

Product Summary

BV_{DSS}	$R_{DS(ON)}$ (Ω)	I_D (A)
60V	0.3 @ $V_{GS} = 10V$	1.6

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.

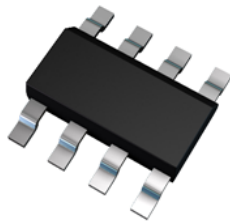
- DC-AC Converters
- Motor Control

Features

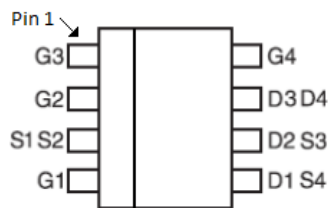
- Compact Package
- Low On State Losses
- Low Drive Requirements
- Operates up to 60V
- 1 Amp Continuous Rating
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

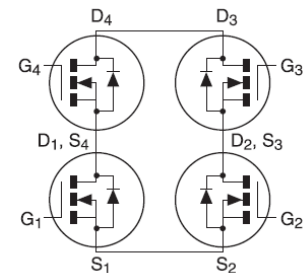
- Case: SM-8 (8 LEAD SOT223)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.117 grams (Approximate)



Top View



Top View
Pin Out



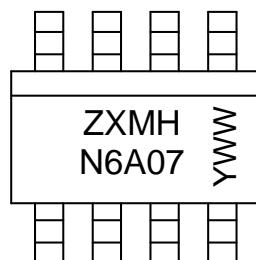
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXMHN6A07T8TA	7	12	1,000
ZXMHN6A07T8TC	13	12	4,000

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 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



ZXMHN6A07 = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 5= 2015)
 WW or $\bar{W}W$ = Week Code (01 to 53)

