100V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	Max $R_{DS(on)}$	Max I_D T_A = +25°C (Note 5)
100V	230mΩ @ V_{GS} = 10V	1.9A
	300mΩ @ V_{GS} = 4.5V	1.68A

Features and Benefits

- Low On-Resistance
- Fast Switching Speed
- Low Threshold
- Low Gate Drive
- SOT26 Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at https://www.diodes.com/products/automotive/automotive-products/.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. https://www.diodes.com/quality/product-definitions/**

Description and Applications

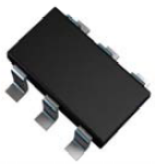
This MOSFET utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes it ideal for high-efficiency, low-voltage, power-management applications.

- DC-DC converters
- Power-management functions
- Disconnect switches
- Motor controls

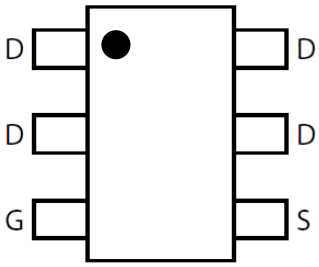
Mechanical Data

- Package: SOT26
- Package 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 e3
- Weight: 0.015 grams (Approximate)

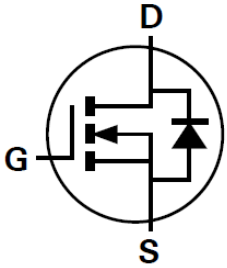
SOT26



Top View



Pinout Top View



Device Symbol

Ordering Information (Note 4)

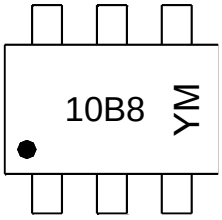
Part Number	Package	Reel Size (inch)	Tape Width (mm)	Packing	
				Qty.	Carrier
ZXMN10B08E6TA	SOT26	7	8	3,000	Reel
ZXMN10B08E6TC	SOT26	13	8	10,000	Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ 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 https://www.diodes.com/design/support/packaging/diodes-packaging/.
5. For a device surface-mounted on FR4 PCB measured at t ≤ 5 secs.

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Marking Information

SOT26



10B8 = Product Type Marking Code
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: L = 2024)
M or $\overline{M}$ = Month (ex: 9 = September)

Date Code Key

Year	2014	-	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	B	-	L	M	N	P	R	S	T	U	V	W

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}	100	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current	V_{GS} = 10V	(Note 5)	I_D	1.9	A
		T_A = +70°C (Note 5)		1.5	
		(Note 6)		1.6	
Pulsed Drain Current		(Note 7)	I_{DM}	9	A
Continuous Source Current (Body Diode)		(Note 5)	I_S	2.5	A
Pulsed Source Current (Body Diode)		(Note 7)	I_{SM}	9	A

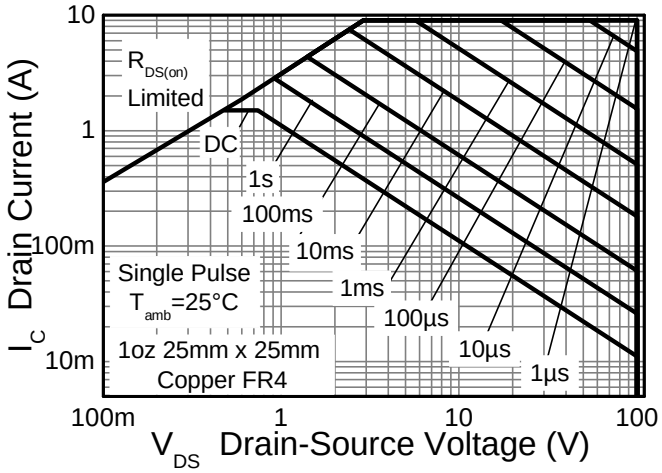
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

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

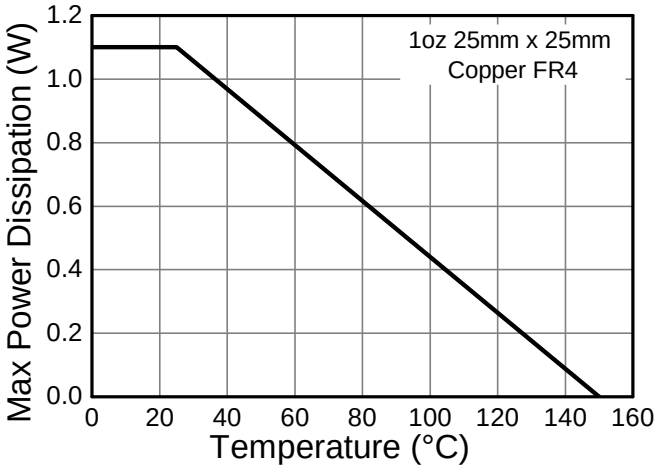
Notes: 5. For a device surface-mounted on FR4 PCB measured at t ≤ 5 secs.
6. For a device surface-mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
7. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300µs - pulse width limited by maximum junction temperature. Refer to *Transient Thermal Impedance* graph.

