

## Product Summary

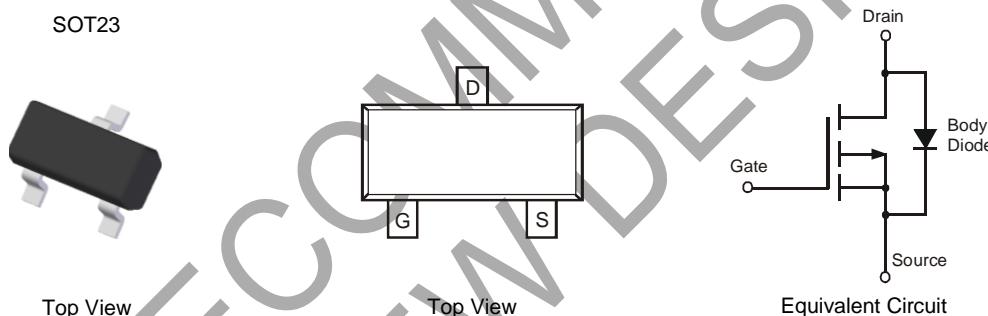
$BV_{DSS}$	$R_{DS(ON)}$	$I_D$ $T_A = +25^\circ C$
-30V	122m $\Omega$ @ $V_{GS} = -10V$	-2.7A
	190m $\Omega$ @ $V_{GS} = -4.5V$	-2.0A

## Description

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

## Applications

- DC-DC Converters
- Power Management Functions



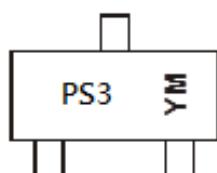
## Ordering Information (Note 5)

Part Number	Compliance	Case	Packaging
DMP3160L-7	Standard	SOT23	3000/Tape & Reel
DMP3160LQ-7	Automotive	SOT23	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](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 <https://www.diodes.com/quality/product-compliance-definitions/>.
- For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



PS3 = Product Type Marking Code

YM = Date Code Marking

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

M = Month (ex: 9 = September)

### Date Code Key

Year	2007	...	2017	2018	2019	2020	2021	2022	2023	2024		
Code	U	...	E	F	G	H	I	J	K	L		
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		$V_{DSS}$	-30	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current (Note 6) $V_{GS} = -10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	-2.7 -2
Pulsed Drain Current (Note 7)		$I_{DM}$	-8	A