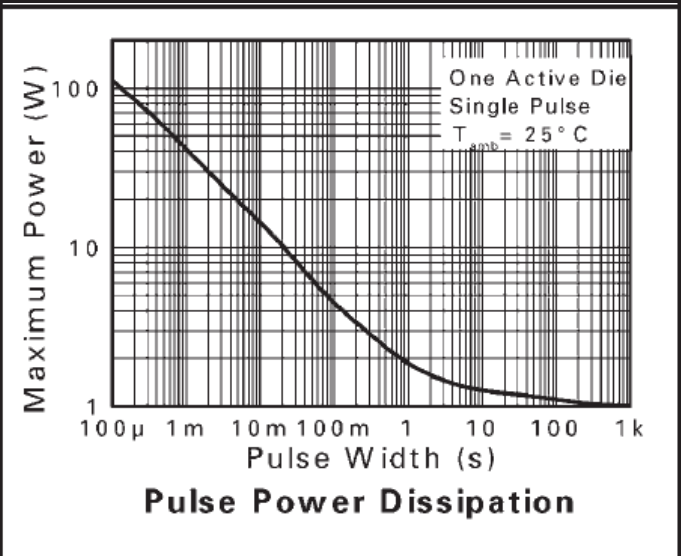
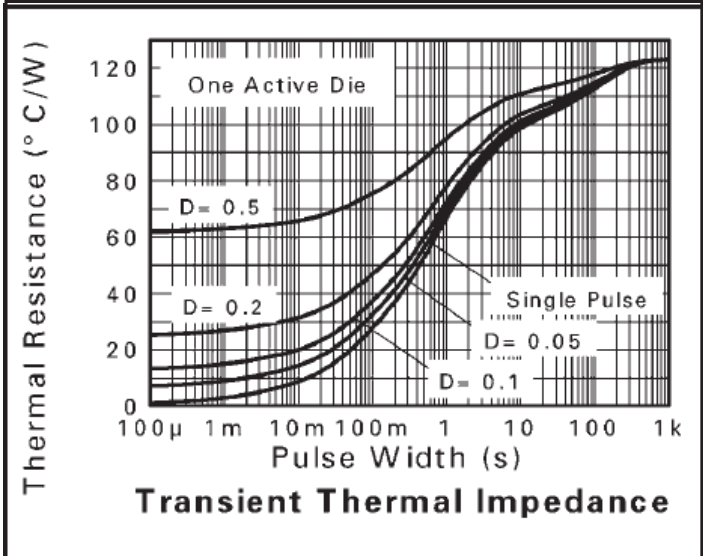
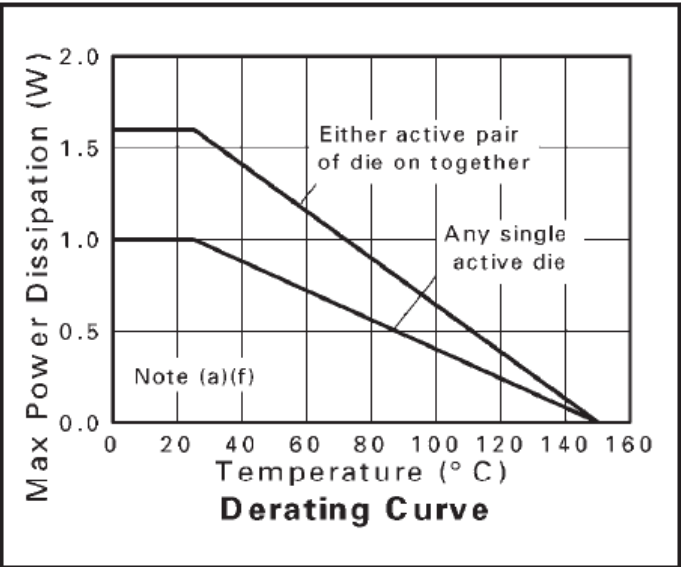
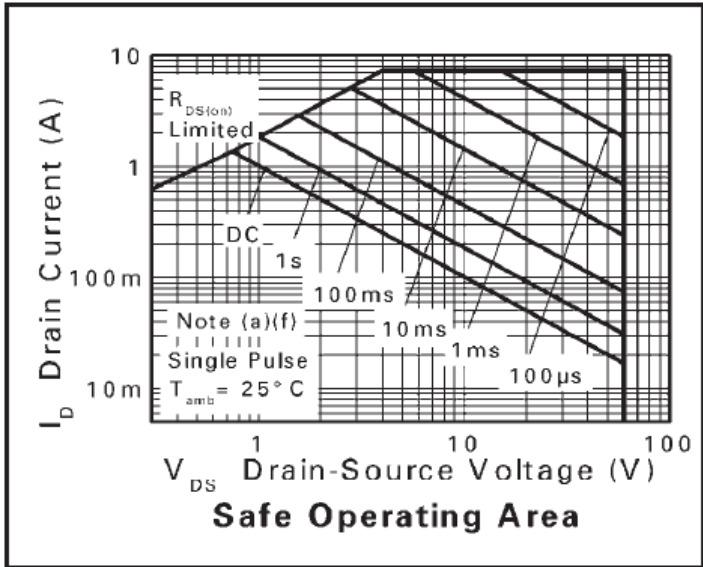
Absolute Maximum Ratings

Characteristic		Symbol	Value	Unit	
Drain-Source Voltage		V_{DSS}	60	V	
Gate-Source Voltage		V_{GSS}	± 20	V	
Continuous Drain Current	$V_{GS} = 10V$	I_D	$T_A = +25^\circ C$ (Notes 6, 8)	1.6	A
			$T_A = +70^\circ C$ (Notes 6, 8)	1.3	
			$T_A = +25^\circ C$ (Notes 5, 8)	1.4	
Pulsed Drain Current (Note 7)		I_{DM}	9	A	
Continuous Source Current (Body Diode) (Notes 6, 8)		I_S	1	A	
Pulsed Source Current (Body Diode) (Note 7)		I_{SM}	9	A	

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation at $T_A = +25^\circ C$	Any Single transistor "on" (Notes 5, 8)	P_{TOT}	1.1	W
	Single transistor 'on' (Notes 6, 8)		1.4	
	Two transistors 'on' equally (Notes 5, 9)		1.6	
Linear Derating Factor above $+25^\circ C$	Single transistor "on" (Notes 5, 8)	P_{TOT}	8.8	mW/ $^\circ C$
	Single transistor 'on' (Notes 6, 8)		11.2	
	Two transistors 'on' equally (Notes 5, 9)		13.2	
Thermal Resistance - Junction to Ambient	Single transistor "on" (Notes 5, 8)	$R_{\theta JA}$	114	$^\circ C/W$
	Single transistor "on" (Notes 6, 8)		89	
	Two transistors 'on' equally (Notes 5, 9)		76	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ C$

