

DMP3130L

P-CHANNEL ENHANCEMENT MODE MOSFET

Features

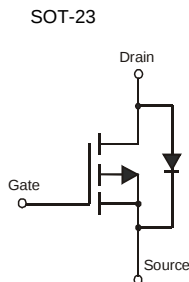
- Low On-Resistance:
 - $R_{DS(ON)} < 77m\Omega$ @ $V_{GS} = -10V$
 - $R_{DS(ON)} < 95m\Omega$ @ $V_{GS} = -4.5V$
 - $R_{DS(ON)} < 150m\Omega$ @ $V_{GS} = -2.5V$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Lead Free By Design/RoHS Compliant (Note 2)
- "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

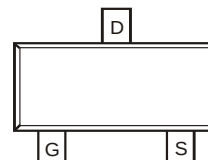
- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram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



TOP VIEW



Equivalent Circuit



TOP VIEW

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}	± 12	V
Drain Current (Note 1)	I_D	$T_A = 25^\circ\text{C}$	A
		$T_A = 70^\circ\text{C}$	
Drain Current (Note 1)	I_{DM}	-12	A
Body-Diode Continuous Current (Note 1)	I_S	-2.0	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	1.4	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 1)	$R_{\theta JA}$	90	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- Device mounted on FR-4 PCB. $t \leq 5$ sec.
 - No purposefully added lead.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Drain-Source Breakdown Voltage	BV _{DSS}	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	μA	V _{DS} = -30V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	V _{GS(th)}	-0.6	—	-1.3	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	59 73 115	77 95 150	mΩ	V _{GS} = -10V, I _D = -4.2A V _{GS} = -4.5V, I _D = -4A V _{GS} = -2.5V, I _D = -3A
Forward Transconductance	g _{fs}	—	8	—	S	V _{DS} = -5V, I _D = -4A
Source-Drain Diode Forward Voltage	V _{SD}	—	0.8	-1.25	V	V _{GS} = 0V, I _S = -3.0A
DYNAMIC CHARACTERISTICS (Note 5)						
Input Capacitance	C _{iss}	—	432	864	pF	V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	87	174	pF	
Reverse Transfer Capacitance	C _{rss}	—	62	124	pF	
Gate Resistance	R _G	—	4.04	—	Ω	V _{DS} = 0V, V _{GS} = 0V f = 1.0MHz
SWITCHING CHARACTERISTICS (Note 5)						
Total Gate Charge	Q _G	—	5.9 12	11.8 24	nC	V _{DS} = -15V, V _{GS} = -4.5V, I _D = -4.0A V _{DS} = -15V, V _{GS} = -10V, I _D = -4.0A
Gate-Source Charge	Q _{GS}	—	1.0	2.0		V _{DS} = -15V, V _{GS} = -4.5V, I _D = -4.0A
Gate-Drain Charge	Q _{GD}	—	3.1	6.2		
Turn-On Delay Time	t _{d(on)}	—	4.6	9.2	ns	V _{DS} = -15V, V _{GS} = -10V, I _D = -1A, R _G = 6.0Ω
Rise Time	t _r	—	6.5	13.0		
Turn-Off Delay Time	t _{d(off)}	—	27.8	55.6		
Fall Time	t _f	—	15.0	30.0		

Notes: 3. Short duration pulse test used to minimize self-heating effect.
4. Guaranteed by design. Not subject to product testing