



Description

The SI2308 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This device is suitable for use as a load switch or in PWM applications.

General Features

$V_{DS} = 60V, I_D = 2.5A$

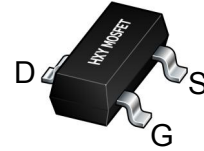
$R_{DS(ON)} < 160m\Omega @ V_{GS} = 10V$

Application

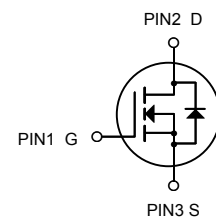
Battery protection

Load switch

Uninterruptible power supply



SOT-23



N-Channel MOSFET

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
SI2308	SOT-23	MS08	3000

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

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous	2.5	A
I_{DM}	Drain Current-Pulsed (Note 1)	10	A
P_D	Maximum Power Dissipation	1.25	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	62.5	°C/W



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

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0		2	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =44V, V _{GS} =0			1	uA
		V _{DS} =44V, V _{GS} =0 T _J =85°C			5	
I _{D(ON)}	On=State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	10			A
R _{DS(ON)}	Drain-Source On-Resistance	V _{GS} =10V, I _D =1.8A		140	160	mΩ
		V _{GS} =4.5V, I _D =1.5A		154	200	
G _{fs}	Forward Transconductance	V _{DS} =5V, I _D =2.1A		10		S
Source-Drain Diode						
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V		0.8	1.0	V
Dynamic Parameters						
Q _g	Total Gate Charge	V _{DS} =27V V _{GS} =4.5V I _D =2.1A		2.1	3.9	nC
Q _{gs}	Gate-Source Charge			0.6		
Q _{gd}	Gate-Drain Charge			0.8		
C _{iss}	Input Capacitance	V _{DS} =25V V _{GS} =0V f=1MHz		295		pF
C _{oss}	Output Capacitance			40		
C _{rss}	Reverse Transfer Capacitance			15		
T _{d(on)}	Turn-On Time	V _{DS} =27V R _L =10Ω I _D =1A		3.6		nS
T _r				3.5		
T _{d(off)}	Turn-Off Time		V _{GEN} =4.5V R _G =6Ω		32	
T _f				3		

