



DMP2215L

### P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

#### **Features**

Low On-Resistance:

 $R_{DS(ON)} < 100 m\Omega$  @  $V_{GS} = -4.5 V$ ,  $I_{D} = -2.7 A$   $R_{DS(ON)} < 215 m\Omega$  @  $V_{GS} = -2.5 V$ ,  $I_{D} = -2.0 A$ 

- 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

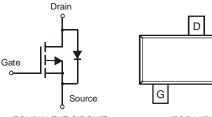
### **Mechanical Data**

- 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)



TOP VIEW





EQUIVALENT CIRCUIT

TOP VIEW

# **Maximum Ratings** $@T_A = 25^{\circ}C$ unless otherwise specified

Ch	aracteristic		Symbol	Value	Units	
Drain-Source Voltage			$V_{DSS}$	-20	V	
Gate-Source Voltage			$V_{GSS}$	±12	V	
Drain Current (Note 1)	Steady State	$T_A = 25^{\circ}C$ $T_A = 70^{\circ}C$	I <sub>D</sub>	-2.7 -2	А	
Pulsed Drain Current (Note 3)			I <sub>DM</sub>	8	А	

### **Thermal Characteristics**

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 1)	P <sub>D</sub>	1.08	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C (Note 1)	$R_{ hetaJA}$	115	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes:

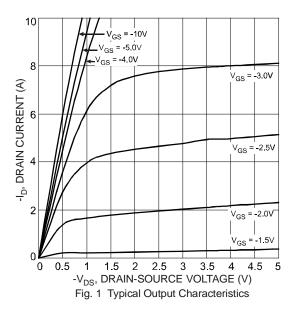
- 1. Device mounted on FR-4 PCB.  $t \le 5$  sec.
- 2. No purposefully added lead.
- 3. Pulse width  $\leq 10 \mu S$ , Duty Cycle  $\leq 1\%$ .
- 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead\_free/index.php.

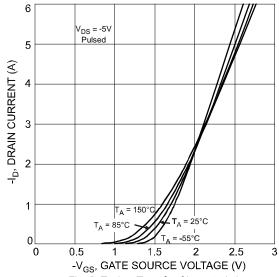


## **Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 5)							
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-20	_	_	V	$V_{GS} = 0V, I_D = -250\mu A$	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>			-800	nA	$V_{DS} = -20V, V_{GS} = 0V$	
On-State Drain Current	I <sub>D(ON)</sub>	-6	_	_	Α	$V_{DS} \le -5V$ , $V_{GS} = -4.5V$	
On-State Drain Current		-3	_	_	_ ^	$V_{DS} \le -5V$ , $V_{GS} = -2.5V$	
Gate-Source Leakage	Lana		_	±80	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$	
· ·	I <sub>GSS</sub>	_		±800		$V_{GS} = \pm 15V$ , $V_{DS} = 0V$	
ON CHARACTERISTICS (Note 5)							
Gate Threshold Voltage	$V_{GS(th)}$	-0.62	-0.89	-1.25	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
Static Drain-Source On-Resistance	R <sub>DS (ON)</sub>		80 165	100	mΩ	$V_{GS} = -4.5V, I_D = -2.7A$	
Static Dialii-Source Off-Resistance				215	1115.2	$V_{GS} = -2.5V, I_D = -2.0A$	
Forward Transfer Admittance	Y <sub>fs</sub>	_	4	_	S	$V_{DS} = -5V, I_{D} = -2.7A$	
Diode Forward Voltage (Note 5)	$V_{SD}$	_	_	-1.26	V	$V_{GS} = 0V, I_{S} = -2.7A$	
DYNAMIC CHARACTERISTICS					-		
Input Capacitance	C <sub>iss</sub>		250	1	pF	V 10V V 0V	
Output Capacitance	Coss		88		pF	$V_{DS} = -10V, V_{GS} = 0V$ f = 1.0MHz	
Reverse Transfer Capacitance	$C_{rss}$	_	58	_	pF	1 = 1.000112	
Gate Resistance	$R_{g}$	_	12	16	Ω	$V_{GS} = 0V$ , $V_{DS} = 0V$ , $f = 1MHz$	
Total Gate Charge	Qg		4.3	5.3		\\\\ 4.5\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
Gate-Source Charge	Q <sub>gs</sub>	_	0.9	_	nC	$V_{GS} = -4.5V, V_{DS} = -10V,$ $I_{D} = -2.7A$	
Gate-Drain Charge	$Q_{gd}$	_	2.1			ID2.1 A	

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







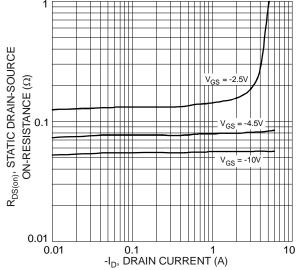


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

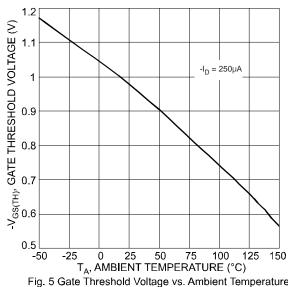


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

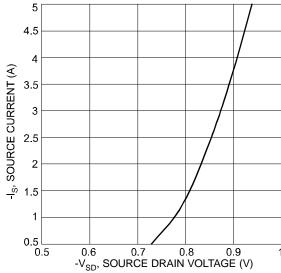
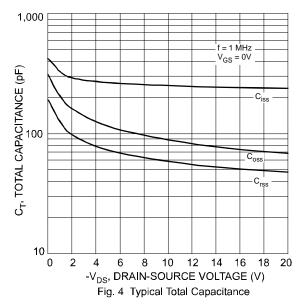
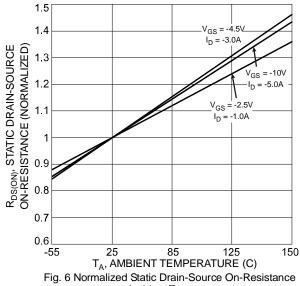


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage





vs. Ambient Temperature

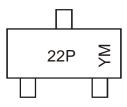


### Ordering Information (Note 6)

Part Number	Case	Packaging
DMP2215L-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**



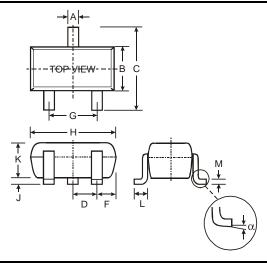
22P = Product Type Marking Code YM = Date Code Marking

Y = Year ex: U = 2007 M = Month ex: 9 = September

Date Code Key

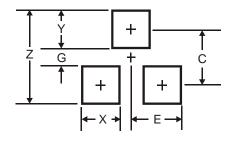
Year	20	07	20	08	20	09	20	10	20	11	20	12
Code	l	J	\	1	V	V	>	(	`	1	Z	<u> </u>
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D

## **Package Outline Dimensions**



SOT-23						
Dim	Min	Max				
Α	0.37	0.51				
В	1.20	1.40				
С	2.30	2.50				
D	0.89	1.03				
F	0.45	0.60				
G	1.78	2.05				
Н	2.80	3.00				
J	0.013	0.10				
K	0.903	1.10				
L	L 0.45 0.6					
M	0.085	0.180				
α	0°	8°				
All Dir	All Dimensions in mm					

## **Suggested Pad Layout**



Dimensions	Value (in mm)
Z	3.4
G	0.7
Х	0.9
Y	1.4
С	2.0
E	0.9

#### IMPORTANT NOTICE

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