

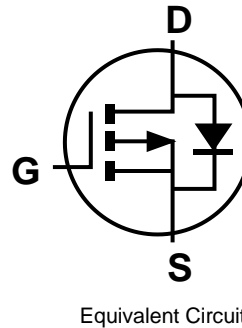
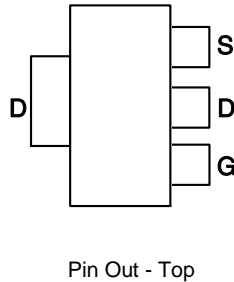
Product Summary

BV _{DSS}	R _{DS(on)} Max	I _D T _A = +25°C
-40V	60mΩ @ V _{GS} = -10V	-6.4A
	100mΩ @ V _{GS} = -4.5V	-5.0A

Description and Applications

This new generation MOSFET is designed to minimize the on-state resistance (R_{DS(on)}) yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

- DC-DC converters
- Power management functions
- Backlighting



Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- **Lead-Free Finish; 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 [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

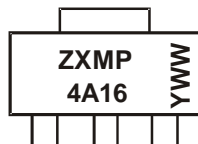
- Package: SOT223
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Ⓔ3
- Weight: 0.112 grams (Approximate)

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
ZXMP4A16GTA	SOT223 (Type DN)	1000	Tape & Reel
ZXMP4A16GTC	SOT223 (Type DN)	4000	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 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/>.