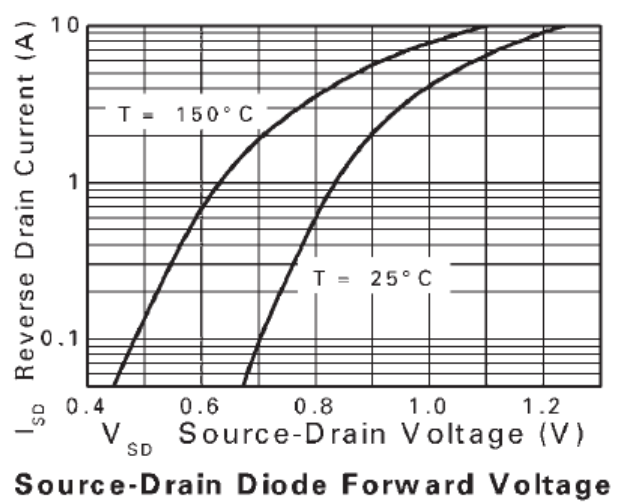
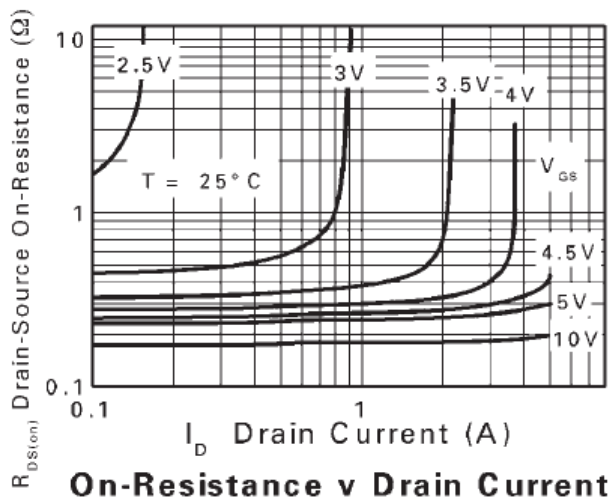
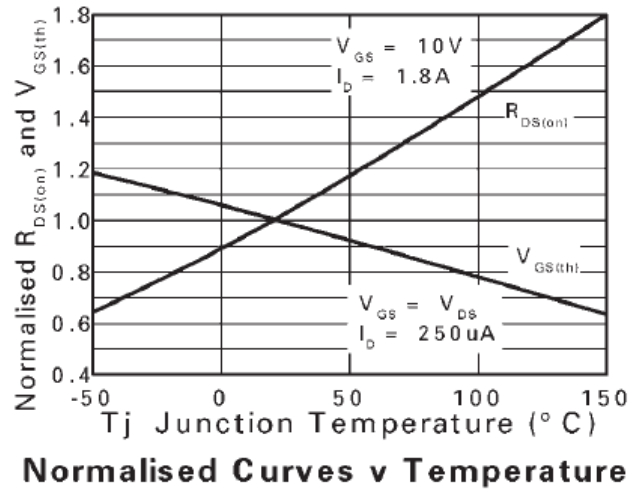
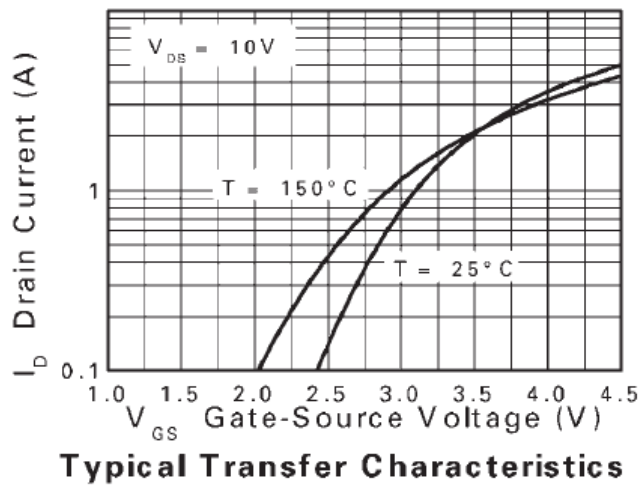
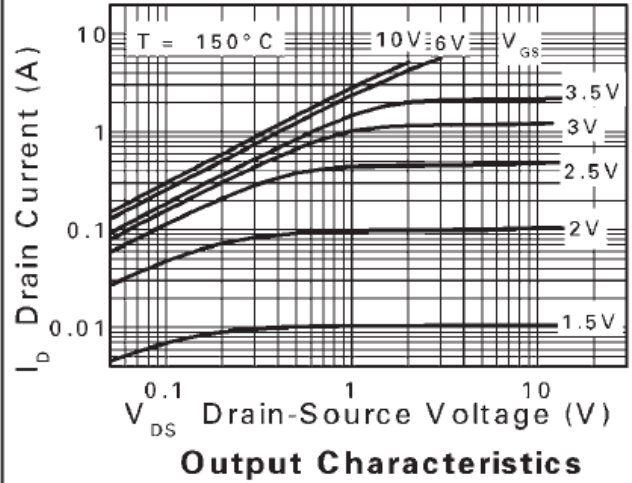
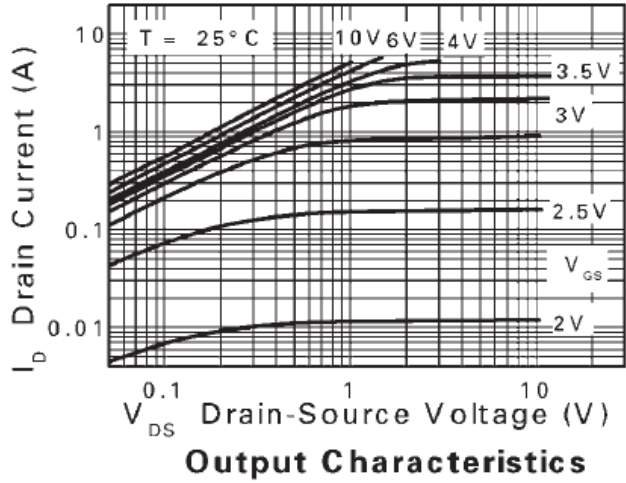
- Notes:
- For a device mounted on 50mm x 50mm x 1.6mm FR-4 PCB with a high coverage of single sided 2oz weight copper in still air conditions with the heat sink split into three equal areas, one for each drain connection.
 - For a device surface mounted on a FR-4 PCB at $t \leq 10$ sec.
 - Repetitive rating on 50mm x 50mm x 1.6mm FR-4 PCB, duty cycle 2%, pulse width 300 μs in still air conditions with the heat sink split into three equal areas, one for each drain connection.
 - For device with one active die.
 - For any two die not sharing the same drain connection.

