



**THE DATASHEET OF  
ZXMP3A17E6TA**



## Product Summary

$V_{(BR)DSS}$	Max $R_{DS(ON)}$	Max $I_D$ $T_A = +25^\circ C$ (Note 6)
-30V	70m $\Omega$ @ $V_{GS} = -10V$	-4A

## Description and Applications

This new generation of TRENCH MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.

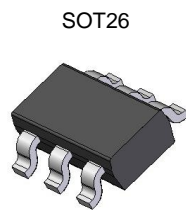
- DC - DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

## Features and Benefits

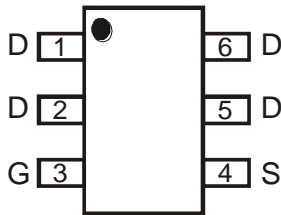
- Low On-Resistance
- Fast Switching Speed
- Low Threshold
- Low Gate Drive
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

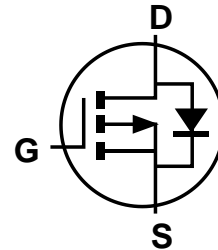
- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.016 grams (Approximate)



Top View



Pin-Out (Top View)



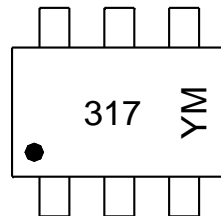
Equivalent Circuit

## Ordering Information (Note 4)

Part Number	Marking	Reel Size (inch)	Tape Width (mm)	Quantity Per Reel
ZXMP3A17E6TA	317	7	8	3000
ZXMP3A17E6TC	317	13	8	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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



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

Characteristic		Symbol	Value	Unit	
Drain-Source Voltage		V <sub>DSS</sub>	-30	V	
Gate-Source Voltage		V <sub>GS</sub>	±20	V	
Continuous Drain Current	V <sub>GS</sub> = -10V	I <sub>D</sub>	T <sub>A</sub> = +25°C (Note 6)	-4.0	A
			T <sub>A</sub> = +70°C (Note 6)	-3.2	
			T <sub>A</sub> = +25°C (Note 5)	-3.2	
Pulsed Drain Current (Note 7)		I <sub>DM</sub>	-14.4	A	
Continuous Source Current (Body Diode) (Note 6)		I <sub>S</sub>	-2.5	A	
Pulsed Source Current (Body Diode) (Note 7)		I <sub>SM</sub>	-14.4	A	

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

Characteristic	Symbol	Value	Unit
Power Dissipation at T <sub>A</sub> = +25°C (Note 5)	P <sub>D</sub>	1.1	W
Linear derating factor		8.8	mW/°C
Power Dissipation at T <sub>A</sub> = +25°C (Note 6)	P <sub>D</sub>	1.7	W
Linear Derating Factor		13.6	mW/°C
Junction to Ambient (Note 5)	R <sub>θJA</sub>	113	°C/W
Junction to Ambient (Note 6)	R <sub>θJA</sub>	73	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes: 5. For a device surface mounted on 25mm x 25mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions.

6. For a device surface mounted on FR-4 PCB measured at t = 5 secs.

7. Repetitive rating 25mm x 25mm FR-4 PCB, D = 0.05, pulse width 10μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

