30V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D T_A = +25°C
-30V	0.15Ω @ V_{GS} = -10V	-2.6A
	0.23Ω @ V_{GS} = -4.5V	-1.5A

Description

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

Applications

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

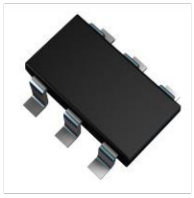
Features and Benefits

- Fast Switching Speed
- Low On-Resistance
- 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**

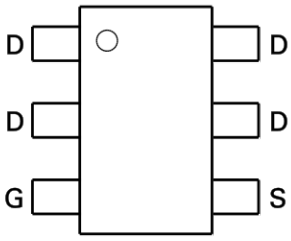
Mechanical Data

- Case: SOT-26
- Case Material: Molded Plastic; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.015 grams (Approximate)

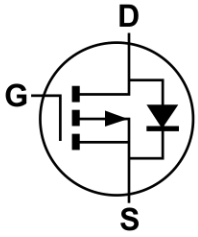
SOT-26



Top View



Pin Out - Top



Equivalent Circuit

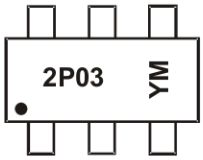
Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXM62P03E6TA	2P03	7	8	3,000 Units
ZXM62P03E6TC	2P03	13	8	10,000 Units

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

SOT-26



2P03 = Product Type Marking Code
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: C = 2015)
M or $\overline{M}$ = 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°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GS}	±20	V
Continuous Drain Current	V_{GS} = -4.5V	T_A = +25°C (Note 5) T_A = +70°C (Note 5)	I_D	-1.5 -1.2	A
Pulsed Drain Current (Note 7)			I_{DM}	-7.4	A
Continuous Source Current (Body Diode)			I_S	-0.54	A
Pulsed Source Current (Body Diode)			I_{SM}	-7.4	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5) Linear Derating Factor	P_D	625 5	mW mW/°C
Power Dissipation (Note 6) Linear Derating Factor	P_D	806 6.4	mW mW/°C
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	113	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	73	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

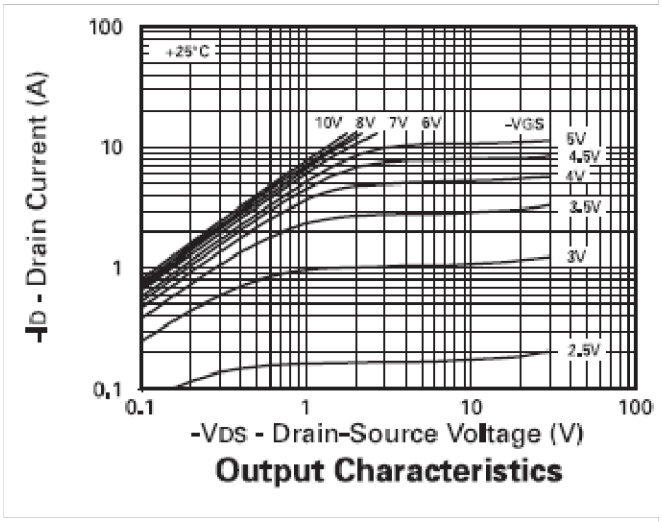
Notes:
5. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
6. For a device surface mounted on FR4 PCB measured at t ≤5 seconds.
7. Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal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