Note: 1. Pulse test: pulse width≤300uS, duty cycle≤2%

2.Static parameters are based on package level with recommended wire bonding



Typical Characteristics

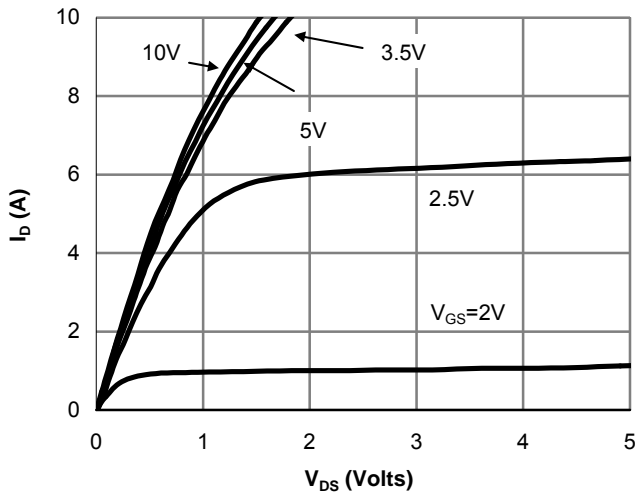


Fig 1: On-Region characteristics

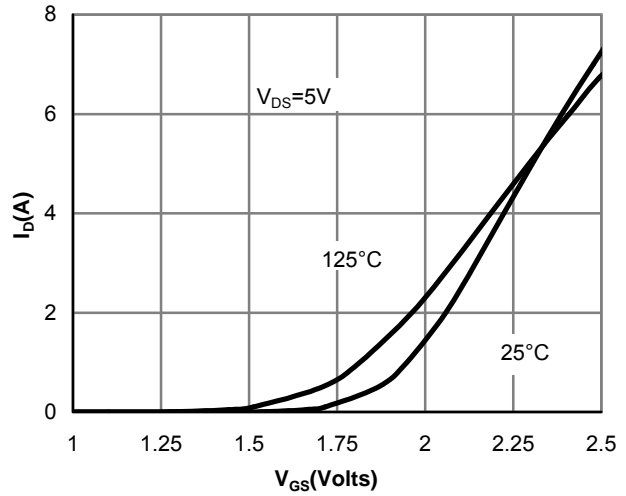


Figure 2: Transfer Characteristics

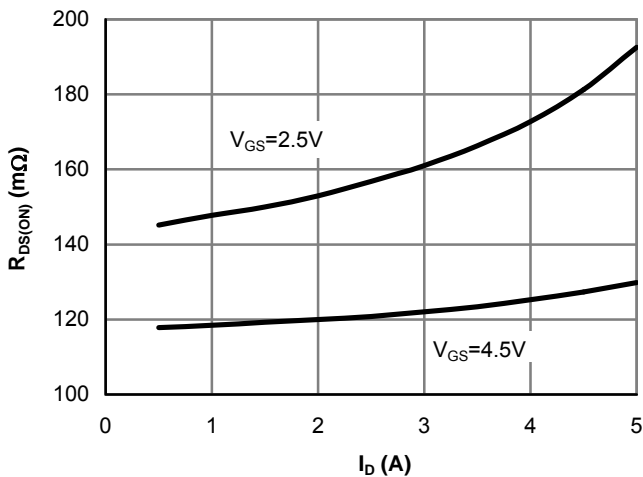


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

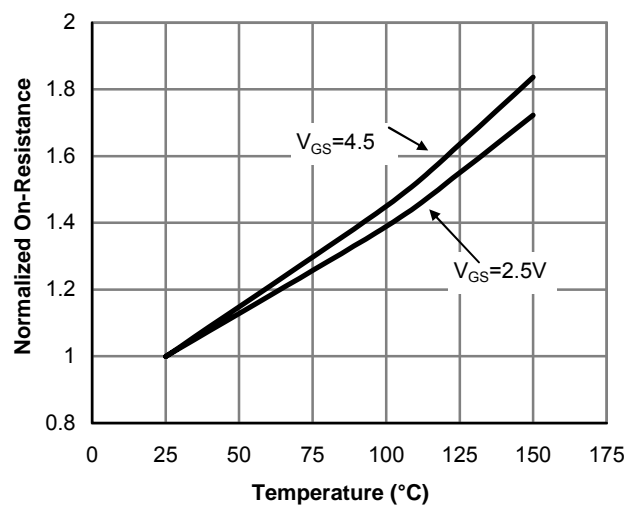


Figure 4: On-Resistance vs. Junction Temperature