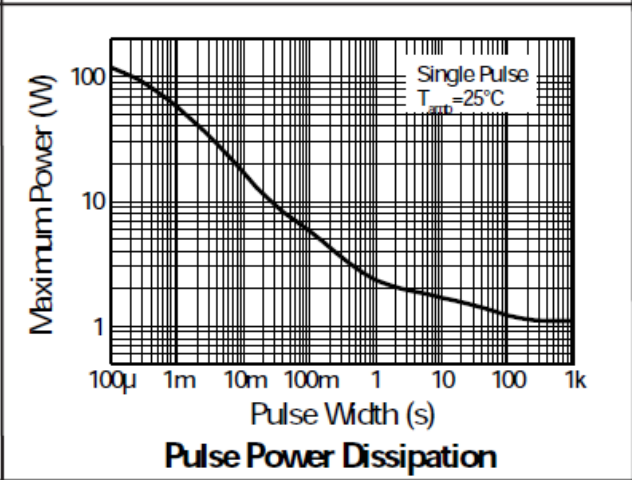
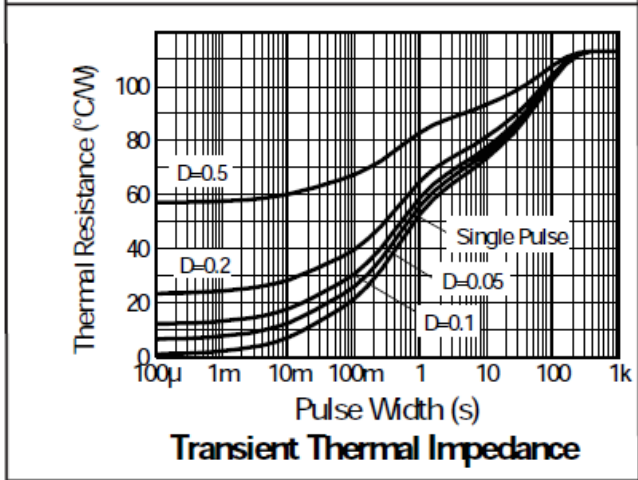
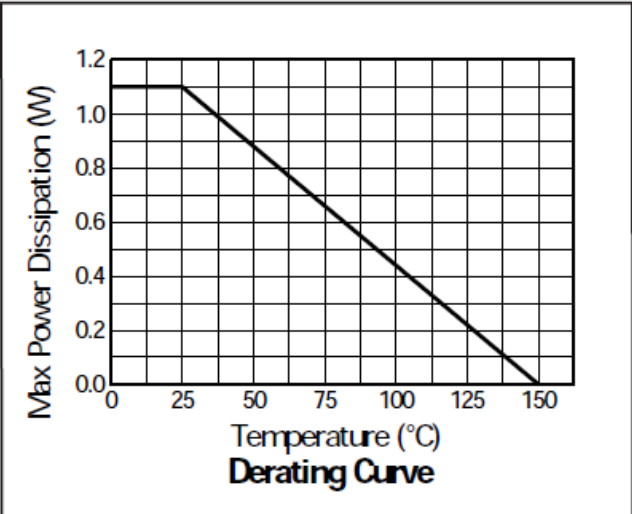
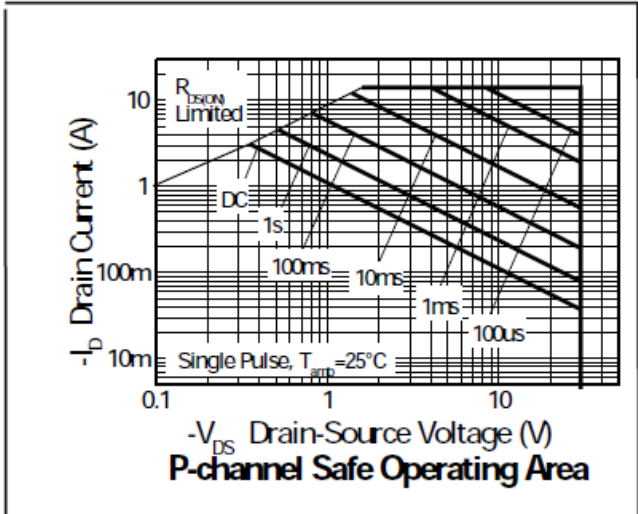
**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