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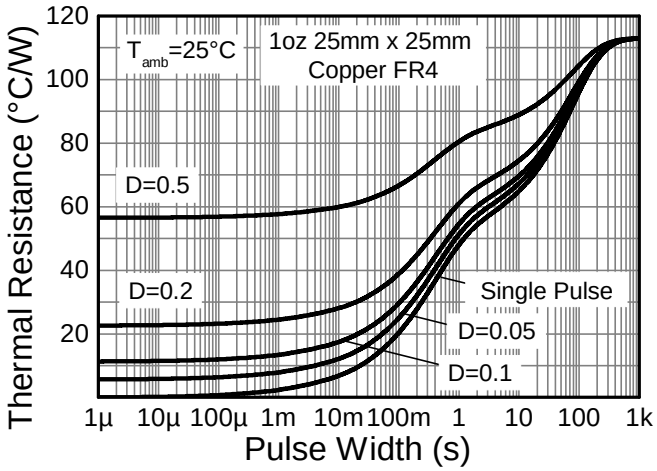
Thermal Characteristics



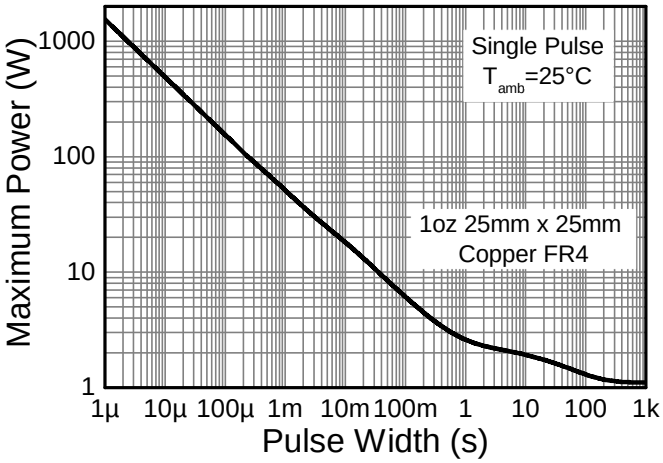
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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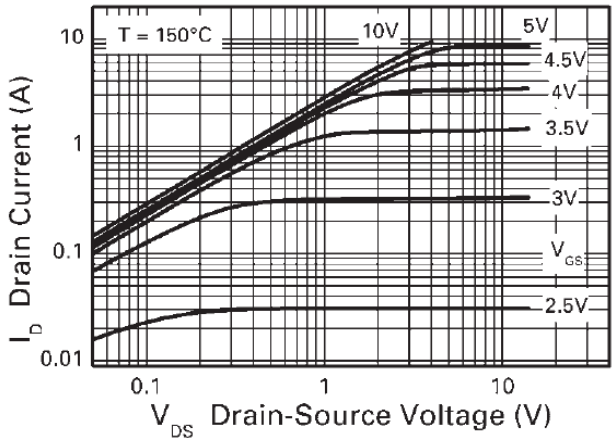
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	I_D = 250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	0.5	µA	V_{DS} = 100V, 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	—	3.0	V	I_D = 250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 8)	$R_{DS(on)}$	—	—	0.23	Ω	V_{GS} = 10V, I_D = 1.6A
				0.30		V_{GS} = 4.5V, I_D = 1.4A
				0.50		V_{GS} = 4.3V, I_D = 1.1A
Forward Transconductance (Notes 8 & 9)	g_{fs}	—	4.8	—	S	V_{DS} = 15V, I_D = 1.6A
Diode Forward Voltage (Note 8)	V_{SD}	—	0.85	0.95	V	T_J = +25°C, I_S = 2.0A, V_{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	497	—	pF	V_{DS} = 50V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	29	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	18	—	pF	
Gate Charge (Note 10)	Q_g	—	5.0	—	nC	V_{DS} = 50V, V_{GS} = 5V, I_D = 1.6A
Total Gate Charge (Note 10)	Q_g	—	9.2	—	nC	V_{DS} = 50V, V_{GS} = 10V I_D = 1.6A
Gate-Source Charge (Note 10)	Q_{gs}	—	1.7	—	nC	
Gate-Drain Charge (Note 10)	Q_{gd}	—	2.5	—	nC	
Turn-On Delay Time (Note 10)	$t_{d(on)}$	—	2.9	—	ns	V_{DD} = 50V, I_D = 1.0A $R_G \cong$ 6.0Ω, V_{GS} = 10V
Turn-On Rise Time (Note 10)	t_r	—	2.1	—	ns	
Turn-Off Delay Time (Note 10)	$t_{d(off)}$	—	12.1	—	ns	
Turn-Off Fall Time (Note 10)	t_f	—	5.0	—	ns	
Reverse Recovery Time	t_{rr}	—	32	—	ns	T_J = +25°C, I_F = 1.7A di/dt = 100A/µs
Reverse Recovery Charge	Q_{rr}	—	40	—	nC	