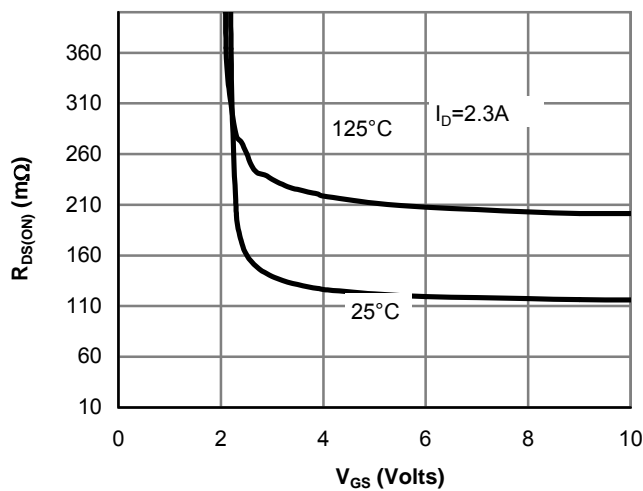


Figure 5: On-Resistance vs. Gate-Source Voltage

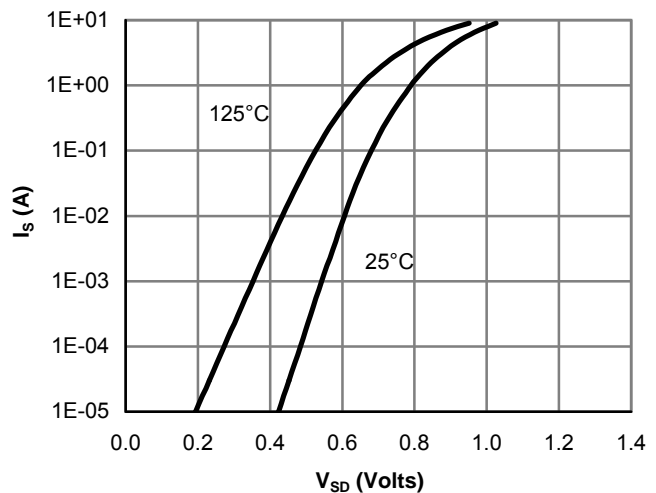


Figure 6: Body-Diode Characteristics

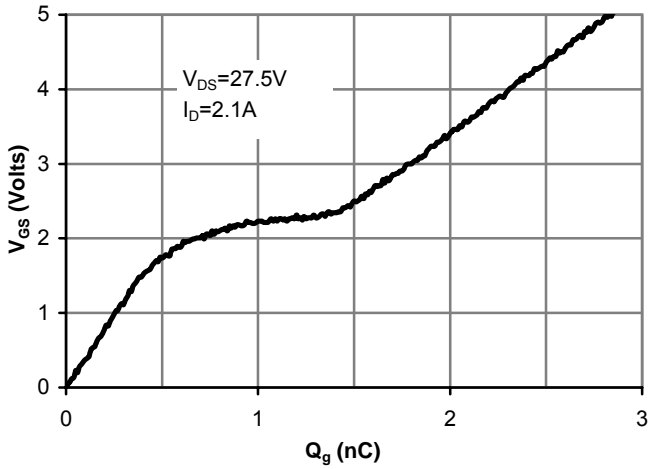


Figure 7: Gate-Charge Characteristics

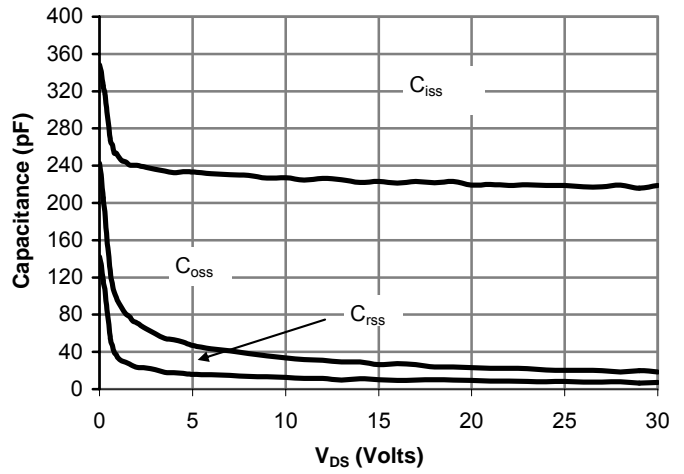


Figure 8: Capacitance Characteristics

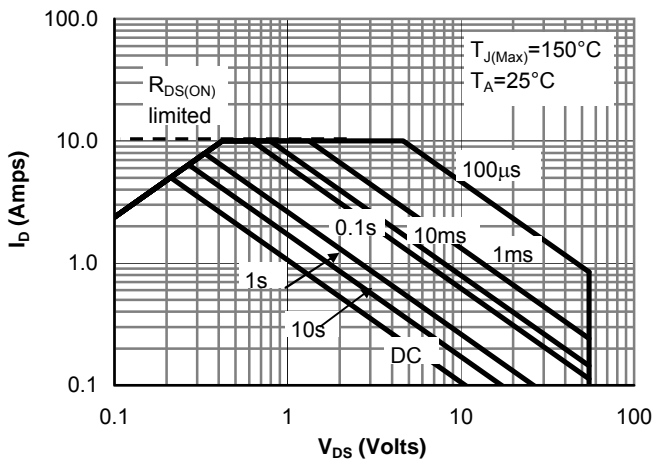


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

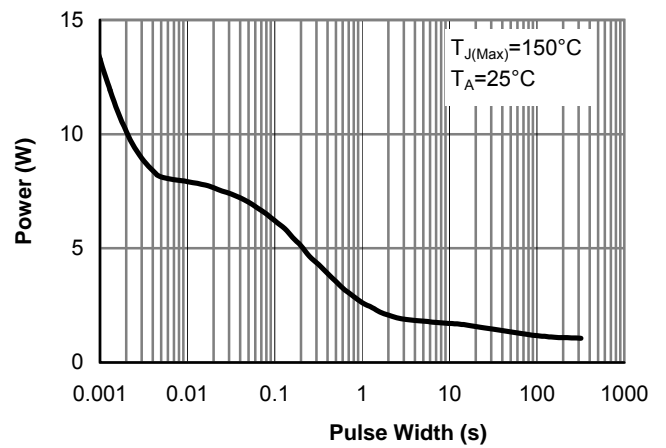


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