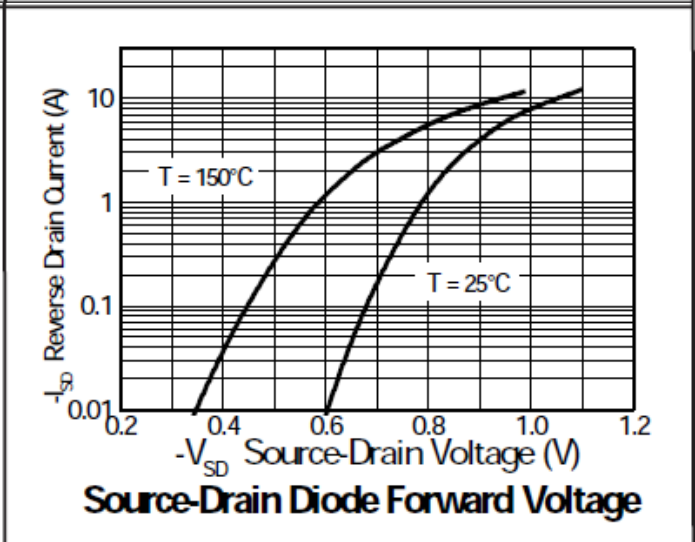
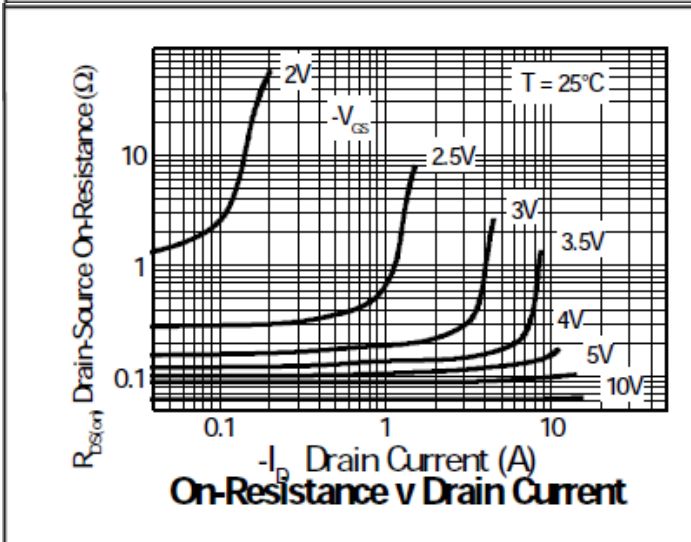
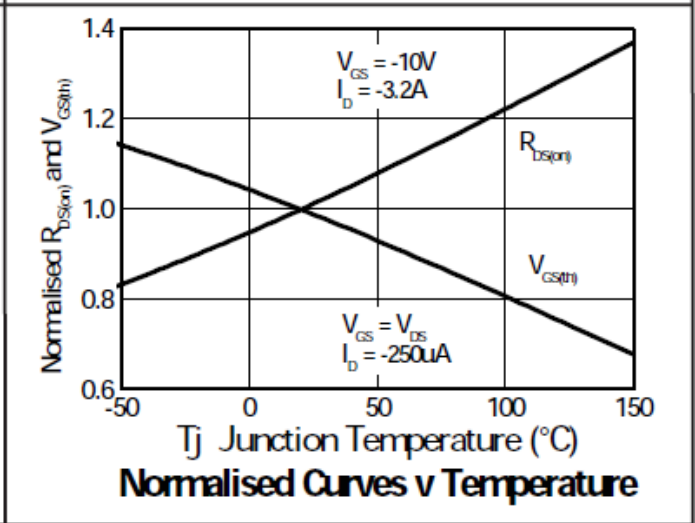
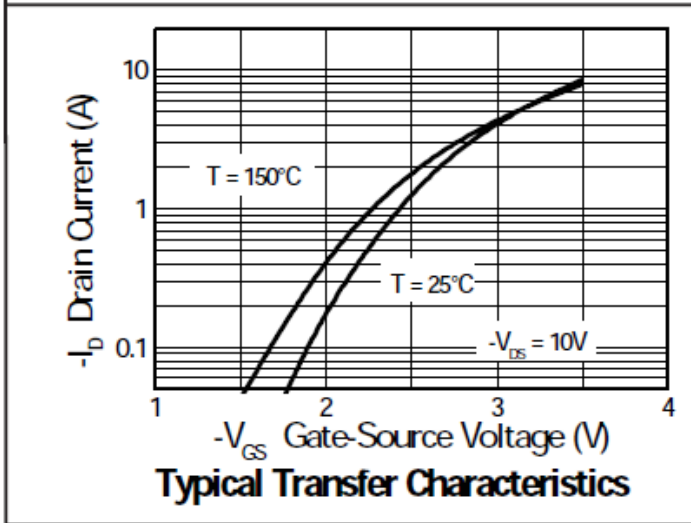
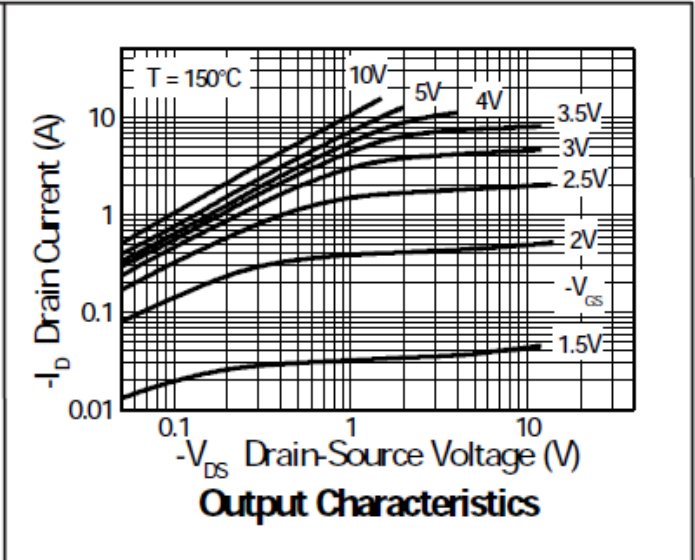
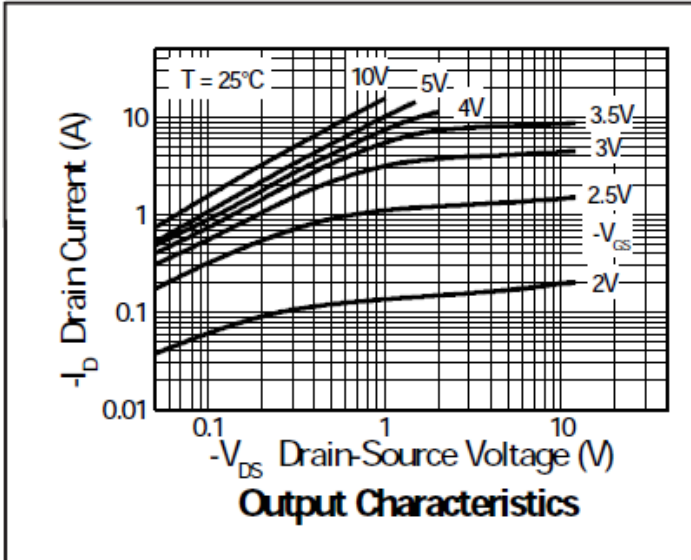
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	-30	-	-	V	I <sub>D</sub> = -250μA, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	-0.5	μA	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V
Gate-Body Leakage	I <sub>GSS</sub>	-	-	100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
Gate-Source Threshold Voltage	V <sub>GS(TH)</sub>	-1.0	-	-	V	I <sub>D</sub> = -250μA, V <sub>DS</sub> = V <sub>GS</sub>
Static Drain-Source On-State Resistance (Note 8)	R <sub>DS(ON)</sub>	-	-	0.070	Ω	V <sub>GS</sub> = -10V, I <sub>D</sub> = -3.2A
				0.110		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.5A
Forward Transconductance (Notes 8 & 10)	g <sub>fs</sub>	-	6.4	-	S	V <sub>DS</sub> = -15V, I <sub>D</sub> = -3.2A
Diode Forward Voltage (Note 8)	V <sub>SD</sub>	-	-0.85	-1.2	V	T <sub>J</sub> = +25°C, I <sub>S</sub> = -2.5A, V <sub>GS</sub> = 0V