**Thermal Characteristics**

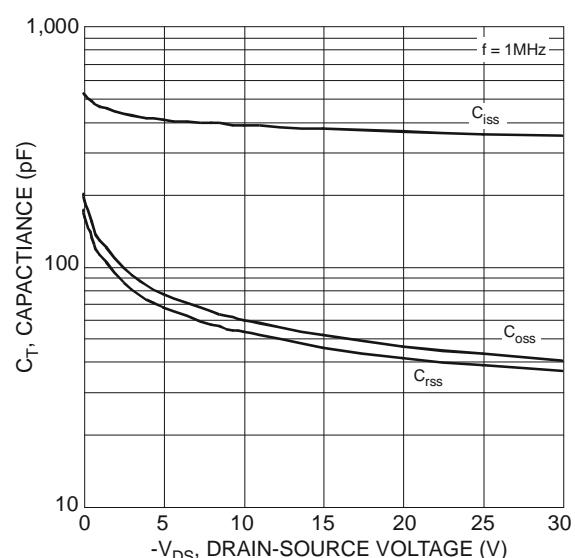
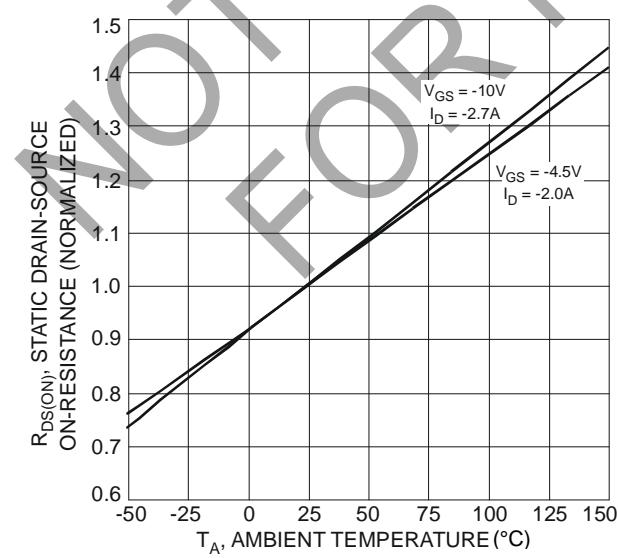
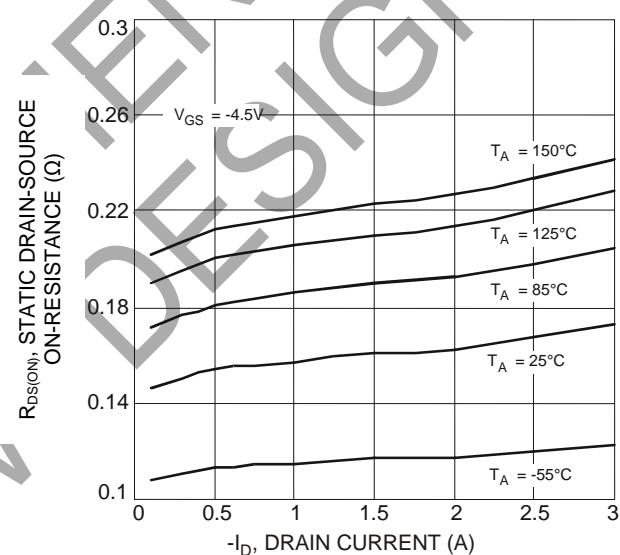
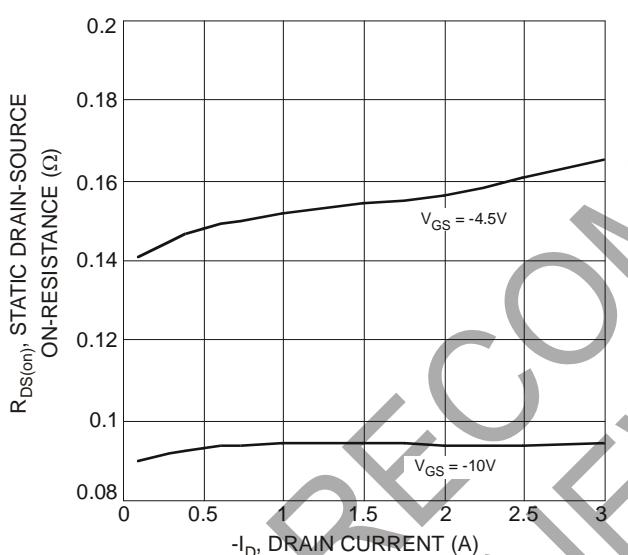
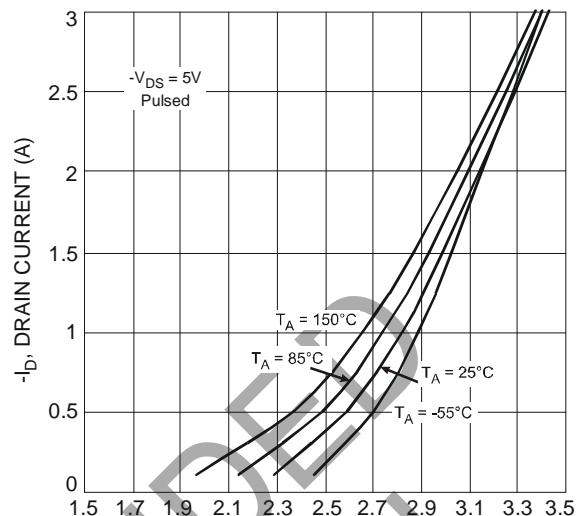
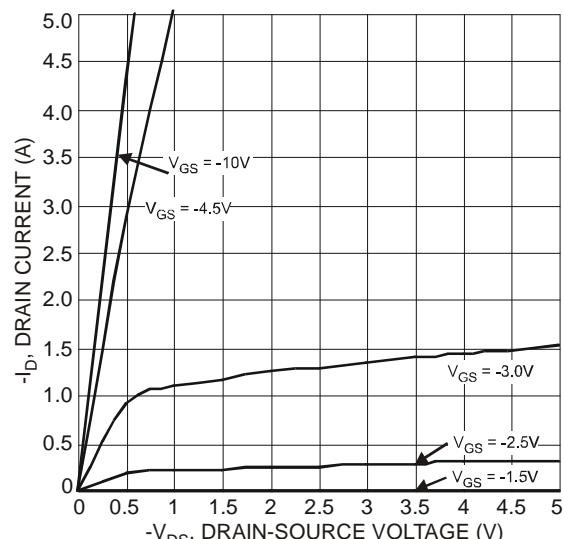
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	$P_D$	1.08	W
Thermal Resistance, Junction to Ambient @ $T_A = +25^\circ\text{C}$ (Note 6)	$R_{\theta JA}$	115	°C/W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	—	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-800	nA	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GS}$	—	—	$\pm 80$ $\pm 800$	nA	$V_{GS} = \pm 12\text{V}, V_{DS} = 0\text{V}$ $V_{GS} = \pm 15\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	-1.3	-1.8	-2.1	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	97 165	122 190	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -2.7\text{A}$ $V_{GS} = -4.5\text{V}, I_D = -2.0\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	—	5.9	—	S	$V_{DS} = -5\text{V}, I_D = -2.7\text{A}$
Diode Forward Voltage (Note 8)	$V_{SD}$	—	—	-1.26	V	$V_{GS} = 0\text{V}, I_S = -2.7\text{A}$
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	$C_{iss}$	—	384.4	—	pF	$V_{DS} = -10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	59.4	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	52.8	—	pF	
Gate Resistance	$R_G$	—	17.1	—	$\Omega$	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V},$ $f = 1.0\text{MHz}$
Total Gate Charge ( $V_{GS} = -4.5\text{V}$ )	$Q_g$	—	4.0	—	nC	$V_{GS} = -10\text{V}/-4.5\text{V},$ $V_{DS} = -15\text{V}, I_D = -3\text{A}$
Total Gate Charge ( $V_{GS} = -10\text{V}$ )	$Q_g$	—	8.2	—	nC	
Gate-Source Charge	$Q_{gs}$	—	0.9	—	nC	
Gate-Drain Charge	$Q_{gd}$	—	1.2	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.8	—	ns	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V},$ $R_G = 6\Omega, I_D = -1\text{A}$
Turn-On Rise Time	$t_R$	—	7.3	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	22.5	—	ns	
Turn-Off Fall Time	$t_F$	—	13.4	—	ns	

