

DN2308

DN2308 N-Channel Enhancement MOSFET

General description

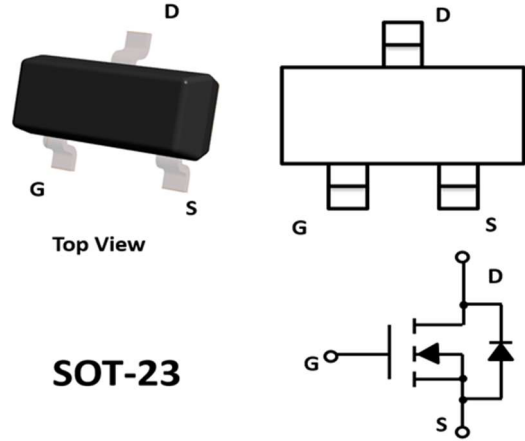
N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- $V_{DS}=60V$
- $I_D=3A$
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<100\ m\Omega$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $<110\ m\Omega$
- Trench Power MOSFET technology
- High Power and current handing capability
- High density cell design for low $R_{DS(ON)}$

APPLICATIONS

- DC-DC Converters
- Power management functions



SOT-23

Device Marking Code:

Device Type	Device Marking
DN2308	MS08

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	60	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	$T_A=25^\circ C$ @ Steady State	2
		$T_A=70^\circ C$ @ Steady State	2.4
Pulsed Drain Current ^A	I_{DM}	12	A
Total Power Dissipation @ $T_A=25^\circ C$	P_D	1.2	W
Thermal Resistance Junction-to-Ambient @ Steady State ^B	$R_{\theta JA}$	105	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

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Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{GSS1}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
	I_{GSS2}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 50	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.7	2.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3A$		58	100	m Ω
		$V_{GS}=4.5V, I_D=1.5A$		70	110	
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}	$V_{DS}=30V, V_{GS}=0V, f=1MHz$		330		pF
Output Capacitance	C_{oss}			90		
Reverse Transfer Capacitance	C_{rss}			17		
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=30V, I_D=3.0A$		5.1		nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			1.7		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=30V, I_D=1.5A, R_L=1\Omega$ $R_{GEN}=3\Omega$		13		ns
Turn-on Rise Time	t_r			51		
Turn-off Delay Time	$t_{D(off)}$			19		
Turn-off fall Time	t_f			12		

Note :

