P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

NEW PRODUCT

Features

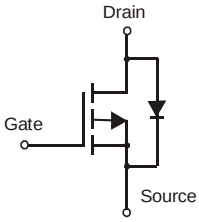
- Low On-Resistance:
  $R_{DS(ON)}$ < 110mΩ @ V_{GS} = -4.5V
  $R_{DS(ON)}$ < 225mΩ @ V_{GS} = -2.5V
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

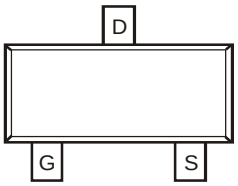
- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)

SOT-23

TOP VIEW



EQUIVALENT CIRCUIT



TOP VIEW

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	±12	V
Drain Current (Note 1)	Steady State	T_A = 25°C T_A = 70°C	I_D	-2.6 -2	A
Pulsed Drain Current (Note 3)			I_{DM}	8	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 1)	P_D	1.08	W
Thermal Resistance, Junction to Ambient @T_A = 25°C (Note 1)	$R_{\theta JA}$	115	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. Device mounted on FR-4 PCB. t ≤5 sec.
2. No purposefully added lead.
3. Pulse width ≤10μS, Duty Cycle ≤1%.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

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Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-800	nA	V_{DS} = -20V, V_{GS} = 0V
On-State Drain Current	$I_{D(ON)}$	-6	—	—	A	$V_{DS} \leq$ -5V, V_{GS} = -4.5V
		-3	—	—		$V_{DS} \leq$ -5V, V_{GS} = -2.5V
Gate-Source Leakage	I_{GSS}	—	—	±80 ±800	nA	V_{GS} = ±12V, V_{DS} = 0V V_{GS} = ±15V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.62	-0.89	-1.25	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	—	80 165	110 225	mΩ	V_{GS} = -4.5V, I_D = -2.6A V_{GS} = -2.5V, I_D = -2.0A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	4	—	S	V_{DS} = -5V, I_D = -2.6A
Diode Forward Voltage (Note 5)	V_{SD}	—	—	-1.26	V	V_{GS} = 0V, I_S = -2.6A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	250	—	pF	V_{DS} = -10V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	88	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	58	—	pF	
Gate Resistance	R_g	—	12	16	Ω	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz
Total Gate Charge	Q_g	—	4.3	5.3	nC	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -2.7A
Gate-Source Charge	Q_{gs}	—	0.9	—		
Gate-Drain Charge	Q_{gd}	—	2.1	—		

Notes: 5. Short duration pulse test used to minimize self-heating effect.