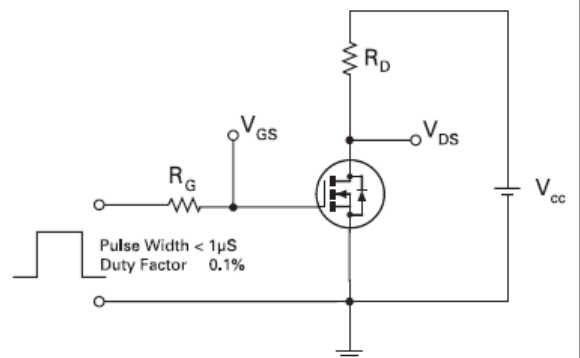
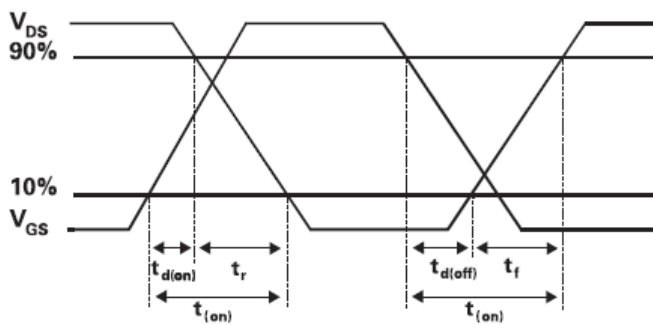
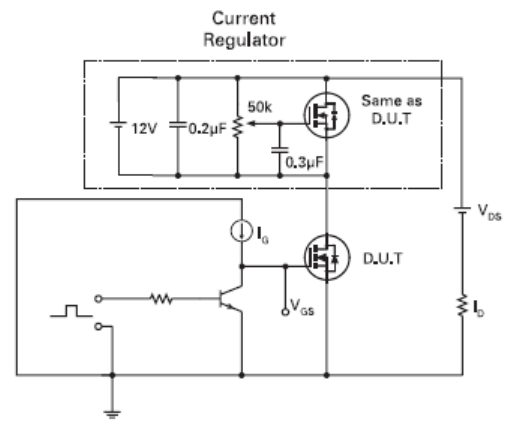
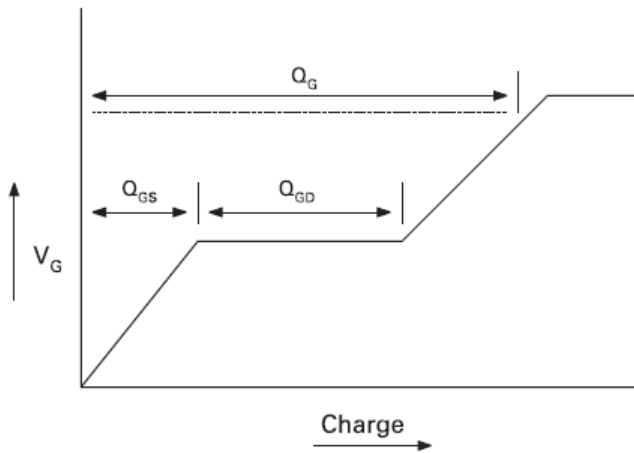
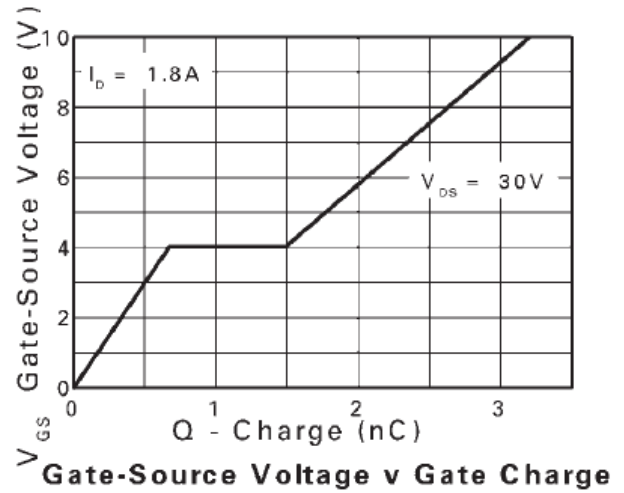
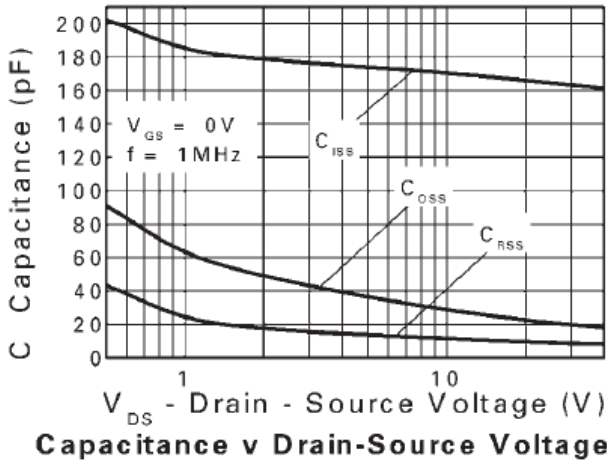