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance (Note 10)	C <sub>ISS</sub>	-	630	-	pF	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V f = 1MHz
Output Capacitance (Note 10)	C <sub>OSS</sub>	-	113	-	pF	
Reverse Transfer Capacitance (Note 10)	C <sub>RSS</sub>	-	78	-	pF	
Gate Charge (Notes 9 & 10)	Q <sub>g</sub>	-	8.28	-	nC	V <sub>GS</sub> = -5V, V <sub>DS</sub> = -15V I <sub>D</sub> = -3.2A
Total Gate Charge (Notes 9 & 10)	Q <sub>g</sub>	-	15.8	-	nC	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -15V I <sub>D</sub> = -3.2A
Gate-Source Charge (Notes 9 & 10)	Q <sub>gs</sub>	-	1.84	-	nC	
Gate-Drain Charge (Notes 9 & 10)	Q <sub>gd</sub>	-	2.8	-	nC	
Turn-On Delay Time (Notes 9 & 10)	t <sub>D(ON)</sub>	-	1.74	-	ns	V <sub>DD</sub> = -15V, V <sub>GS</sub> = -10V I <sub>D</sub> = -1A, R <sub>G</sub> = 6.0Ω
Turn-On Rise Time (Notes 9 & 10)	t <sub>R</sub>	-	2.87	-	ns	
Turn-Off Delay Time (Notes 9 & 10)	t <sub>D(OFF)</sub>	-	29.2	-	ns	
Turn-Off Fall Time (Notes 9 & 10)	t <sub>F</sub>	-	8.72	-	ns	
Reverse Recovery Time (Note 10)	t <sub>RR</sub>	-	19.5	-	ns	T <sub>J</sub> = +25°C, I <sub>F</sub> = -1.7A, di/dt = 100A/μs
Reverse Recovery Charge (Note 10)	Q <sub>RR</sub>	-	16.3	-	nC	