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

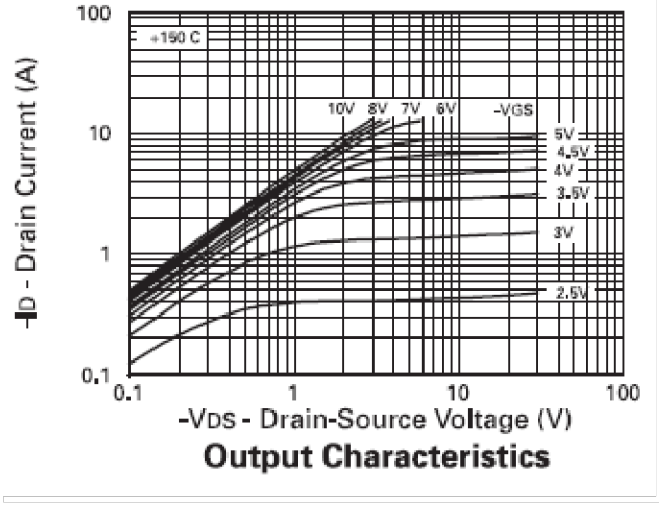
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	I_D = -250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	µA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	-1	—	—	V	I_D = -250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 8)	$R_{DS\ (ON)}$	—	—	0.15	Ω	V_{GS} = -10V, I_D = -1.6A
				0.23		V_{GS} = -4.5V, I_D = -0.8A
Forward Transconductance (Notes 8 & 10)	g_{fs}	1.1	—	—	S	V_{DS} = -10V, I_D = -0.8A
Diode Forward Voltage (Note 8)	V_{SD}	—	—	-0.95	V	T_J = +25°C, I_S = -1.6A, V_{GS} = 0V
Reverse Recovery Time (Note 10)	t_{rr}	—	19.9	—	ns	T_J = +25°C, I_F = -1.6A, di/dt = 100A/µs
Reverse Recovery Charge (Note 10)	Q_{rr}	—	13	—	nC	
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	330	—	pF	V_{DS} = -25V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	120	—		
Reverse Transfer Capacitance	C_{rss}	—	45	—		
Turn-On Delay Time (Note 9)	$t_{d(on)}$	—	2.8	—	ns	V_{DD} = -15V, I_D = -1.6A, $R_G \cong 6.2\Omega$, $R_D \cong 25\Omega$,
Turn-On Rise Time (Note 9)	t_r	—	6.4	—		
Turn-Off Delay Time (Note 9)	$t_{d(off)}$	—	13.9	—		
Turn-Off Fall Time (Note 9)	t_f	—	10.3	—		
Total Gate Charge (Note 9)	Q_g	—	—	10.2	nC	V_{DS} = -24V, V_{GS} = -10V, I_D = -1.6A
Gate-Source Charge (Note 9)	Q_{gs}	—	—	1.5		
Gate-Drain Charge (Note 9)	Q_{gd}	—	—	3		

