drain Charge (Note 11)	Q <sub>gd</sub>	—	2.1	—	nC	
Turn-On Delay Time (Note 11)	t <sub>d(on)</sub>	—	3.4	—	ns	V <sub>DD</sub> = 30V, V <sub>GS</sub> = 10V I <sub>D</sub> = 1.2A, R <sub>G</sub> ≅ 6.0Ω
Turn-On Rise Time (Note 11)	t <sub>r</sub>	—	2.2	—	ns	
Turn-Off Delay Time (Note 11)	t <sub>d(off)</sub>	—	8	—	ns	
Turn-Off Fall Time (Note 11)	t <sub>f</sub>	—	3.2	—	ns	

Notes: 10. Measured under pulsed conditions. Width ≤ 300μs. Duty cycle ≤ 2%.  
11. Switching characteristics are independent of operating junction temperature.  
12. For design aid only, not subject to production testing.

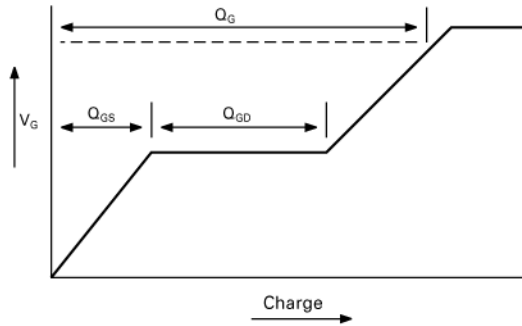
**Typical Characteristics**



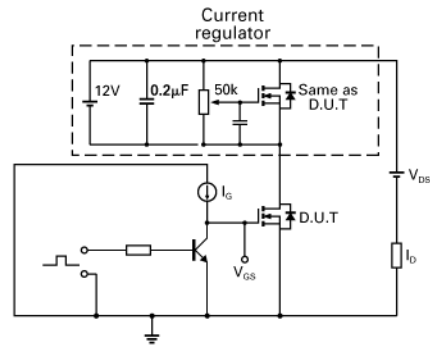
**Typical Characteristics** (continued)



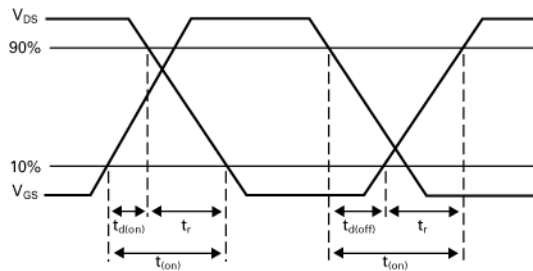
**Test Circuits**



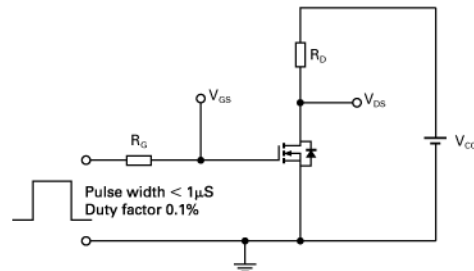
**Basic gate charge waveform**



**Gate charge test circuit**



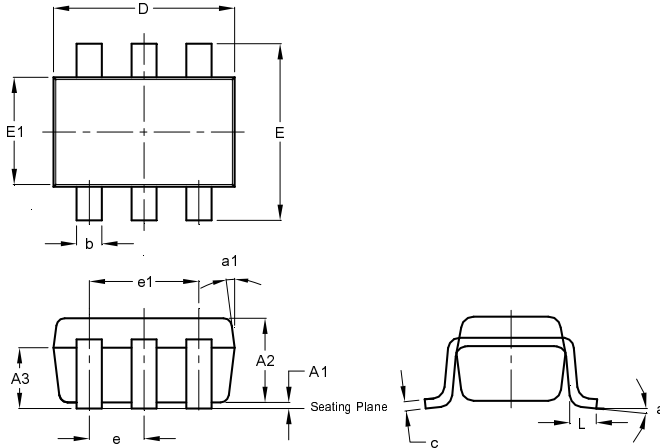
**Switching time waveforms**



**Switching time test circuit**

## Package Outline Dimensions

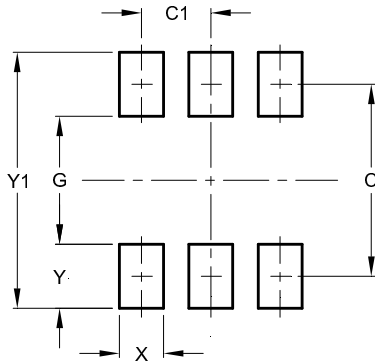
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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°
<b>All Dimensions in mm</b>			

## 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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