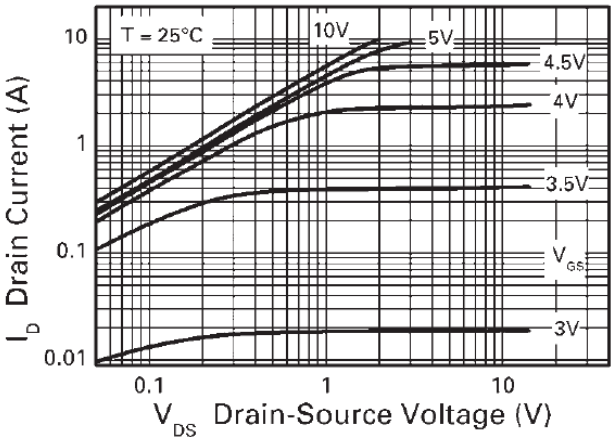
Notes: 8. Measured under pulsed conditions. Width ≤ 300µs. Duty cycle ≤ 2%.
9. For design aid only, not subject to production testing.
10. Switching characteristics are independent of operating junction temperature.

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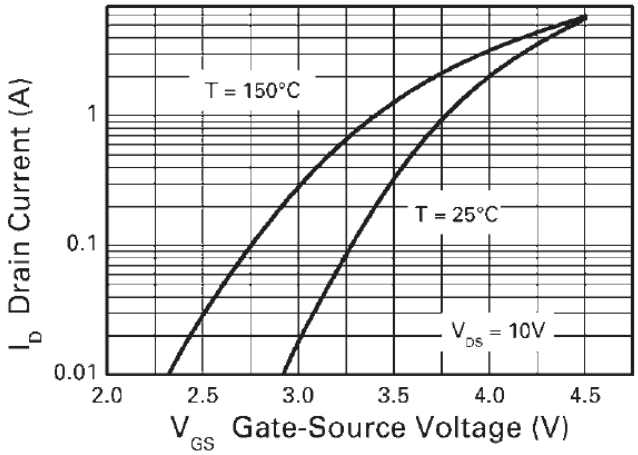
Typical Characteristics



