

DP2101W

DP2101W P-Channel Enhancement Mode Field Effect Transistor

General description

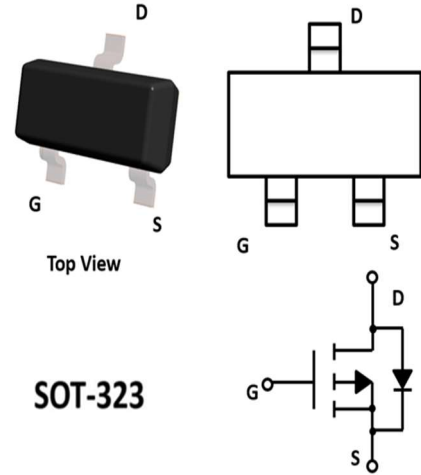
P-Channel Enhancement Mode Field Effect Transistor

Features:

- $V_{DS} : -20V$
- $I_D : -2.0A$
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) < 120 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) < 150 mohm
- Trench Power LV MOSFET technology
- Low $R_{DS(ON)}$
- Low Gate Charge

Applications

- Video monitor
- Power management



SOT-323

Device Marking Code:

Device Type	Device Marking
DP2101W	TS1

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	V_{DS}	-20	V
Gate-source Voltage	V_{GS}	± 10	V
Drain Current	I_D	$T_A=25^\circ C$ @ Steady State	-2
		$T_A=70^\circ C$ @ Steady State	-1.6
Pulsed Drain Current ^A	I_{DM}	-8	A
Total Power Dissipation @ $T_A=25^\circ C$	P_D	0.7	W
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	178	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

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Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V, T_C=25^\circ\text{C}$			-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1.5A$		90	120	m Ω
		$V_{GS}=-2.5V, I_D=-1.5A$		115	150	
Diode Forward Voltage	V_{SD}	$I_S=-2A, V_{GS}=0V$		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-2	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V, f=1\text{MHz}$		290		pF
Output Capacitance	C_{oss}			47		
Reverse Transfer Capacitance	C_{rss}			29		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=-4.5V, V_{DS}=-10V, I_D=-2A$		3.9		nC
Gate Source Charge	Q_{gs}			0.7		
Gate Drain Charge	Q_{gd}			0.9		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-4.5V, V_{DD}=-10V, I_D=-1A, R_{GEN}=2.5\Omega$		12		ns
Turn-on Rise Time	t_r			54		
Turn-off Delay Time	$t_{D(off)}$			15		
Turn-off Fall Time	t_f			9		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Performance Characteristics

