TY Semicondutor®

Product specification

NEW PRODUCT

DMP2123L

P-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

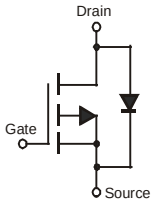
- Low $R_{DS(ON)}$:
  - 72 mΩ @V_{GS} = -4.5V
  - 108 mΩ @V_{GS} = -2.7V
  - 123 mΩ @V_{GS} = -2.5V
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**

Mechanical Data

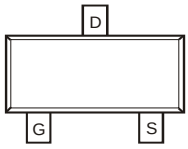
- Case: SOT-23
- Case Material - Molded Plastic, “Green” Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram Below
- Weight: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

SOT-23

TOP VIEW



Internal Schematic



TOP VIEW

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Note 1) Continuous	T_A = 25°C T_A = 70°C	I_D	-3.0 -2.4	A
Pulsed Drain Current (Note 2)		I_{DM}	-15	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 (Note 1); Steady-State	$R_{\theta JA}$	90	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 1. Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper and test pulse width t ≤10s.
2. Repetitive Rating, pulse width limited by junction temperature.
3. No purposefully added lead.

NEW PRODUCT

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	I_D = -250μA, V_{GS} = 0V
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	—	—	-1	μA	V_{DS} = -20V, V_{GS} = 0V
Gate-Body Leakage Current	I_{GSS}	—	—	±100	nA	V_{DS} = 0V, V_{GS} = ±12V
Gate Threshold Voltage	$V_{GS(th)}$	-0.6	—	-1.25	V	V_{DS} = V_{GS}, I_D = -250μA
On State Drain Current (Note 5)	$I_{D(ON)}$	-15	—	—	A	V_{GS} = -4.5V, V_{DS} = -5V
Static Drain-Source On-Resistance (Note 5)	$R_{DS(ON)}$	—	51 87 99	72 108 123	mΩ	V_{GS} = -4.5V, I_D = -3.5A V_{GS} = -2.7V, I_D = -3.0A V_{GS} = -2.5V, I_D = -2.6A
Forward Transconductance (Note 5)	g_{FS}	—	7.3	—	S	V_{DS} = -10V, I_D = -3.0A
Diode Forward Voltage (Note 5)	V_{SD}	—	0.79	-1.26	V	I_S = -1.7A, V_{GS} = 0V
Maximum Body-Diode Continuous Current (Note 1)	I_S	—	—	1.7	A	—
DYNAMIC PARAMETERS (Note 6)						
Total Gate Charge	Q_g	—	7.3	—	nC	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.0A
Gate-Source Charge	Q_{gs}	—	2.0	—	nC	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.0A
Gate-Drain Charge	Q_{gd}	—	1.9	—	nC	V_{GS} = -4.5V, V_{DS} = -10V, I_D = -3.0A
Turn-On Delay Time	$t_{D(on)}$	—	12	—	ns	V_{DS} = -10V, V_{GS} = -4.5V, R_L = 10Ω, R_G = 6Ω
Turn-On Rise Time	t_r	—	20	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	38	—	ns	
Turn-Off Fall Time	t_f	—	41	—	ns	
Input Capacitance	C_{iss}	—	443	—	pF	V_{DS} = -16V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	128	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	101	—	pF	

Notes: 4. Test pulse width t = 300μs.
5. Guaranteed by design. Not subject to production testing.