

Product Summary

BV _{DSS}	R _{DSON}	Package	I _D T _A = +25°C
-20V	110mΩ @ V _{GS} = -4.5V	SOT23	-2.6A
	225mΩ @ V _{GS} = -2.5V		-2.0A

Description

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

Applications

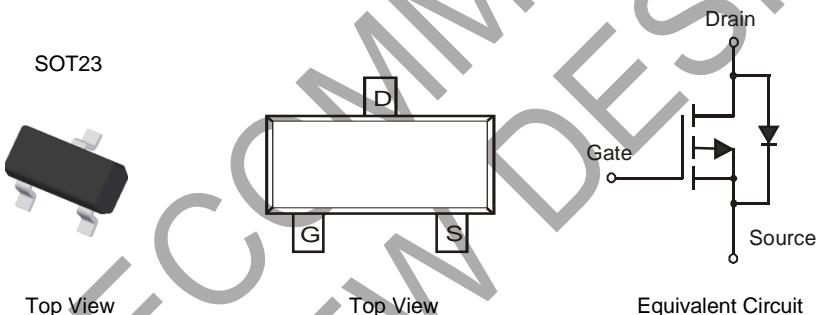
- General Purpose Interfacing Switch
- Power Management Functions

Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- 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
- PPAP Capable (Note 4)

Mechanical Data

- Case: SOT23
- 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 (e3)
- Terminal Connections: See Diagram
- Weight: 0.008 grams (Approximate)



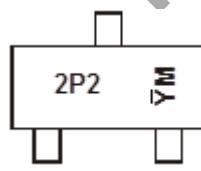
Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
DMP225L-7	Standard	SOT-23	3000/Tape & Reel
DMP225LQ-7	Automotive	SOT-23	3000/Tape & Reel

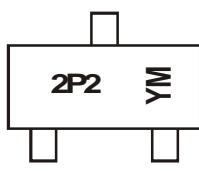
Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_grade_definitions/.
- For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



Chengdu A/T Site



Shanghai A/T Site

2P2 = Product Type Marking Code

YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)

YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)

Y or YM = Year (ex: E = 2017)

M = Month (ex: 9 = September)

Date Code Key

Year	2008	2009	~	2017	2018	2019	2020	2021				
Code	V	W	~	E	F	G	H	I				
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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	± 12	V
Continuous Drain Current (Note 6)	Steady State	$T_A = +25^\circ\text{C}$	I_D	-2.6
		$T_A = +70^\circ\text{C}$		-2
Pulsed Drain Current (Note 7)		I_{DM}	8	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P_D	1.08	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$ (Note 6)	$R_{\theta JA}$	115	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	$V_{GS} = 0\text{V}$, $I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-800	nA	$V_{DS} = -20\text{V}$, $V_{GS} = 0\text{V}$
On-State Drain Current	$I_{D(ON)}$	-6	—	—	A	$V_{DS} \leq -5\text{V}$, $V_{GS} = -4.5\text{V}$
		-3	—	—		$V_{DS} \leq -5\text{V}$, $V_{GS} = -2.5\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 80	nA	$V_{GS} = \pm 12\text{V}$, $V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.45	—	-1.25	V	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	80	110	$\text{m}\Omega$	$V_{GS} = -4.5\text{V}$, $I_D = -2.6\text{A}$
		—	165	225		$V_{GS} = -2.5\text{V}$, $I_D = -2.0\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	—	4	—	s	$V_{DS} = -5\text{V}$, $I_D = -2.6\text{A}$
Diode Forward Voltage (Note 7)	V_{SD}	—	—	-1.26	V	$V_{GS} = 0\text{V}$, $I_S = -2.6\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	250	—	pF	$V_{DS} = -10\text{V}$, $V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	88	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	58	—	pF	
Gate Resistance	R_g	—	12	16	Ω	$V_{GS} = 0\text{V}$, $V_{DS} = 0\text{V}$, $f = 1\text{MHz}$
Total Gate Charge	Q_g	—	4.3	5.3	nC	$V_{GS} = -4.5\text{V}$, $V_{DS} = -10\text{V}$, $I_D = -2.7\text{A}$
Gate-Source Charge	Q_{gs}	—	0.9	—		
Gate-Drain Charge	Q_{gd}	—	2.1	—		

Notes:

- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

- 7. Repetitive rating, pulse width limited by junction temperature.

- 8. Short duration pulse test used to minimize self-heating effect.

- 9. Guaranteed by design. Not subject to production testing.