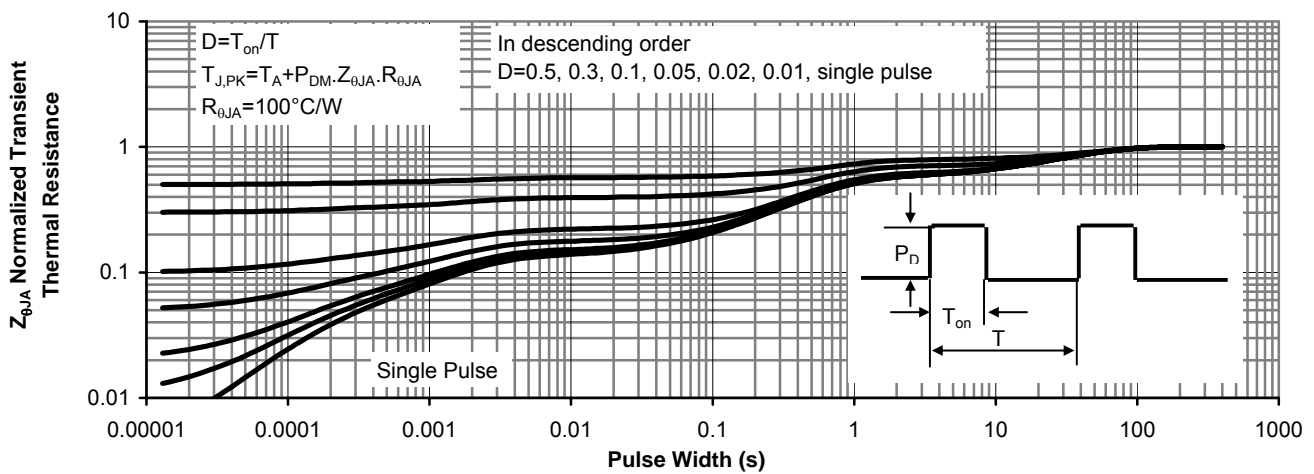
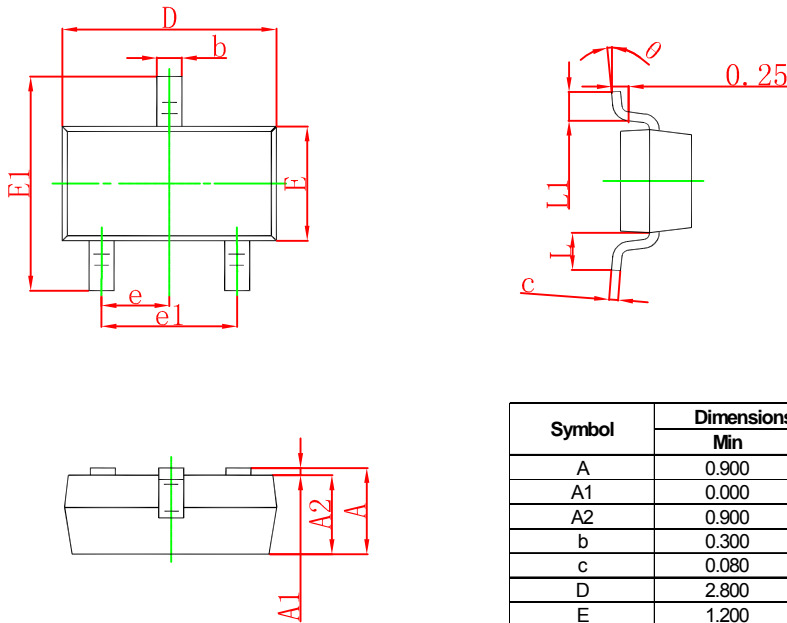


Figure 11: Normalized Maximum Transient Thermal Impedance

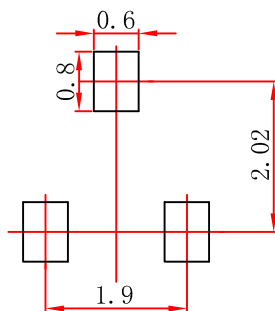


SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		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	0.080	0.150	0.003	0.006
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	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.



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