Marking Information



ZXMP4A16 = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 2 = 2022)
 WW or $\bar{W}W$ = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	-40	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current, V _{GS} = -10V	I _D	T _A = +25°C (Note 5)	-6.4
		T _A = +70°C (Note 5)	-5.1
		T _A = +25°C (Note 6)	-4.6
Maximum Body Diode Forward Current (Note 5)	I _S	-6.4	A
Pulsed Drain Current (Note 7)	I _{DM}	-21	A
Pulsed Source Current (Note 7)	I _{SM}	-21	A

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

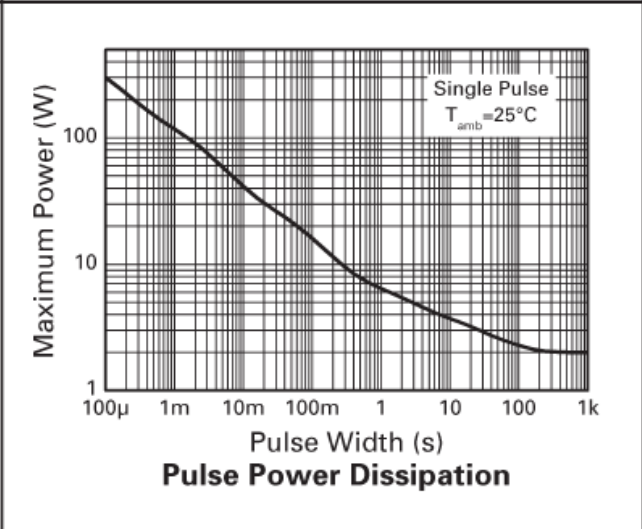
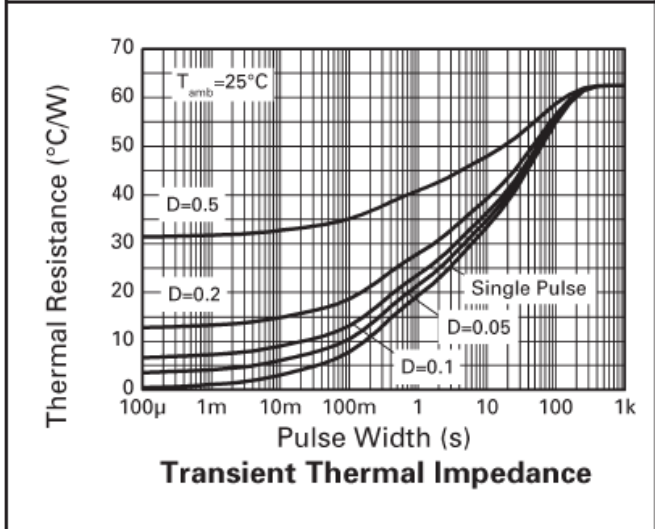
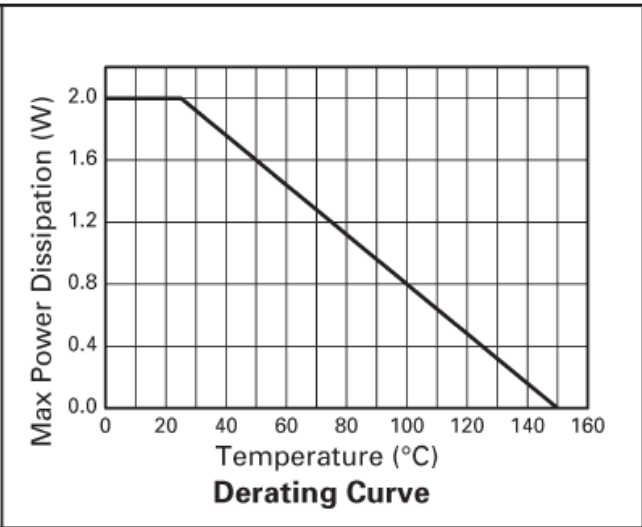
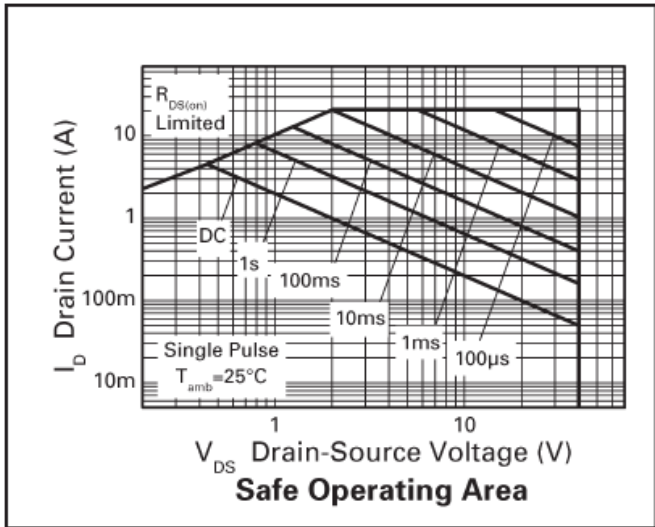
Characteristic	Symbol	Value	Units
Total Power Dissipation Linear Derating Factor	P _D	T _A = +25°C (Note 6)	2.0 16
Total Power Dissipation Linear Derating Factor		T _A = +25°C (Note 5)	3.9 31
Thermal Resistance, Junction to Ambient	R _{θJA}	Steady State (Note 6)	62.5
		Steady State (Note 5)	32
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