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

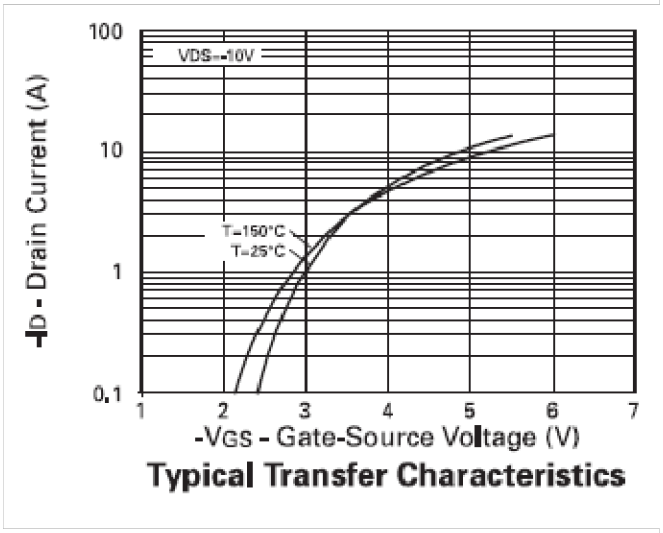
Typical Characteristics



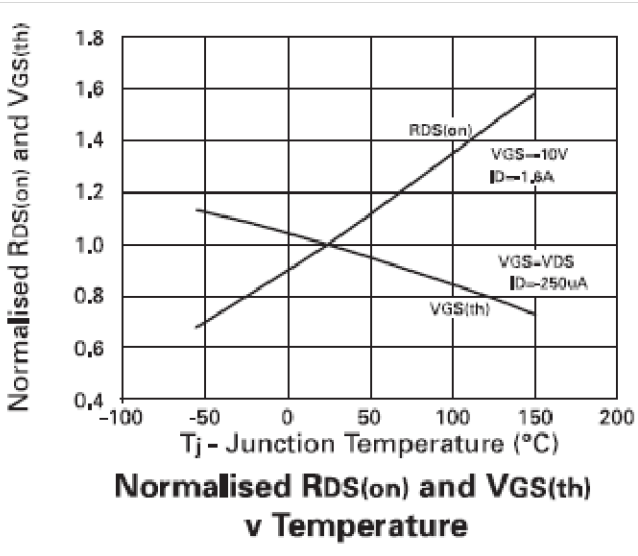
Output Characteristics



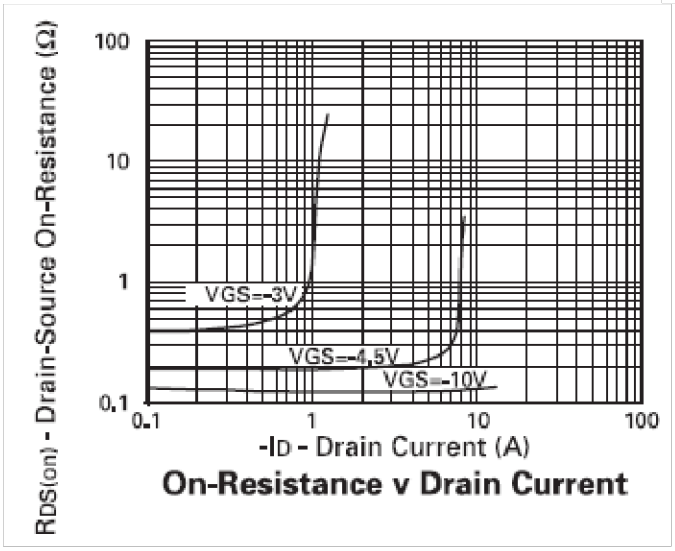
Output Characteristics



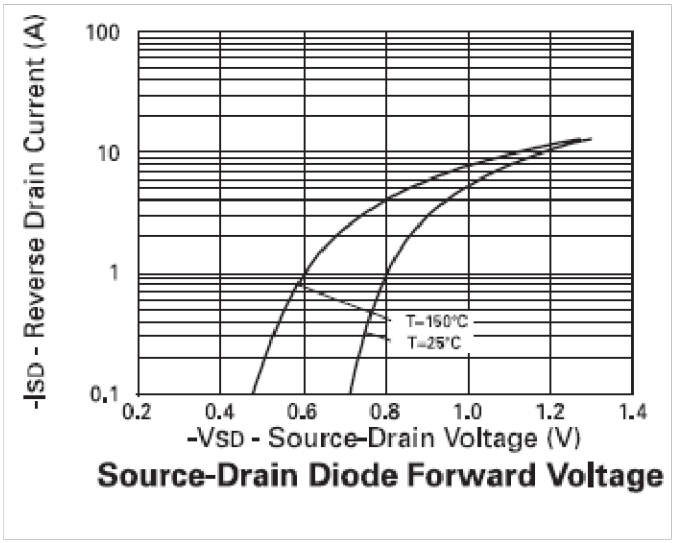
Typical Transfer Characteristics



Normalised RDS(on) and VGS(th) v Temperature

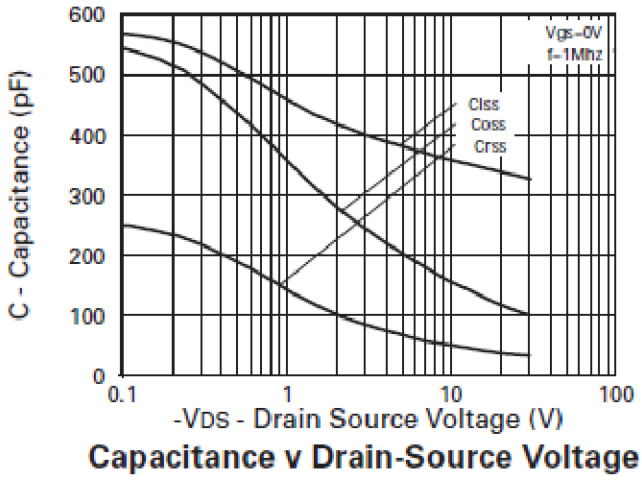


On-Resistance v Drain Current

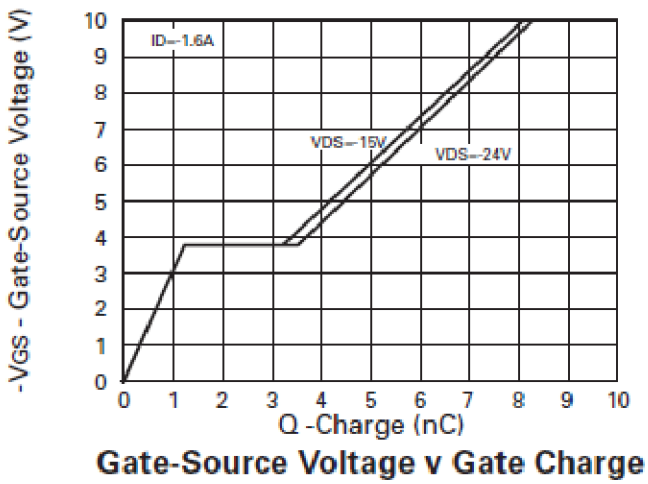


Source-Drain Diode Forward Voltage

Typical Characteristics (cont.)