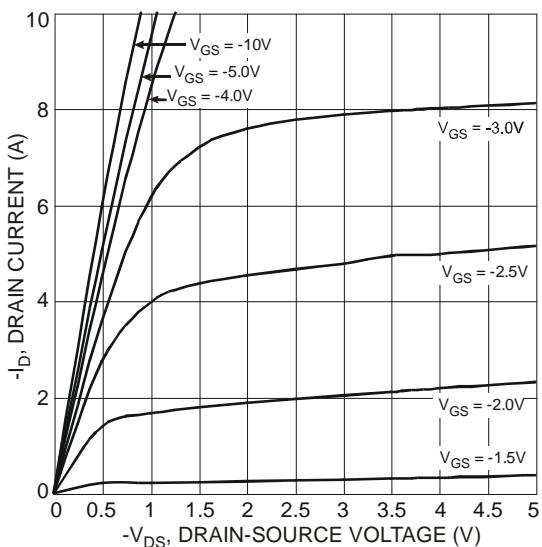


Figure 1 Typical Output Characteristics

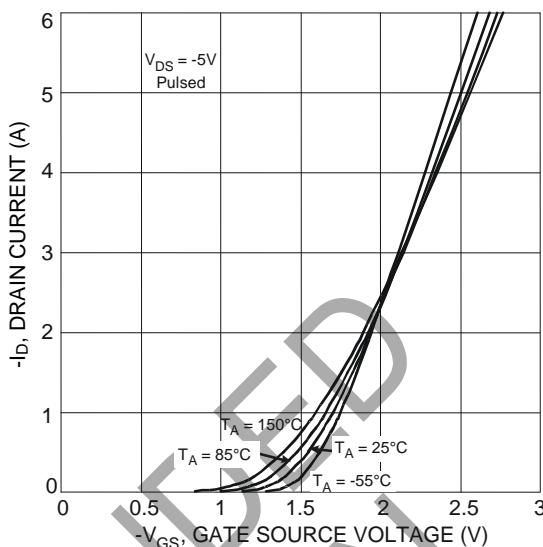


Figure 2 Typical Transfer Characteristics

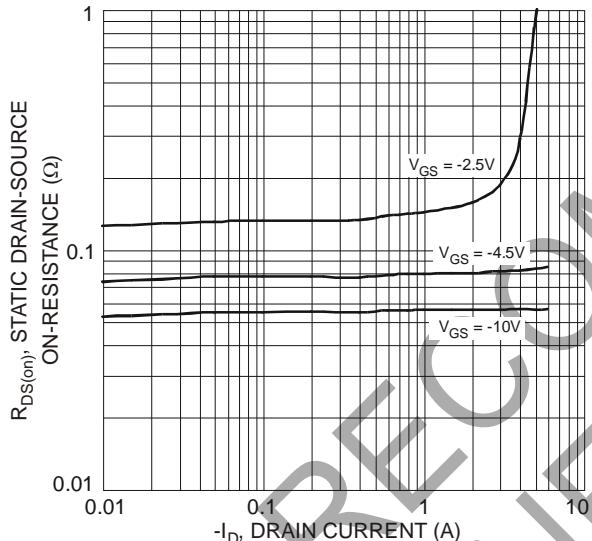


Figure 3 On-Resistance vs. Drain Current and Gate Voltage

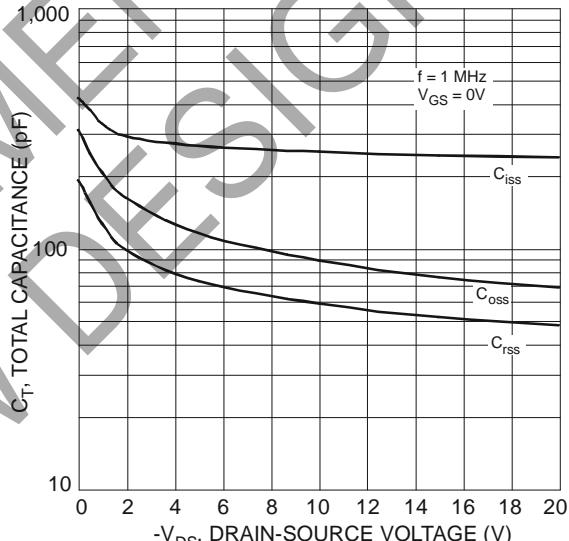


Figure 4 Typical Total Capacitance

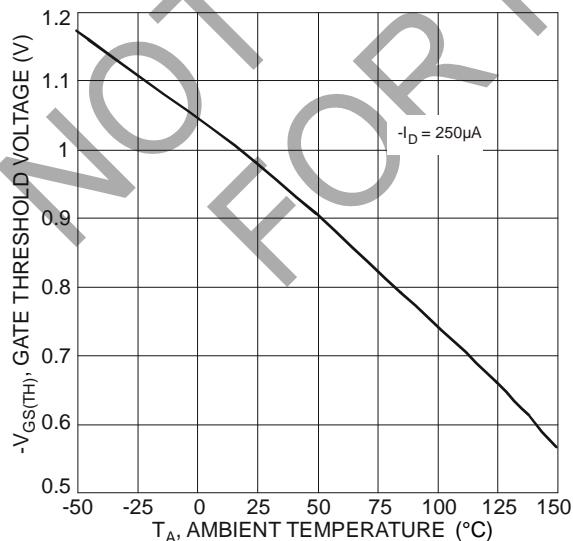


Figure 5 Gate Threshold Voltage vs. Ambient Temperature