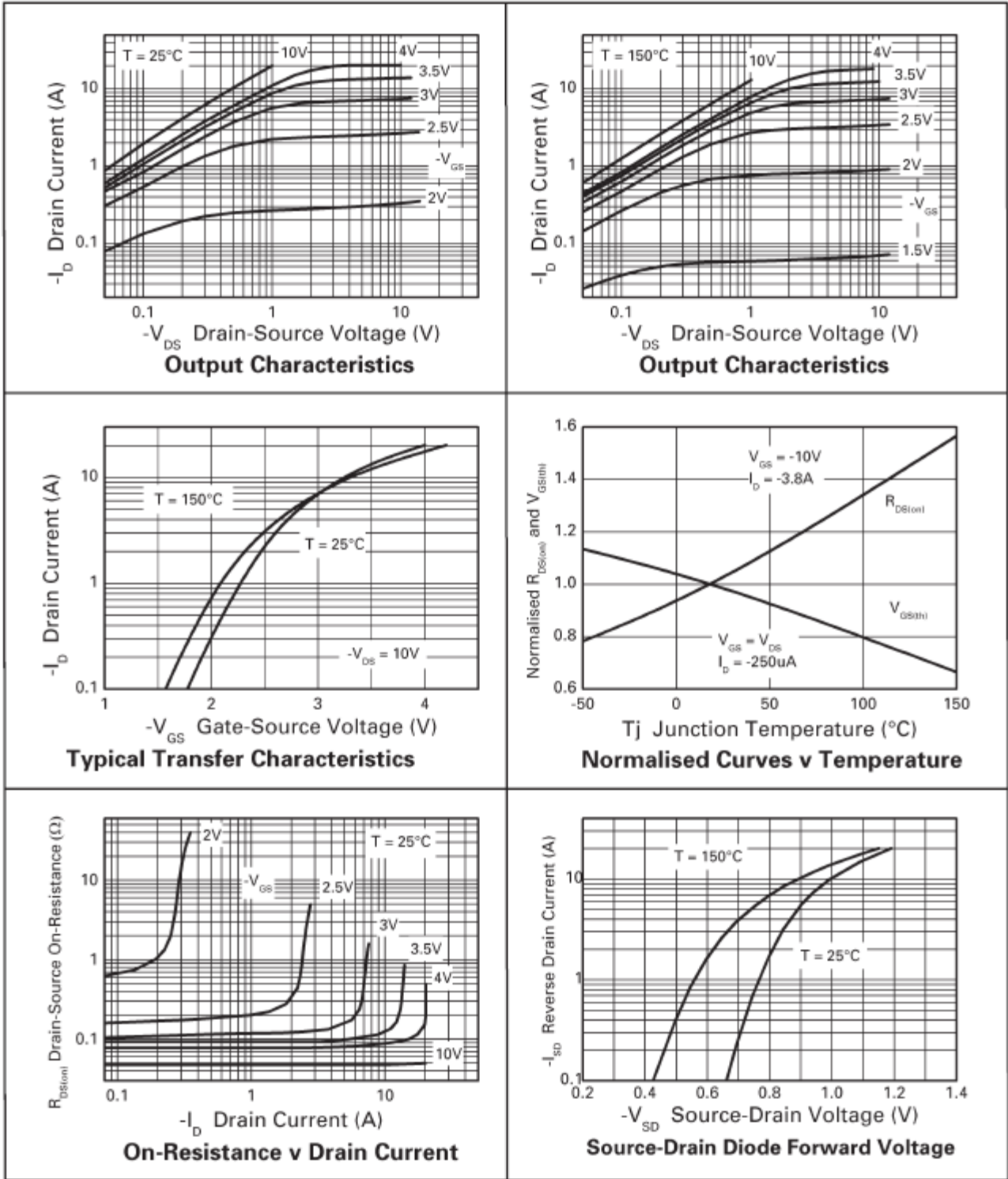
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV _{DSS}	-40	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1.0	μA	V _{DS} = -40V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	-1.0	—	—	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance (Note 9)	R _{DS(on)}	—	—	60	mΩ	V _{GS} = -10V, I _D = -3.8A
		—	—	100		V _{GS} = -4.5V, I _D = -2.9A
Diode Forward Voltage (Note 9)	V _{SD}	—	-0.85	-1.2	V	V _{GS} = 0V, I _S = -3.4A
Forward Transconductance (Notes 9 & 10)	g _{fs}	—	8.85	—	S	V _{DS} = -15V, I _D = -3.8A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	1,007	—	pF	V _{DS} = -20V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	130	—		
Reverse Transfer Capacitance	C _{rss}	—	85	—		
Total Gate Charge (V _{GS} = -5.0V)	Q _g	—	13.6	—	nC	V _{DS} = -20V, I _D = -3.8A
Total Gate Charge (V _{GS} = -10V)	Q _g	—	26.1	—		
Gate-Source Charge	Q _{gs}	—	2.8	—		
Gate-Drain Charge	Q _{gd}	—	4.8	—		
Turn-On Delay Time	t _{D(on)}	—	2.33	—	ns	V _{GS} = -10V, V _{DD} = -20V, R _G = 6.0Ω I _D = -1.0A
Turn-On Rise Time	t _r	—	8.84	—		
Turn-Off Delay Time	t _{D(off)}	—	29.18	—		
Turn-Off Fall Time	t _f	—	12.54	—		
Body Diode Reverse Recovery Time	t _{rr}	—	27.2	—	ns	I _F = -3A, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{rr}	—	25.4	—	nC	