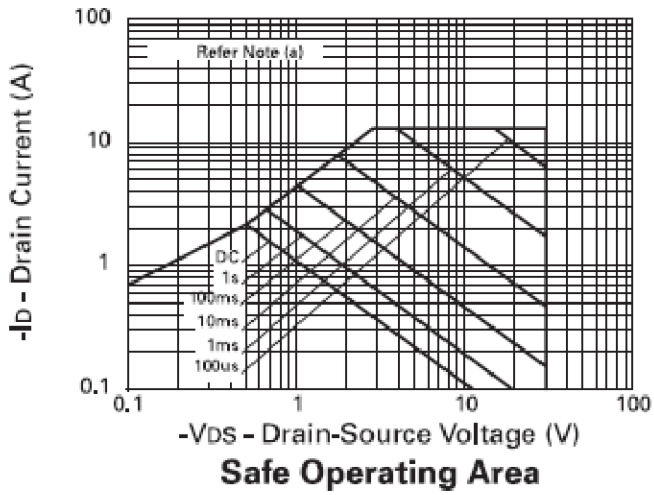


Capacitance v Drain-Source Voltage

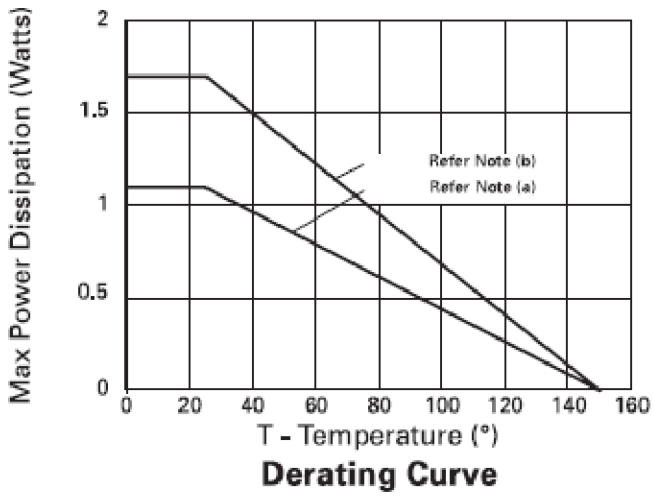


Gate-Source Voltage v Gate Charge

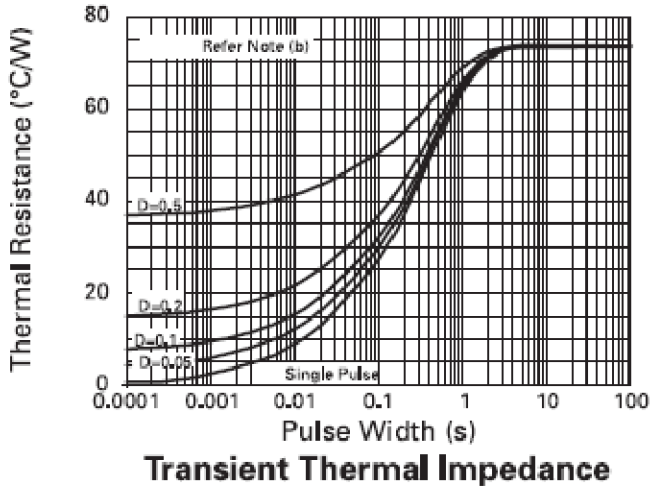
Thermal Characteristics



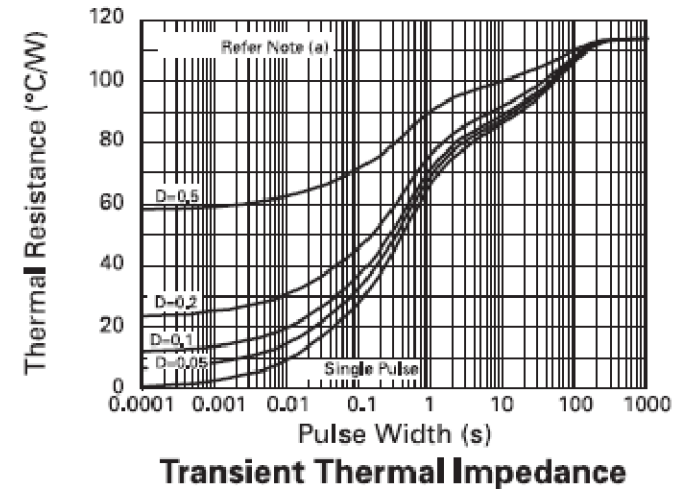
Safe Operating Area



Derating Curve

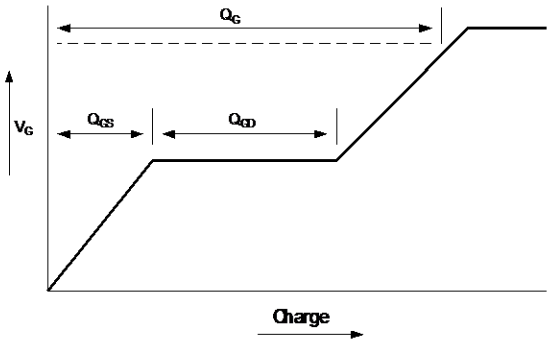


Transient Thermal Impedance

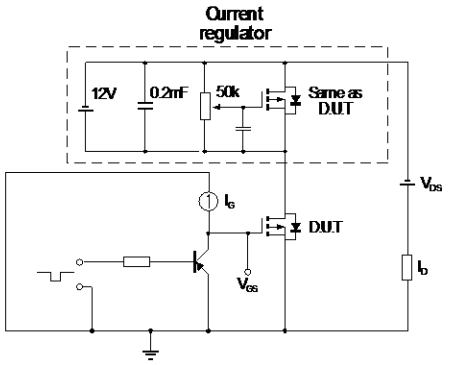


Transient Thermal Impedance

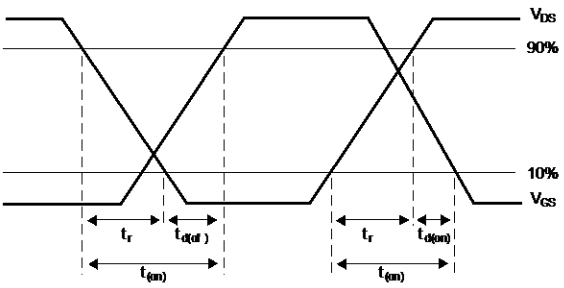
