

SI2318CDS

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^a	Q _g (Typ.)
40	0.042 at V _{GS} = 10 V	5.6	2.9 nC
	0.051 at V _{GS} = 4.5 V	5.1	

FEATURES

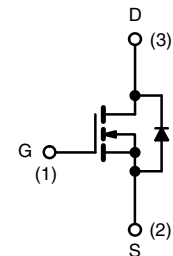
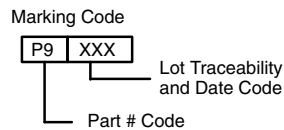
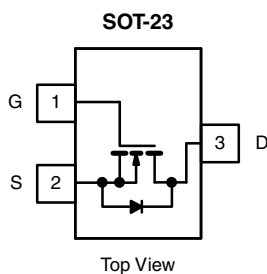
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFET
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- DC/DC Converters
- Load Switch
- Portable and Consumer Applications



Ordering Information: SI2318CDS-T1-GE3 (Lead (Pb)-free and Halogen-free)

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C, unless otherwise noted)				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	40	V	
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	5.6 ^a	A
		T _C = 70 °C	4.5	
		T _A = 25 °C	4.3 ^{b, c}	
		T _A = 70 °C	3.5 ^{b, c}	
Pulsed Drain Current	I _{DM}	20		
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	1.75	
		T _A = 25 °C	1.04 ^{b, c}	
Maximum Power Dissipation	P _D	T _C = 25 °C	2.1	W
		T _C = 70 °C	1.3	
		T _A = 25 °C	1.25 ^{b, c}	
		T _A = 70 °C	0.8 ^{b, c}	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 150	°C	
Soldering Recommendations (Peak Temperature)		260		

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{b, d}	R _{thJA}	80	100	°C/W	
Maximum Junction-to-Foot (Drain)	R _{thJF}	40	60		

Notes:

- a. Based on T_C = 25 °C
- b. Surface mounted on 1" x 1" FR4 board.
- c. t = 5 s.
- d. Maximum under steady state conditions is 125 °C/W.



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SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	40			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = 250 μA		39		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			- 4.7		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1.2		2.5	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40 V, V _{GS} = 0 V			1	μA
		V _{DS} = 40 V, V _{GS} = 0 V, T _J = 70 °C			10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ 5 V, V _{GS} = 10 V	20			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V, I _D = 4.3 A		0.035	0.042	Ω
		V _{GS} = 4.5 V, I _D = 3.9 A		0.041	0.051	
Forward Transconductance ^a	g _{fs}	V _{DS} = 20 V, I _D = 4.3 A		17		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = 20 V, V _{GS} = 0 V, f = 1 MHz		340		pF
Output Capacitance	C _{oss}			60		
Reverse Transfer Capacitance	C _{rss}			30		
Total Gate Charge	Q _g	V _{DS} = 20 V, V _{GS} = 10 V, I _D = 4.3 A		5.8	9	nC
		V _{DS} = 20 V, V _{GS} = 4.5 V, I _D = 4.3 A		2.9	6	
Gate-Source Charge	Q _{gs}			1.1		
Gate-Drain Charge	Q _{gd}		0.9			
Gate Resistance	R _g	f = 1 MHz	0.6	3.3	6.6	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 20 V, R _L = 5.7 Ω I _D ≅ 3.5 A, V _{GEN} = 4.5 V, R _g = 1 Ω		12	20	ns
Rise Time	t _r			50	75	
Turn-Off Delay Time	t _{d(off)}			10	20	
Fall Time	t _f			8	16	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 20 V, R _L = 5.7 Ω I _D ≅ 3.5 A, V _{GEN} = 10 V, R _g = 1 Ω		7	14	
Rise Time	t _r			20	30	
Turn-Off Delay Time	t _{d(off)}			14	21	
Fall Time	t _f			8	16	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			1.75	A
Pulse Diode Forward Current	I _{SM}				20	
Body Diode Voltage	V _{SD}	I _S = 3.5 A, V _{GS} = 0 V		0.85	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = 3.5 A, dI/dt = 100 A/μs, T _J = 25 °C		15	23	ns
Body Diode Reverse Recovery Charge	Q _{rr}			7	14	nC
Reverse Recovery Fall Time	t _a			11		ns
Reverse Recovery Rise Time	t _b			4		

Notes:

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %
- b. Guaranteed by design, not subject to production testing.