- Notes:
5. For a device surface mounted on FR4 PCB measured at t ≤ 10s.
 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 = 0.05, pulse width limited by maximum junction temperature.
 8. Short duration pulse test used to minimize self-heating effect.
 9. Measured under pulsed conditions. Width ≤ 300μs. Duty cycle ≤ 2%.
 10. Guaranteed by design. Not subject to product testing.

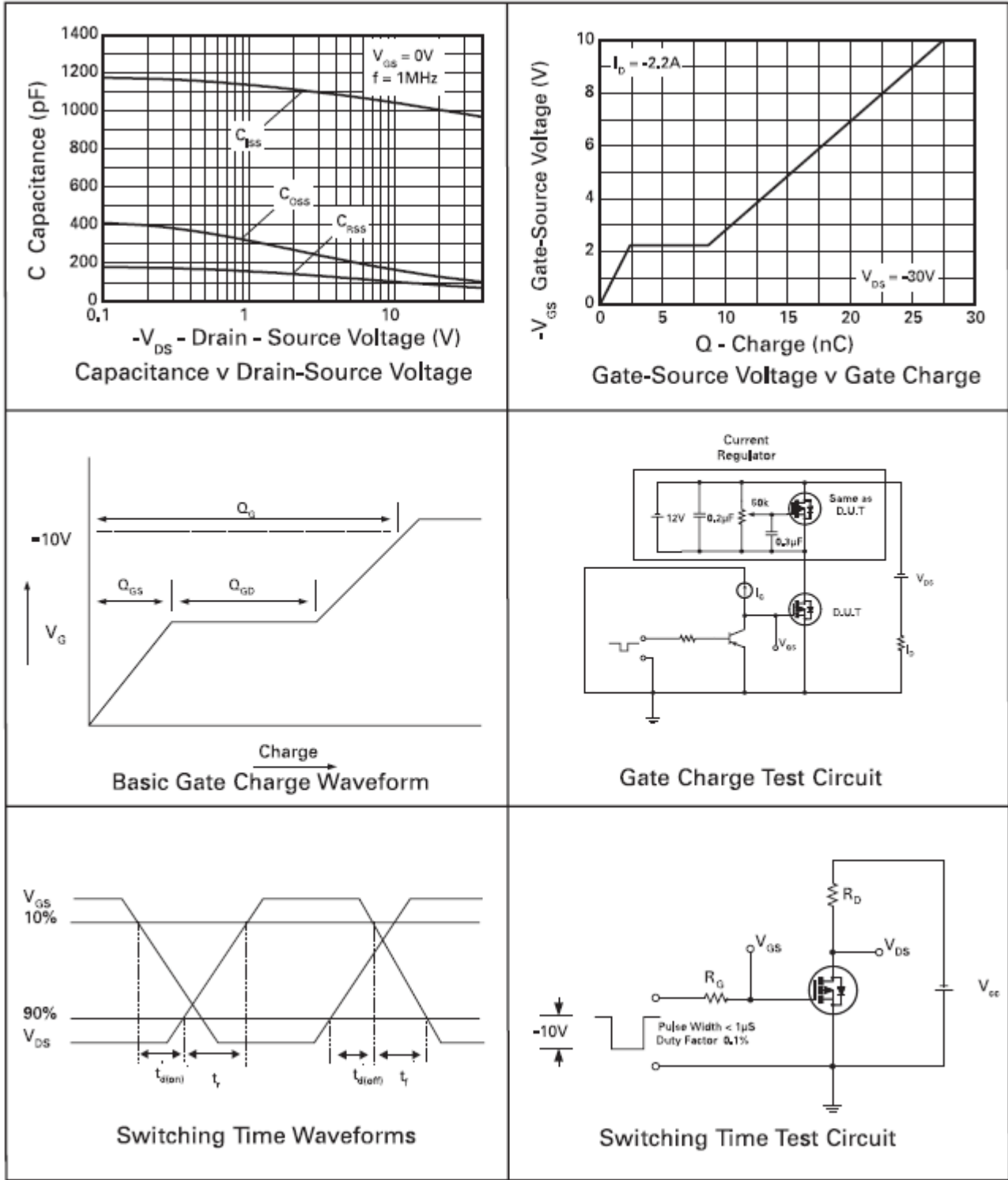
Typical Characteristics



Typical Characteristics (continued)



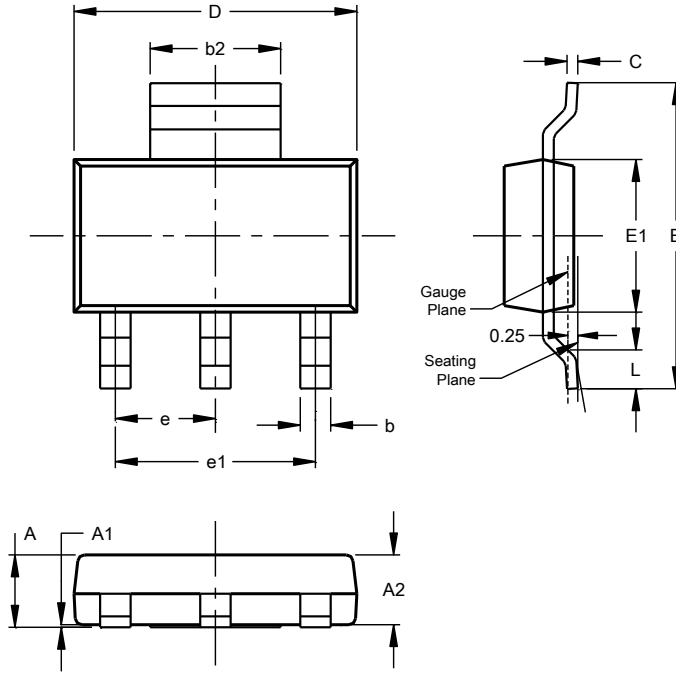
Typical Characteristics (continued)



Package Outline Dimensions

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

SOT223 (Type DN)

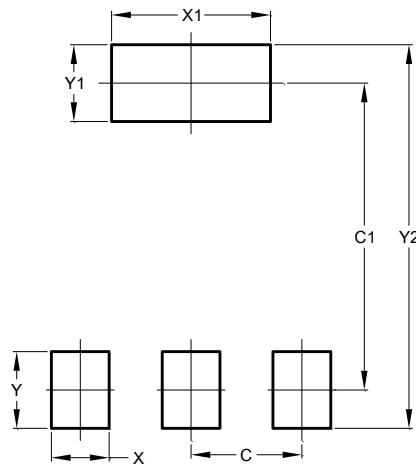


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT223 (Type DN)



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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