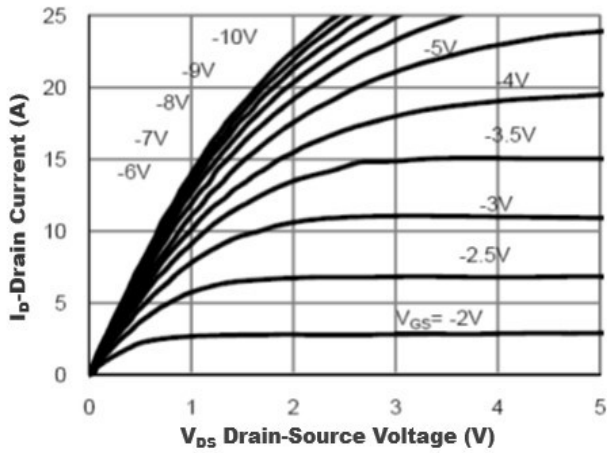


Figure1. Output Characteristics

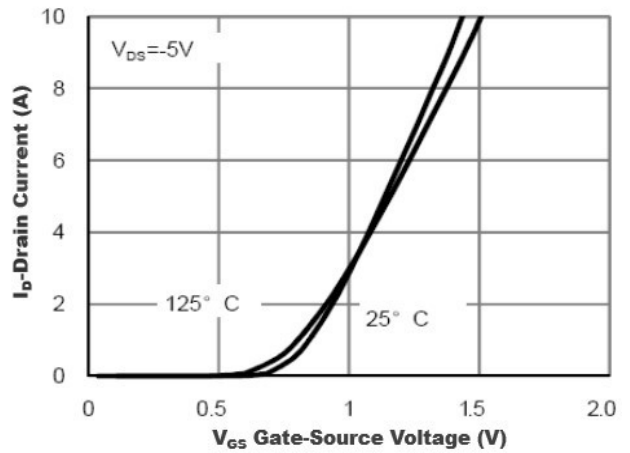


Figure2. Transfer Characteristics

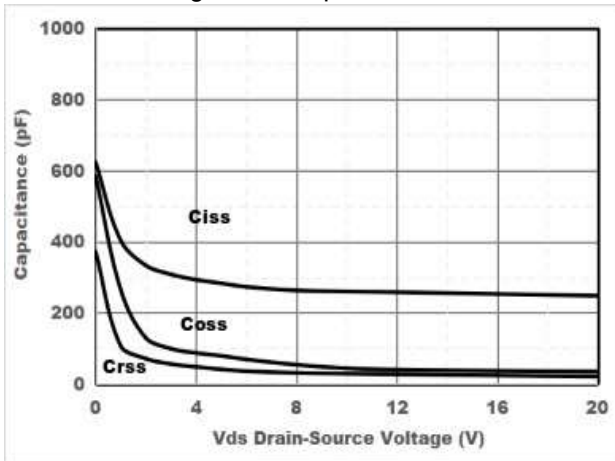


Figure3. Capacitance Characteristics

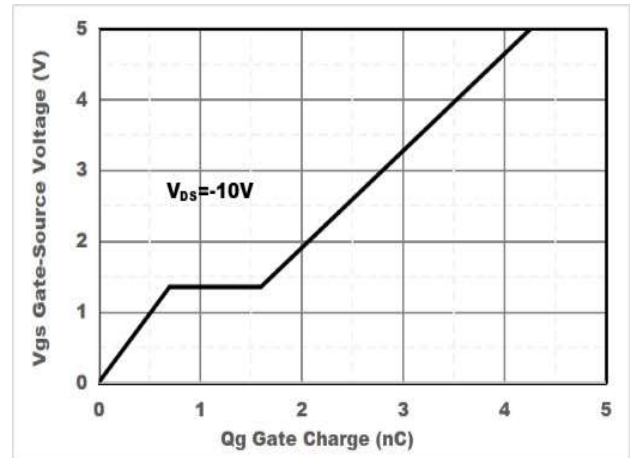


Figure4. Gate Charge

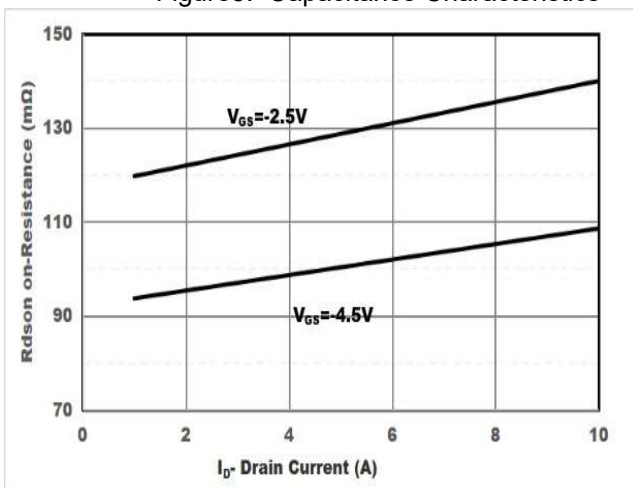


Figure5. Drain-Source on Resistance

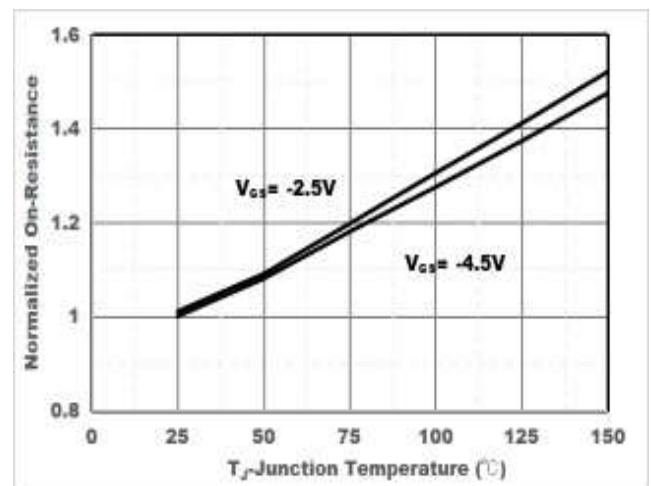
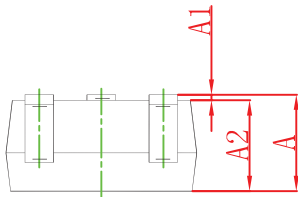
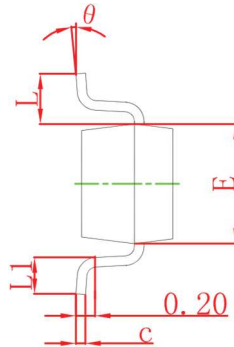
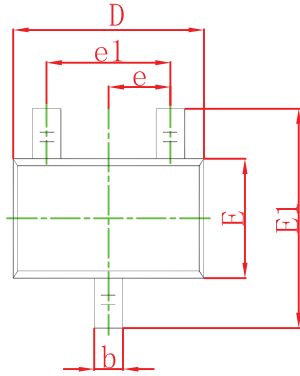
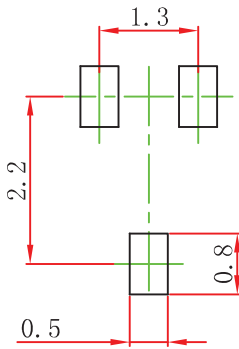


Figure6. Drain-Source on Resistance

SOT-323 Package Outline



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
	0°	8°	0°	8°



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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