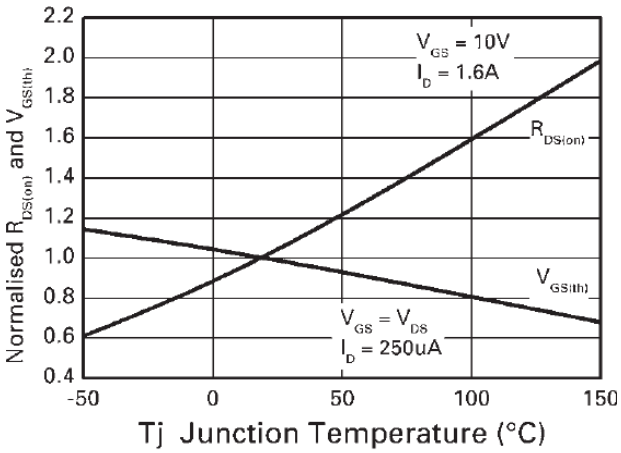
Output Characteristics



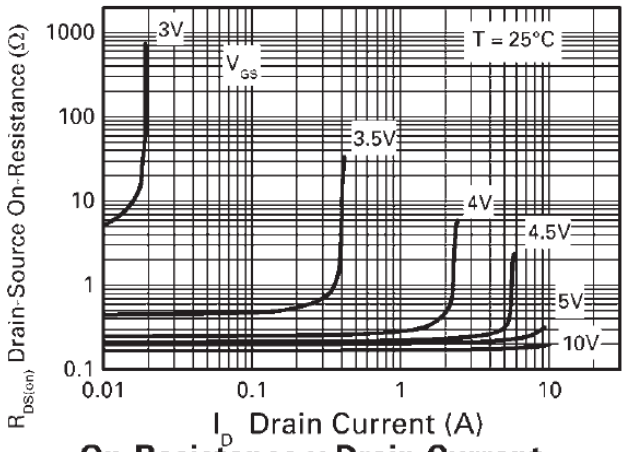
Output Characteristics



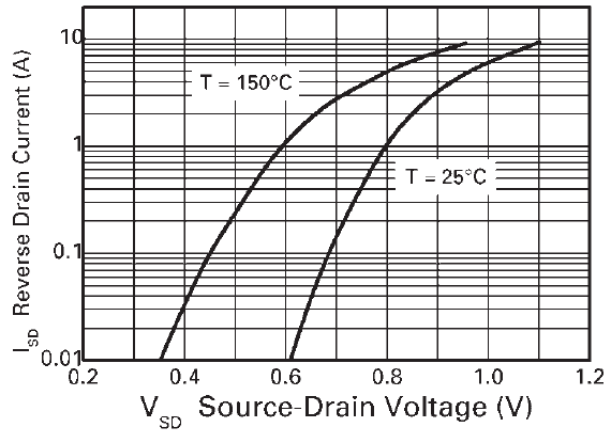
Typical Transfer Characteristics



Normalised Curves v Temperature



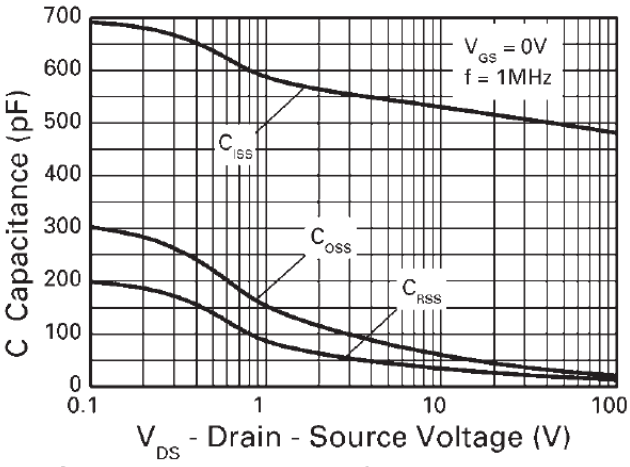
On-Resistance v Drain Current



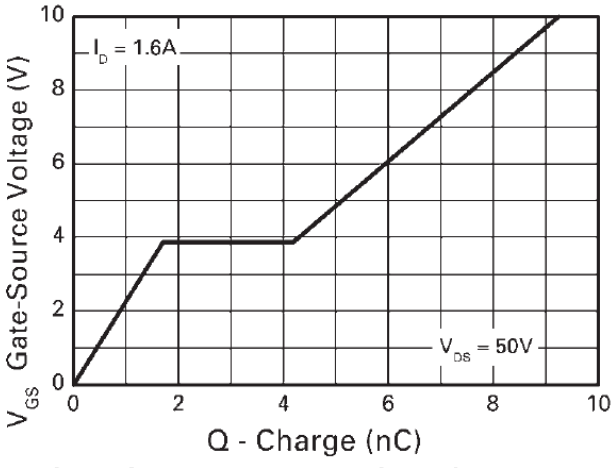
Source-Drain Diode Forward Voltage

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Typical Characteristics (continued)