Test Circuits



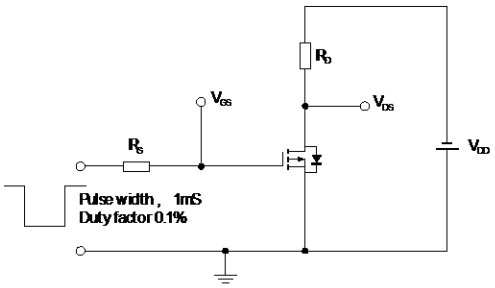
Basic gate charge waveform



Gate charge test circuit



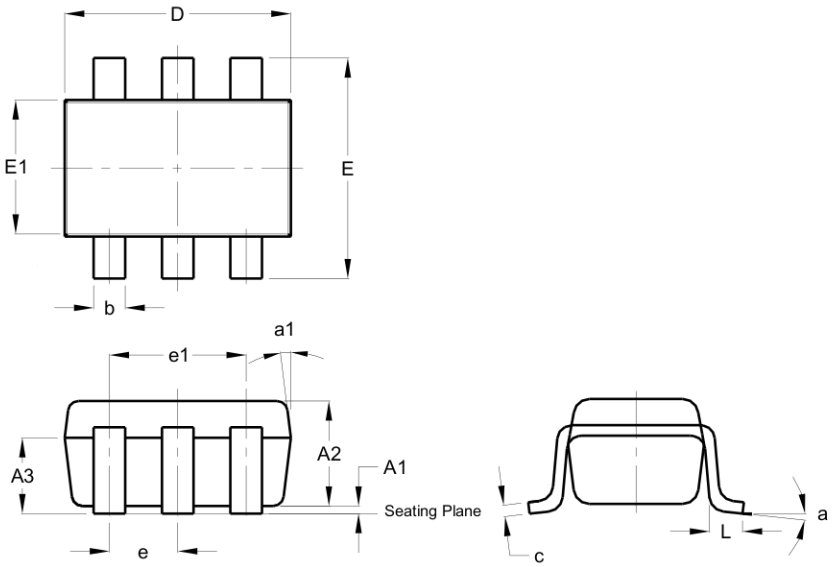
Switching time waveforms



Switching time test circuit

Package Outline Dimensions

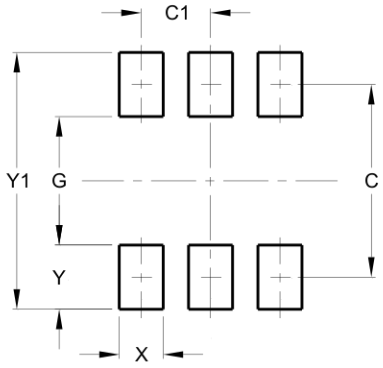
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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°
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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