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 Characteristics

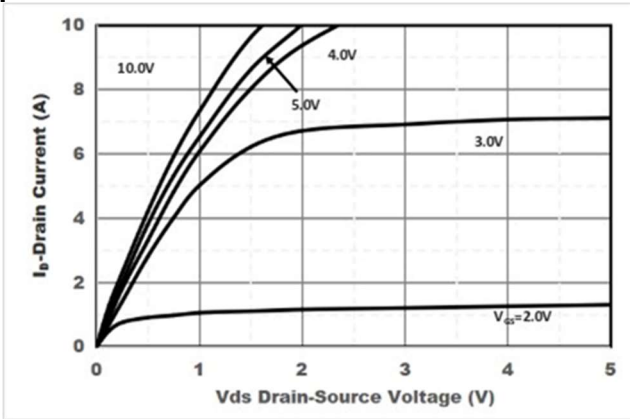


Figure1. Output Characteristics

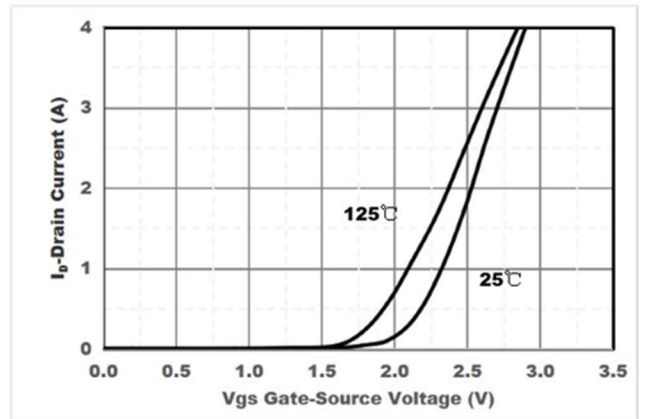


Figure2. Transfer Characteristics

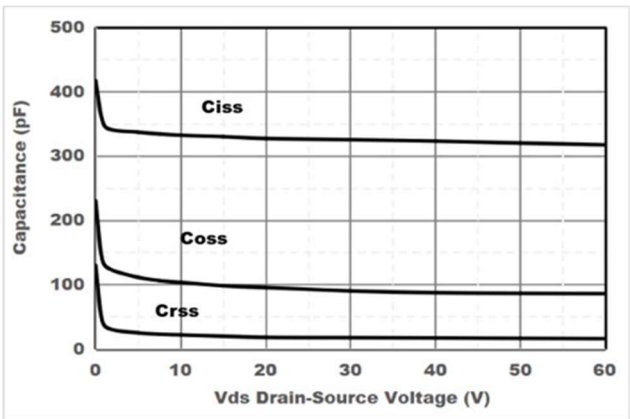


Figure3. Capacitance Characteristics

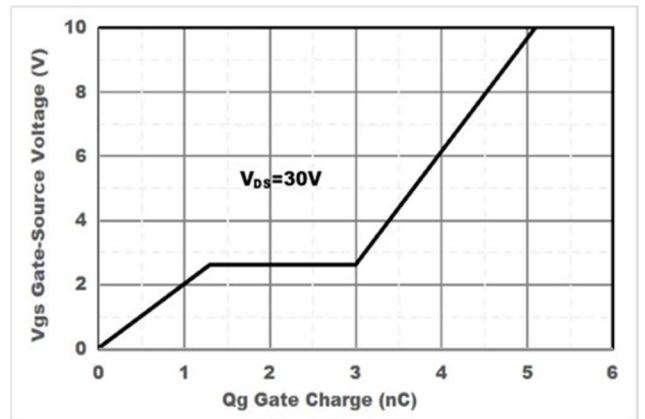


Figure4. Gate Charge

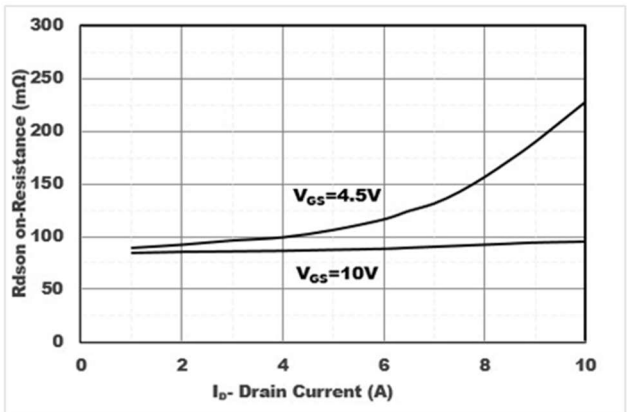


Figure5. Drain-Source on Resistance

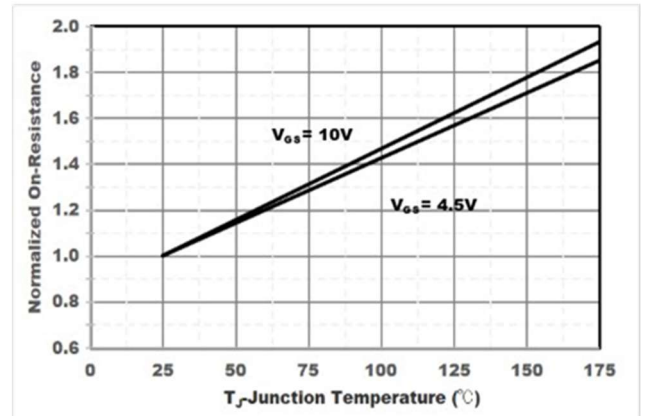


Figure6. Drain-Source on Resistance



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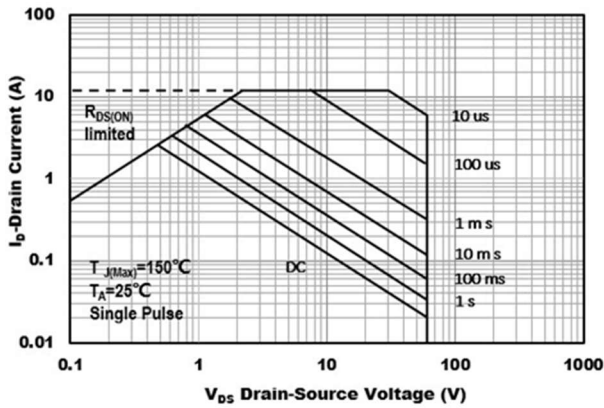


Figure7. Safe Operation Area

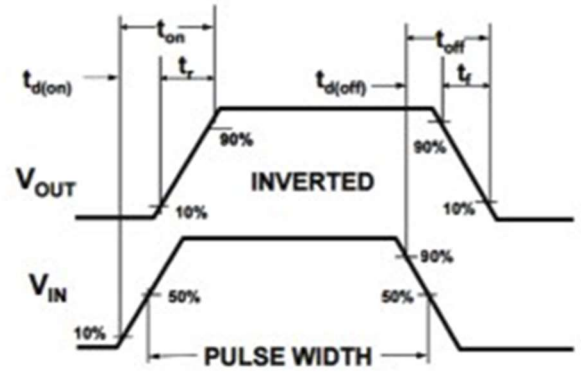
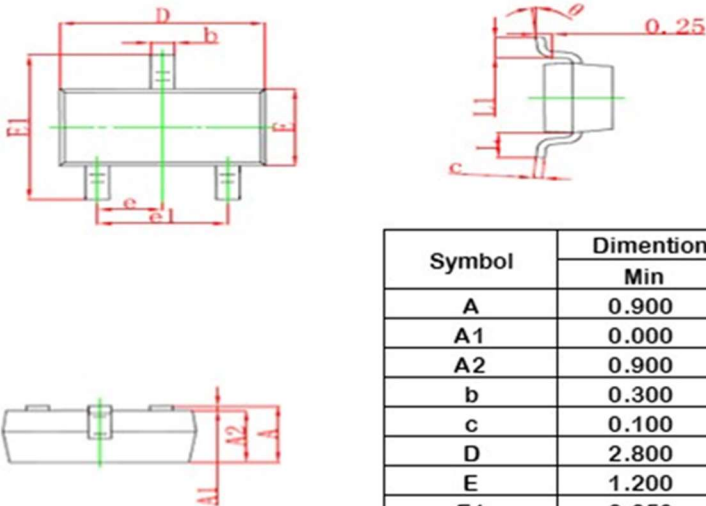


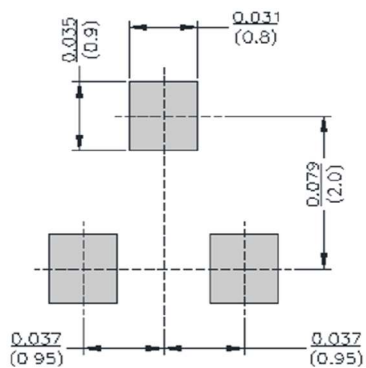
Figure8. Switching wave

SOT-23 Package information



Symbol	Dimensions in Millimeter		Dimensions 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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