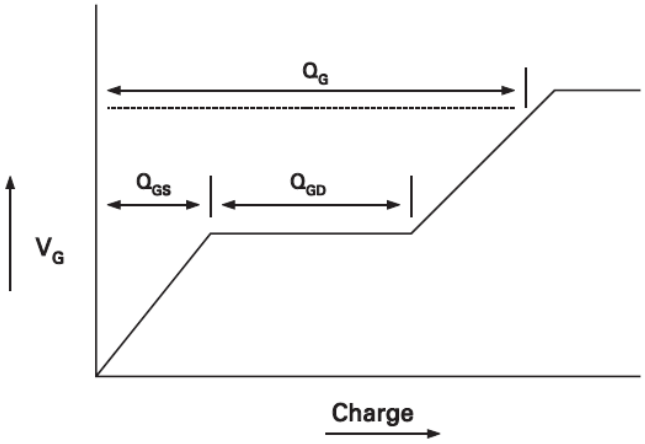


Capacitance v Drain-Source Voltage

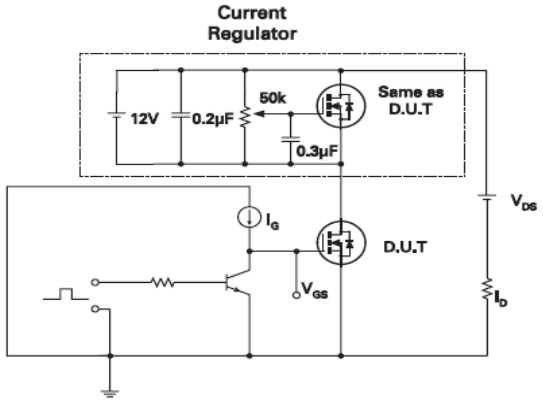


Gate-Source Voltage v Gate Charge

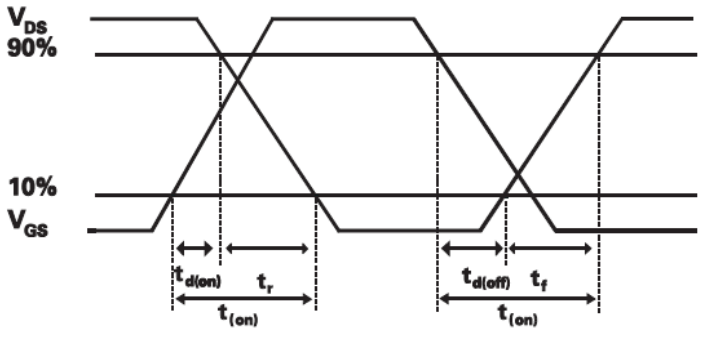
Test Circuits



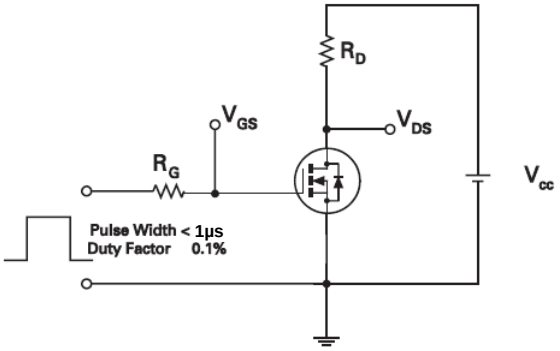
Basic Gate Charge Waveform



Gate Charge Test Circuit



Switching Time Waveforms



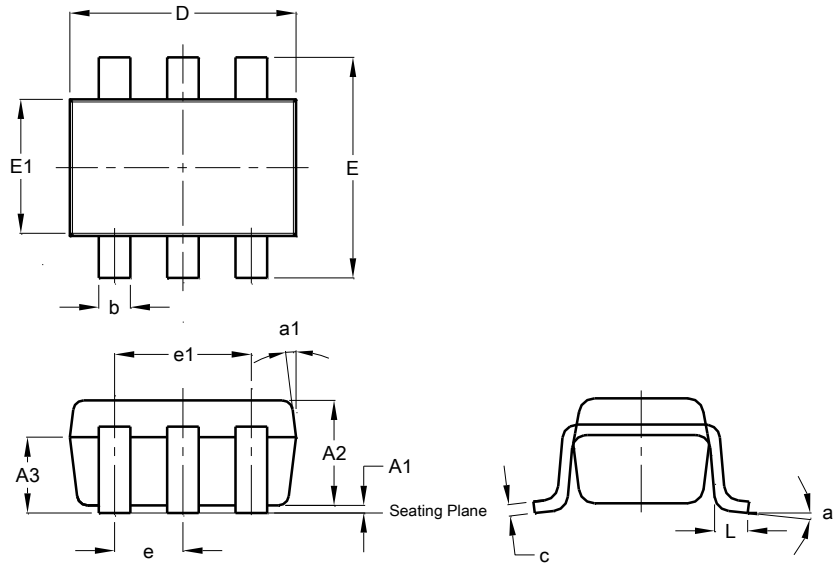
Switching Time Test Circuit

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Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT26

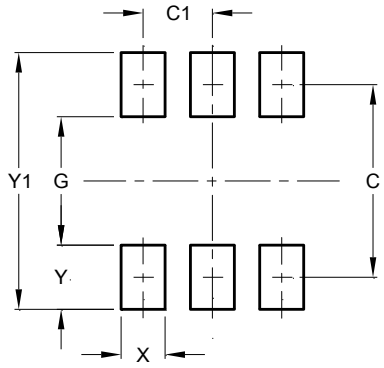


SOT26			
Dim	**Min**	**Max**	**Typ**
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT26



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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