

DP2307

DP2307 P-Channel Enhancement Mode Field Effect Transistor

General description

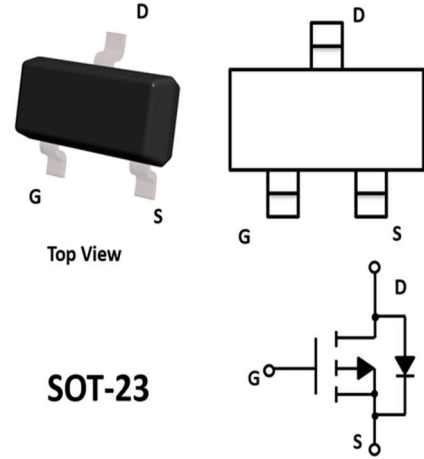
P-Channel Enhancement Mode Field Effect Transistor

Features:

- $V_{DS} : -30V$
- $I_D : -3.0A$
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) < 85 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) < 105 mohm
- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

Applications

- PMW applications
- Load switch
- Power management



Device Marking Code:

Device Type	Device Marking
DP2307	A7SHB

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

Parameter	Symbol	Maximum	Unit
Drain-source Voltage	V_{DS}	-30	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	$T_A=25^\circ C$ @ Steady State	-3.0
		$T_A=70^\circ C$ @ Steady State	-2.4
Pulsed Drain Current ^A	I_{DM}	-13	A
Total Power Dissipation @ $T_A=25^\circ C$	P_D	1.1	W
Thermal Resistance Junction-to-Ambient ^B	$R_{\theta JA}$	113	$^\circ C / W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

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Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-1.0	-1.5	-2.4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -10V, I _D =-3.0A		60	85	mΩ
		V _{GS} = -4.5V, I _D =-2.0A		80	105	
Diode Forward Voltage	V _{SD}	I _S =-3.0A, V _{GS} =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I _S				-3.0	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHZ		375		pF
Output Capacitance	C _{oss}			63		
Reverse Transfer Capacitance	C _{rss}			47		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-15V, I _D =-3.0		4.2		nC
Gate Source Charge	Q _{gs}			1.0		
Gate Drain Charge	Q _{gd}			1.3		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-15V, R _L =15 Ω, I _D =-1A, R _{GEN} =2.5Ω		14		ns
Turn-on Rise Time	t _r			61		
Turn-off Delay Time	t _{D(off)}			19		
Turn-off Fall Time	t _f			10		