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
STATIC						
Drain-Source Breakdown Voltage	BV _{DSS}	60	–	–	V	V _{GS} = 0V, I _D = 250μA
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
Gate Threshold Voltage	V _{GS(TH)}	1.0	–	3.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-State Resistance (Note 10)	R _{DS(ON)}	–	–	0.3	Ω	V _{GS} = 10V, I _D = 1.8A
		–	–	0.45	Ω	V _{GS} = 4.5V, I _D = 1.3A
Forward Transconductance (Notes 10,12)	g _{fs}	–	2.3	–	S	V _{DS} = 15V, I _D = 1.8A
DYNAMIC (Note 12)						
Input Capacitance	C _{iss}	–	166	–	pF	V _{DS} = 40V, V _{GS} = 0V, f = 1MHz
Output Capacitance	C _{oss}	–	20	–	pF	
Reverse Transfer Capacitance	C _{rss}	–	9	–	pF	
SWITCHING (Notes 11, 12)						
Turn-On Delay Time	t _{D(ON)}	–	1.8	–	ns	V _{DD} = 30V, I _D = 1.8A R _G ≈ 6.0Ω, V _{GS} = 10V
Turn-On Rise Time	t _R	–	1.4	–	ns	
Turn-Off Delay Time	t _{D(OFF)}	–	4.9	–	ns	
Turn-Off Fall Time	t _F	–	2.0	–	ns	V _{DS} = 30V, V _{GS} = 10V I _D = 1.8A
Gate Charge	Q _g	–	3.2	–	nC	
Gate-Source Charge	Q _{gs}	–	0.7	–	nC	
Gate Drain Charge	Q _{gd}	–	0.8	–	nC	
Source-Drain Diode						
Diode Forward Voltage (Note 10)	V _{SD}	–	–	0.95	V	T _J = +25°C, I _S = 0.45A, V _{GS} = 0V
Reverse Recovery Time (Note 12)	t _{RR}	–	21	–	ns	T _J = +25°C, I _S = 1.0A, di/dt = 100A/μs
Reverse Recovery Charge (Note 12)	Q _{RR}	–	21	–	nC	