Notes:

6. Device mounted on FR-4 PCB.  $t \leq 10$  sec.
7. Pulse width  $\leq 10\mu\text{S}$ , Duty Cycle  $\leq 1\%$ .
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.



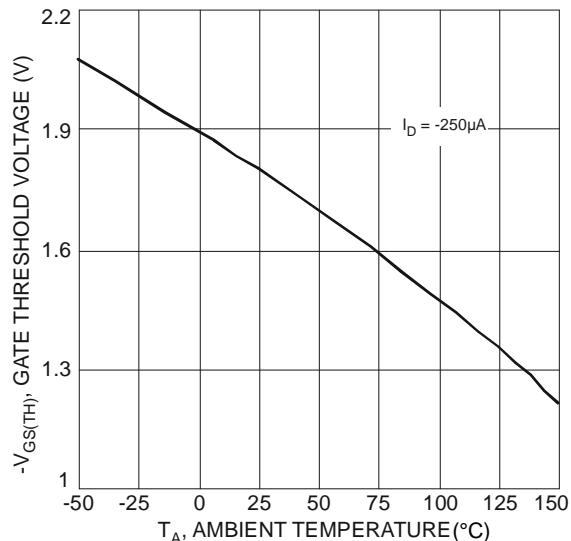


Fig. 7 Gate Threshold Voltage vs. Ambient Temperature

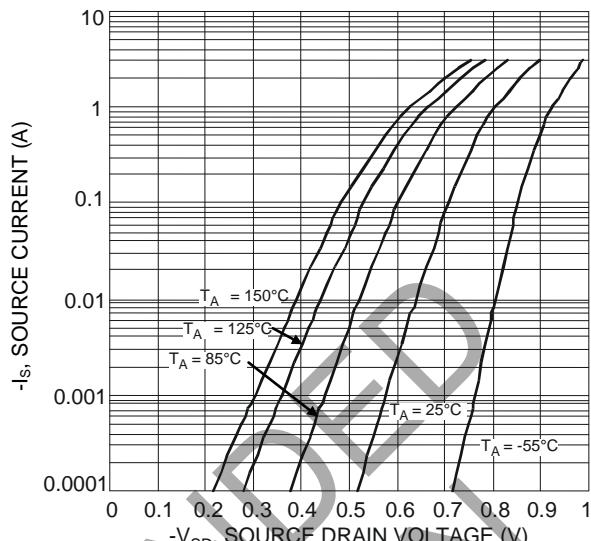


Fig. 8 Reverse Source Current vs. Source-Drain Voltage

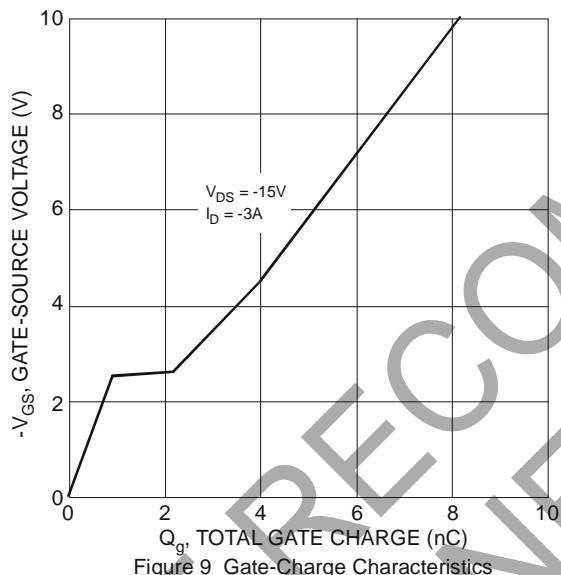


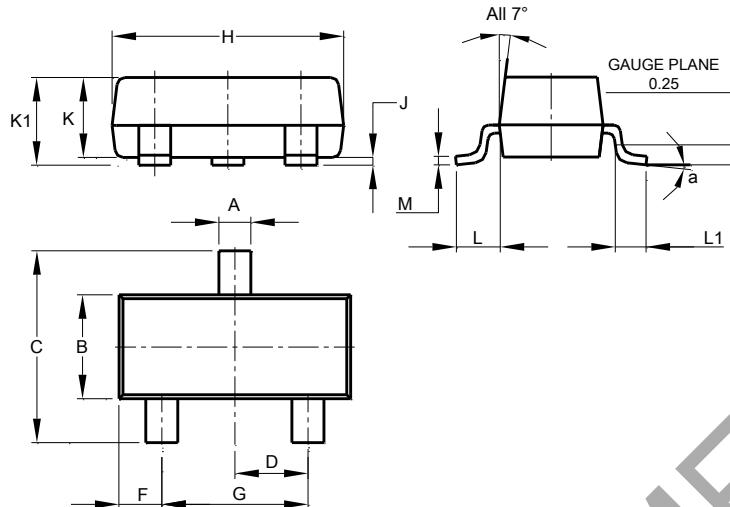
Figure 9 Gate-Charge Characteristics

NOT RECOMMENDED FOR NEW DESIGN

## Package Outline Dimensions

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

SOT23



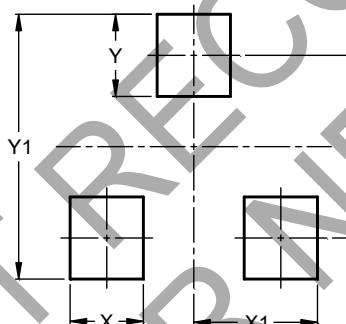
SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--

All Dimensions in mm

## Suggested Pad Layout

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

SOT23



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

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