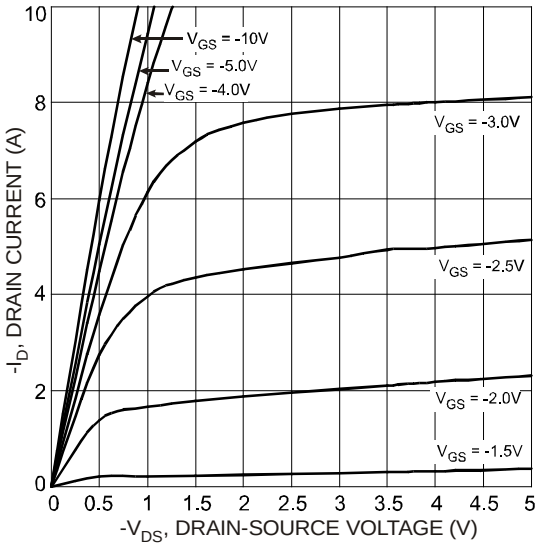

Fig. 1 Typical Output Characteristics

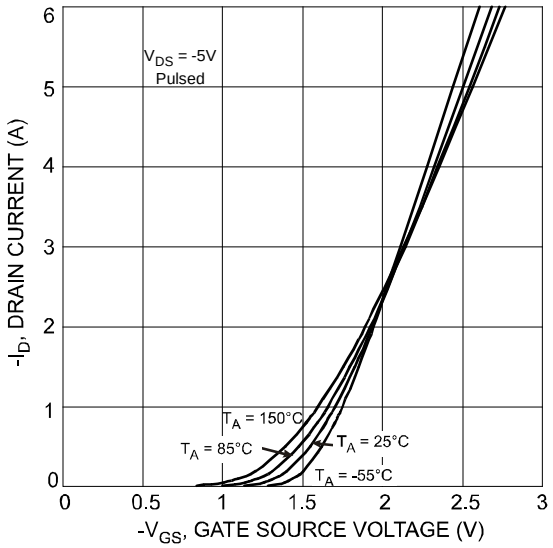

Fig. 2 Typical Transfer Characteristics

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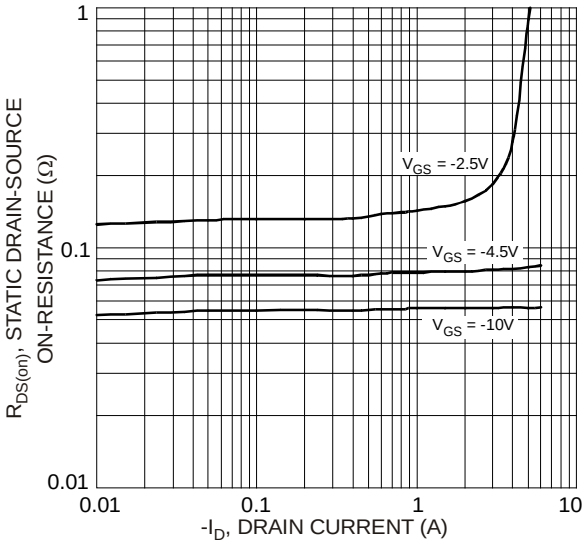

Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

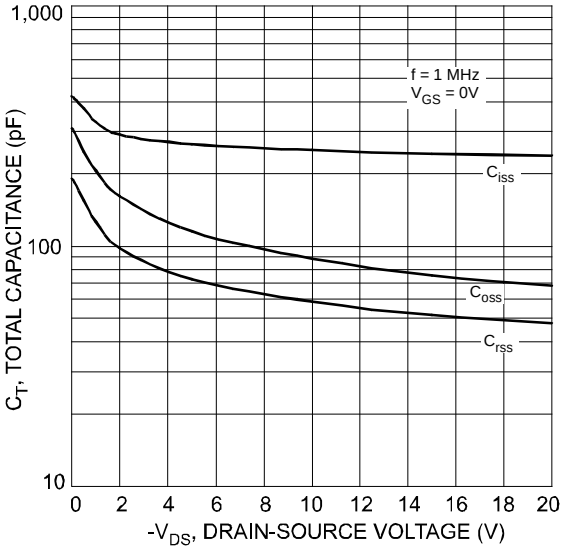

Fig. 4 Typical Total Capacitance

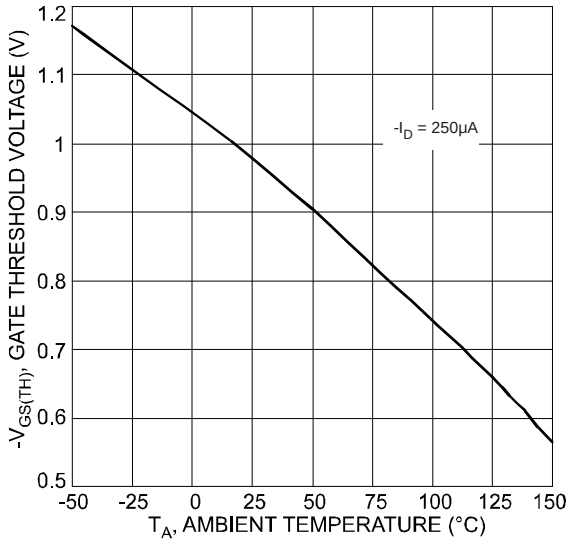

Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

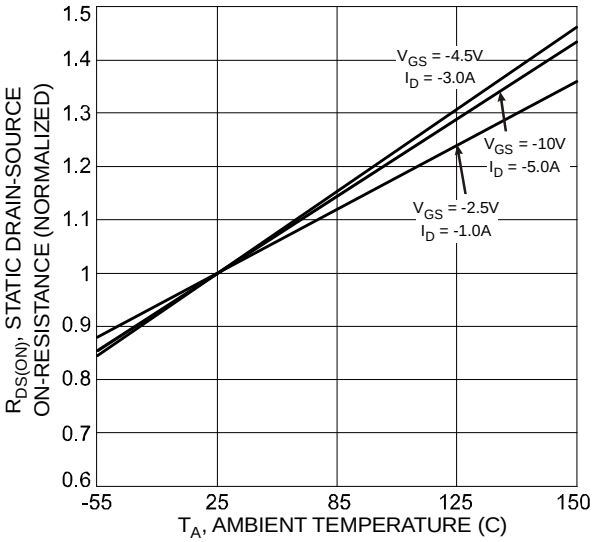

Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

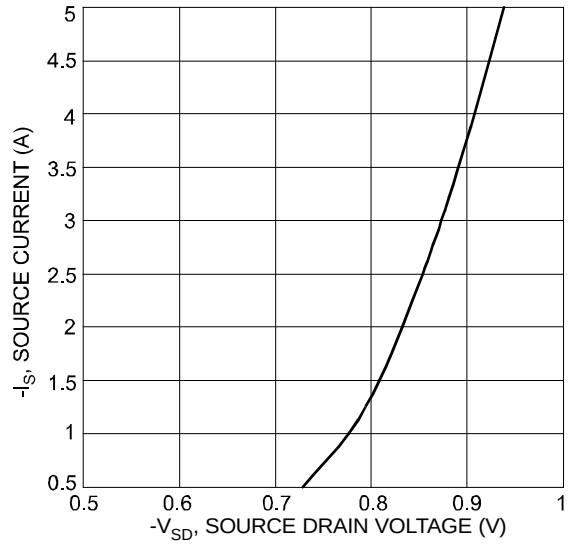

Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

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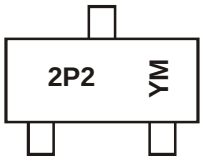
Ordering Information (Note 6)

Part Number	Case	Packaging
DMP2225L-7	SOT-23	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



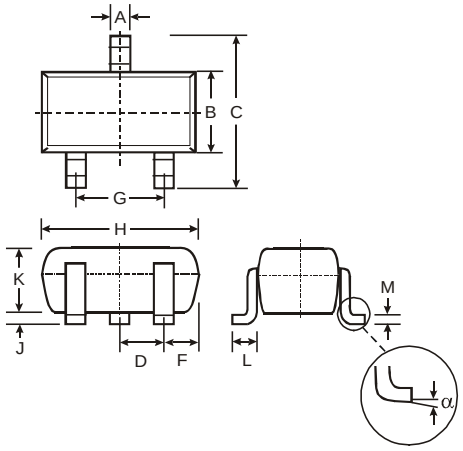
2P2 = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: V = 2008
M = Month ex: 9 = September

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

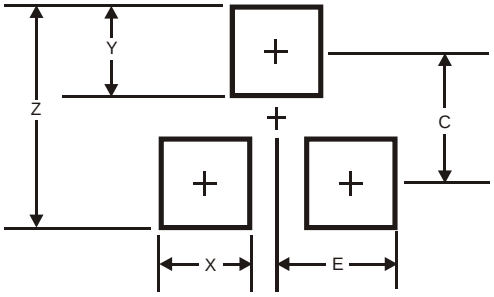
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
F	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35