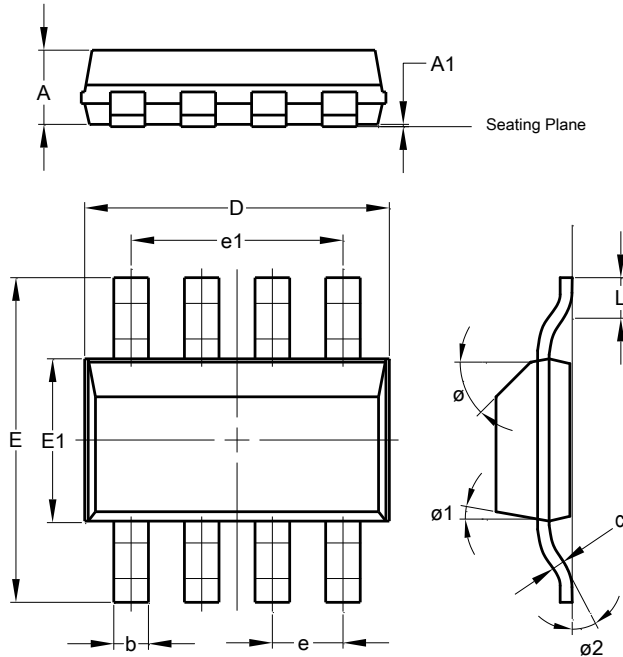
- Notes: 10. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.
 11. Switching characteristics are independent of operating junction temperature.
 12. For design aid only, not subject to production testing.





Package Outline Dimensions

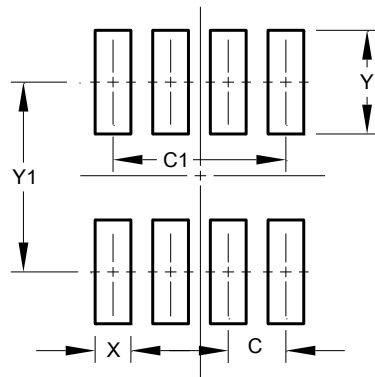
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SM-8			
Dim	Min	Max	Typ
A	--	1.70	1.60
A1	0.02	0.10	0.04
b	0.70	0.90	0.80
c	0.24	0.32	0.28
D	6.30	6.70	6.60
e	1.53 REF		
e1	4.59 REF		
E	6.70	7.30	7.00
E1	3.30	3.70	3.50
L	0.75	1.00	0.90
ø	--	--	45°
ø1	--	15°	--
ø2	--	--	10°
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	1.52
C1	4.60
X	0.95
Y	2.80
Y1	6.80

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