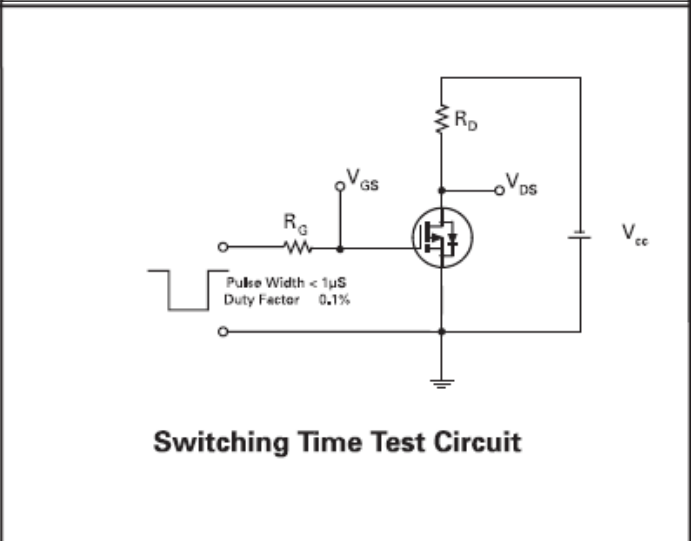
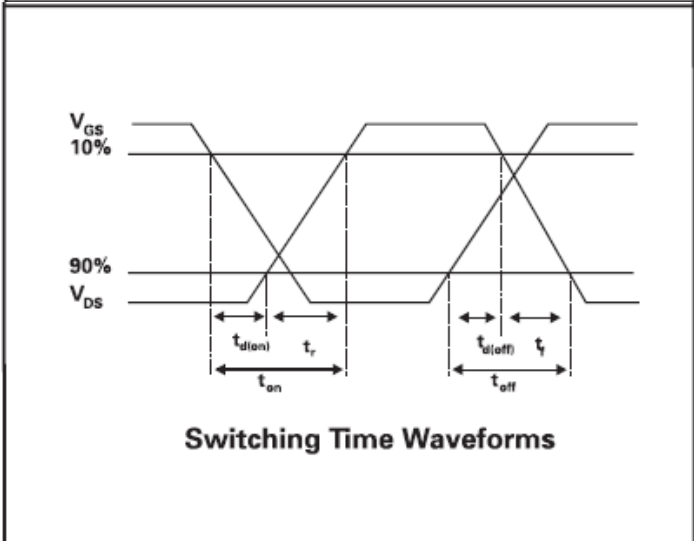
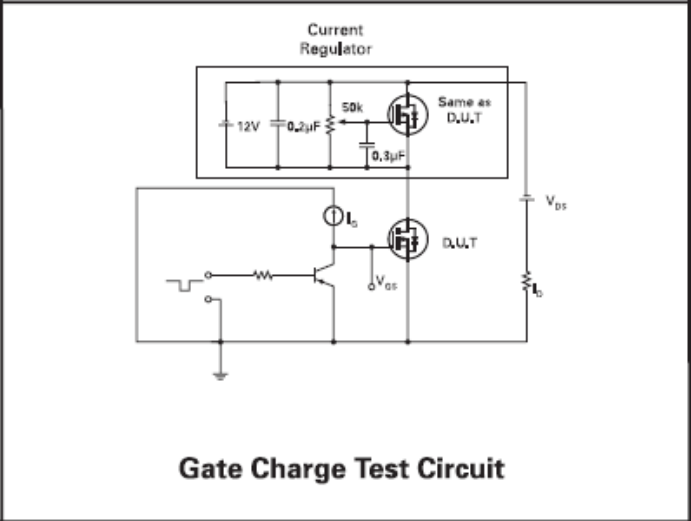
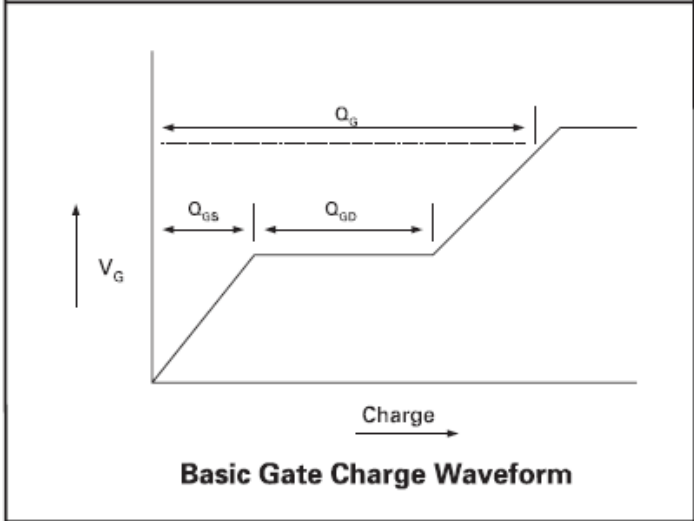
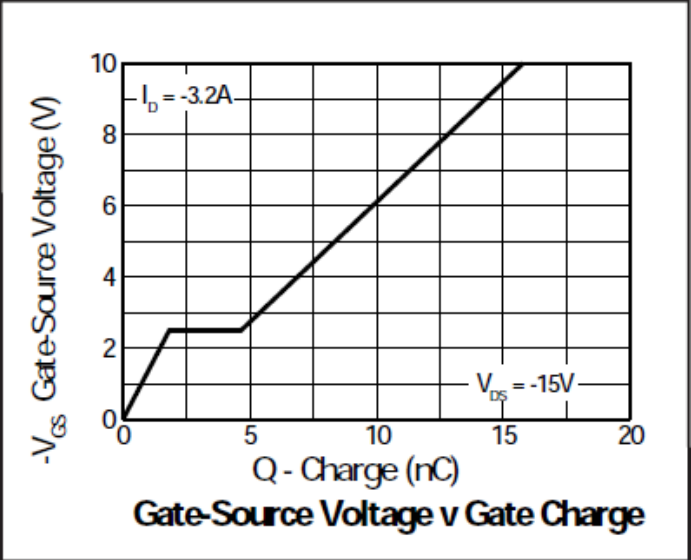
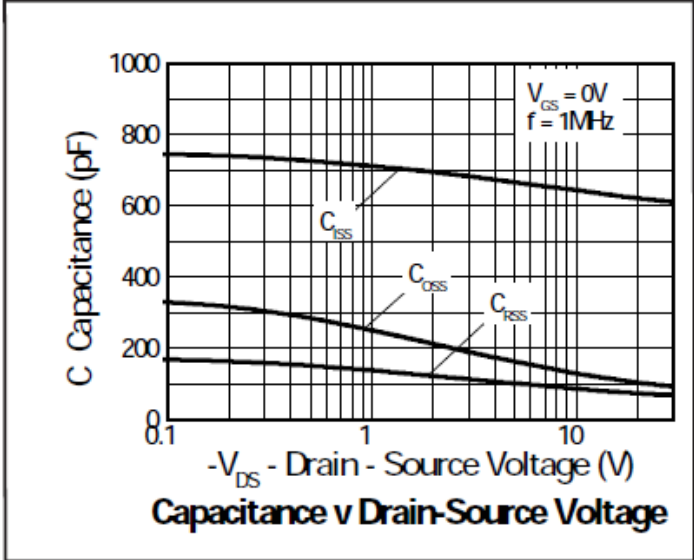
Notes: 8. Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2%

9. Switching characteristics are independent of operating junction temperature.

10. For design aid only, not subject to production testing.

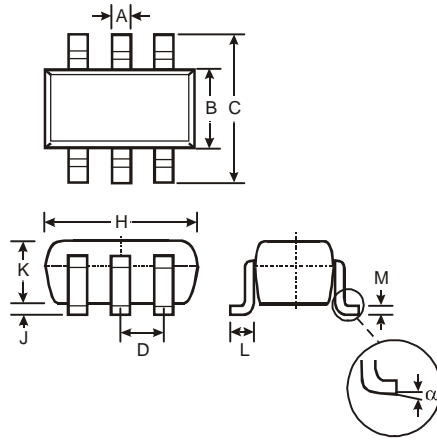






**Package Outline Dimensions**

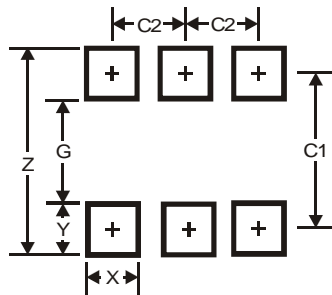
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT26			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	—
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)
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

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