A.Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

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

Typical Performance Characteristics

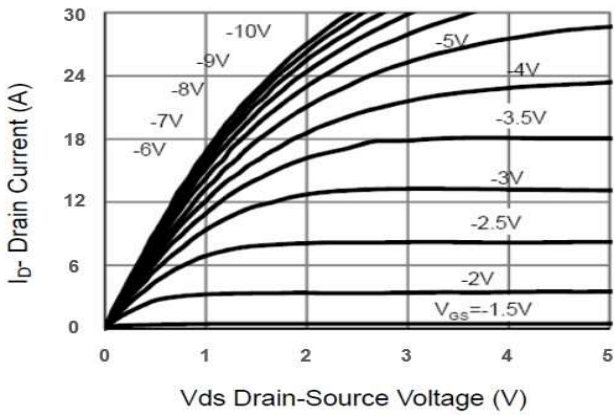


Figure1. Output Characteristics

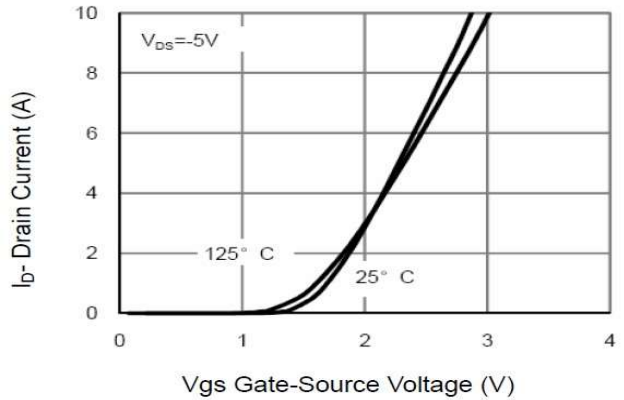


Figure2. Transfer Characteristics

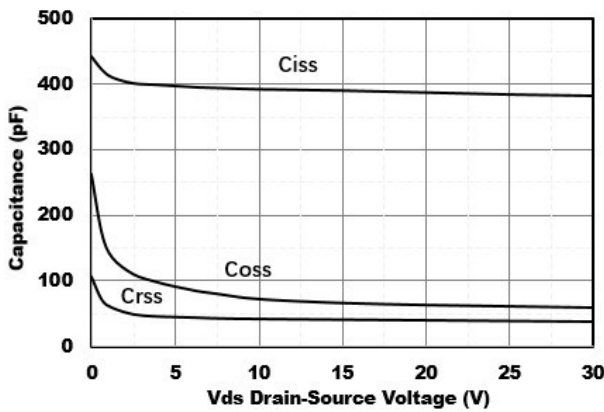


Figure3. Capacitance Characteristics

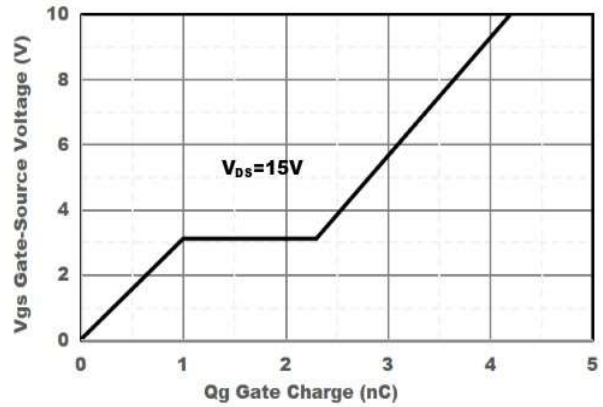


Figure4. Gate Charge

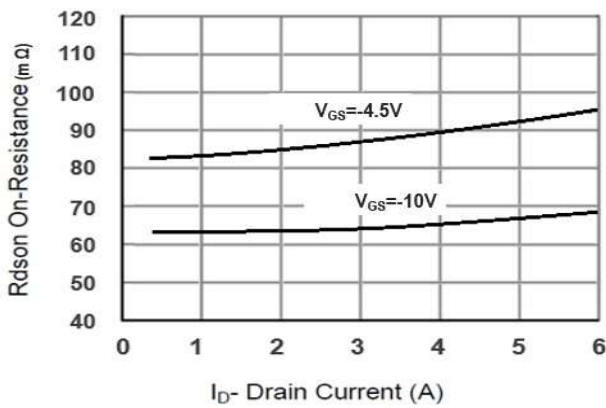


Figure5. Drain-Source on Resistance

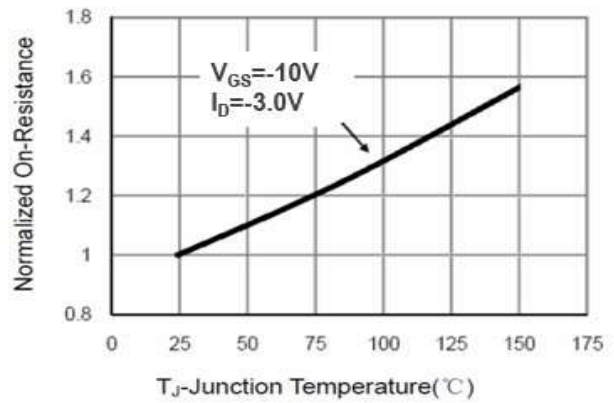


Figure6. Drain-Source on Resistance

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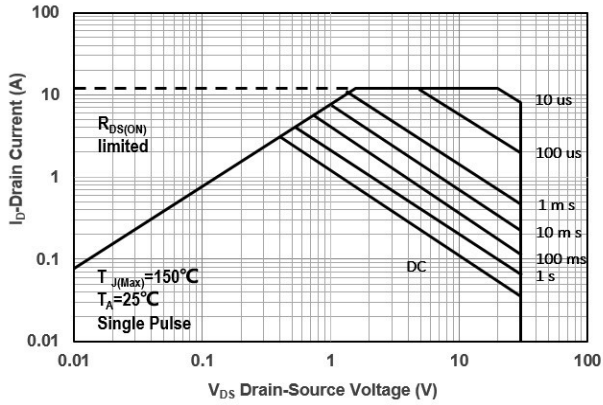


Figure7. Safe Operation Area

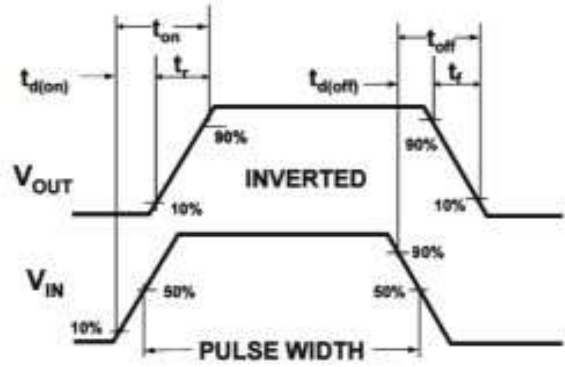
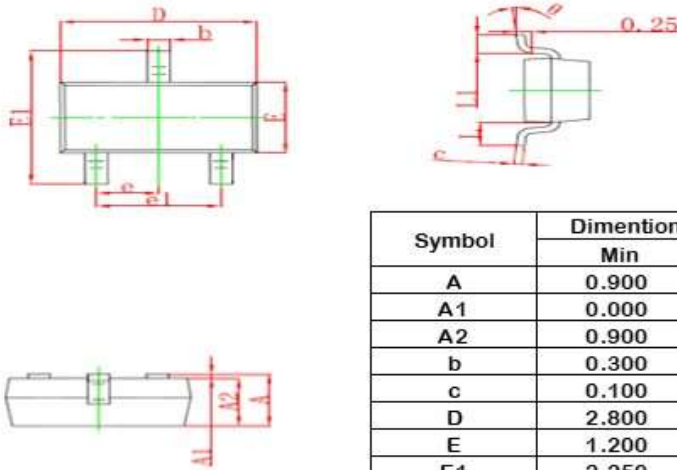


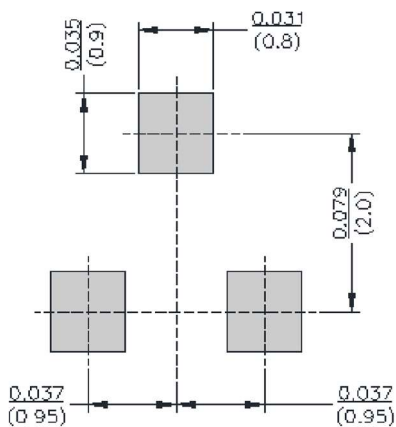
Figure8. Switching wave

SOT-23 Package Outline



Symbol	Dimentions in Millimeter		Dimentions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



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