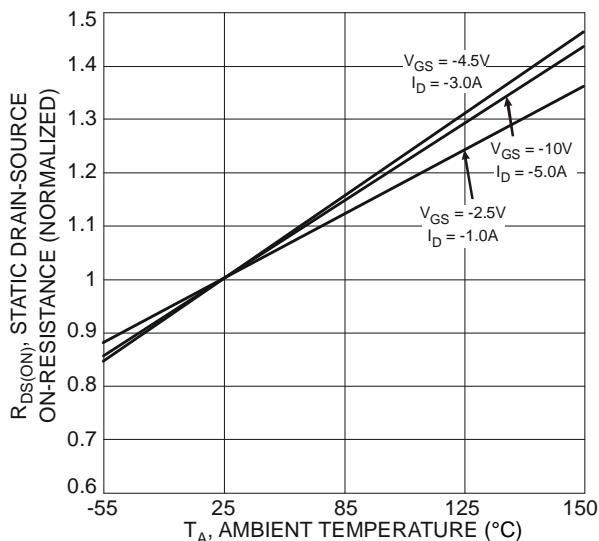


Figure 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

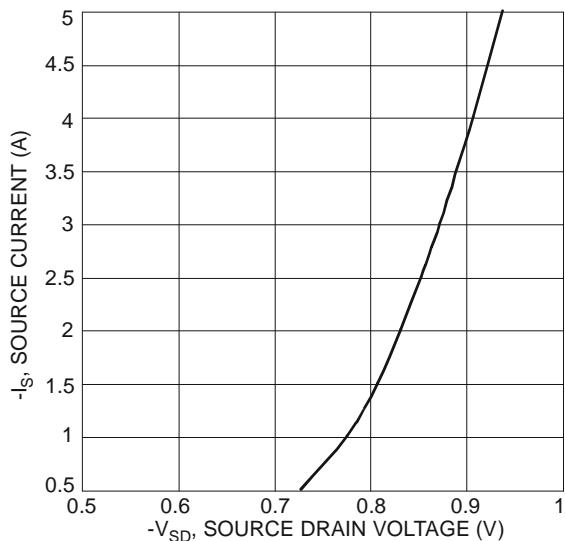


Figure 7 Reverse Drain Current vs. Source-Drain Voltage

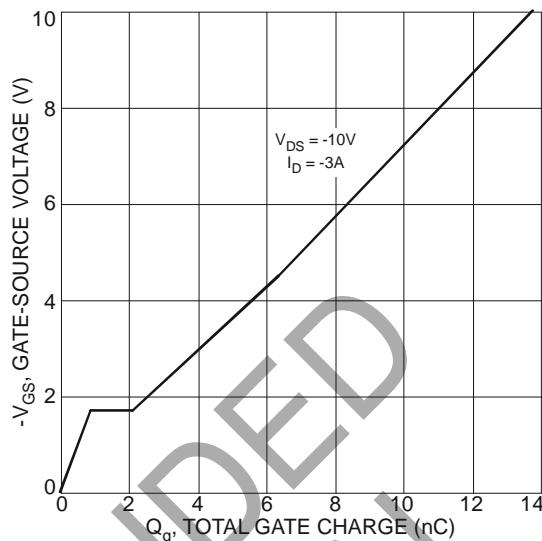


Figure 8 Gate-Charge Characteristics

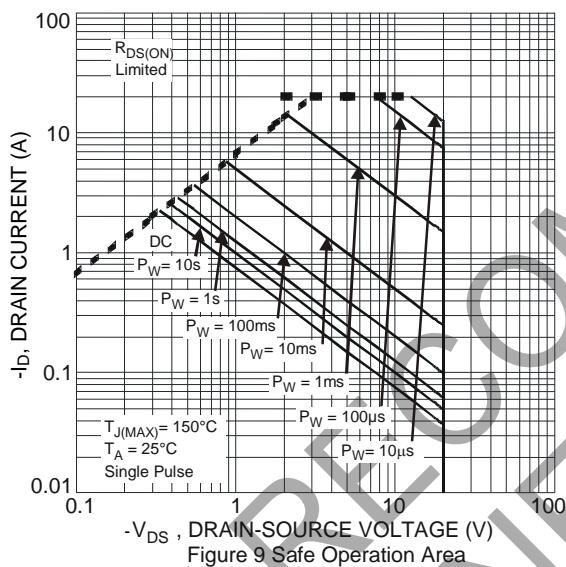


Figure 9 Safe Operation Area

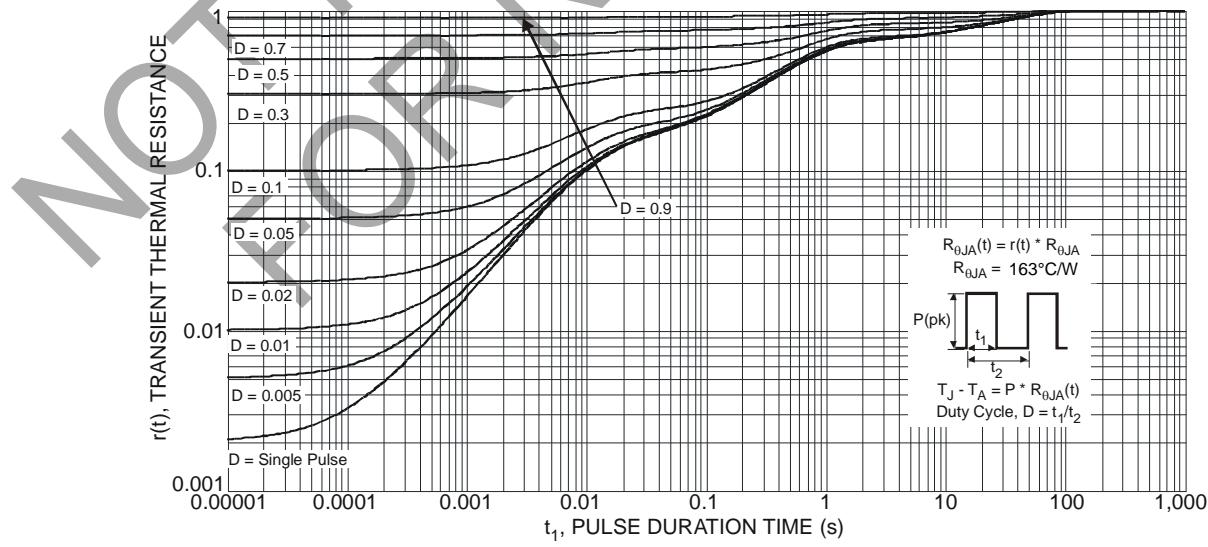
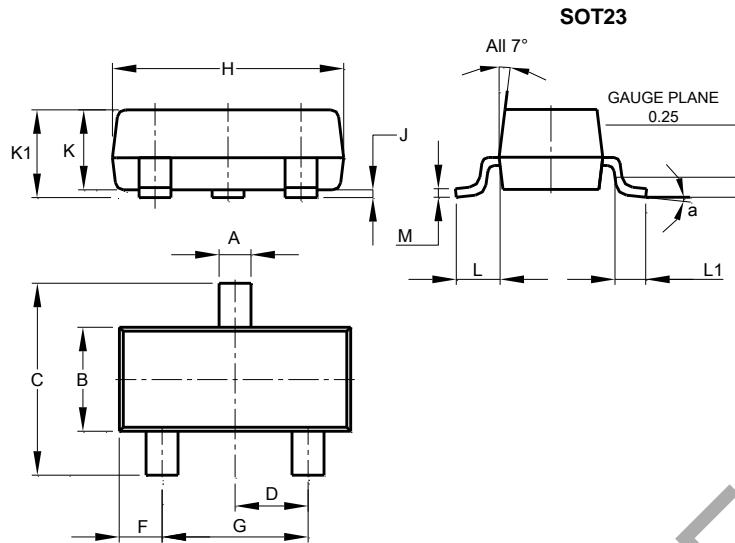


Figure 10 Transient Thermal Response

Package Outline Dimensions

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

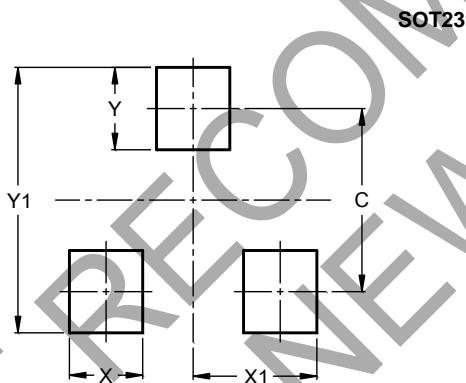


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--

All Dimensions in mm

Suggested Pad Layout

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



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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