



SI2336DS

PRODUCT SUMMARY			
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^a	Q _g (Typ.)
30	0.042 at V _{GS} = 4.5 V	5.2	5.7 nC
	0.046 at V _{GS} = 2.5 V	4.9	
	0.052 at V _{GS} = 1.8 V	4.1	

FEATURES

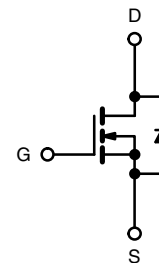
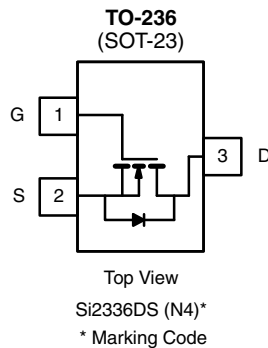
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFET
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- DC/DC Converters
- Boost Converters



N-Channel MOSFET

Ordering Information: Si2336DS-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}	30	V
Gate-Source Voltage	V _{GS}	± 8	
Continuous Drain Current (T _J = 150 °C)	I _D	T _C = 25 °C	5.2
		T _C = 70 °C	4.1
		T _A = 25 °C	4.3 ^{b, c}
		T _A = 70 °C	3.5 ^{b, c}
Pulsed Drain Current	I _{DM}	20	A
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C	
		T _A = 25 °C	1.0 ^{b, c}
Maximum Power Dissipation	P _D	T _C = 25 °C	1.8
		T _C = 70 °C	1.1
		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) ^{d, e}		260	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, d}	t ≤ 5 s	R _{thJA}	80	100	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R _{thJF}	55	70	

Notes:

- T_C = 25 °C.
- Surface mounted on 1" x 1" FR4 board.
- t = 5 s.
- Maximum under steady state conditions is 130 °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	30			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = 250 μA		31		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			- 2.7		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.4		1	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 8 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C			10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 5 V, V _{GS} = 10 V	10			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 3.8 A		0.034	0.042	Ω
		V _{GS} = 2.5 V, I _D = 3.6 A		0.038	0.046	
		V _{GS} = 1.8 V, I _D = 2 A		0.041	0.052	
Forward Transconductance ^a	g _{fs}	V _{DS} = 15 V, I _D = 3.8 A		30		S
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		560		pF
Output Capacitance	C _{oss}			60		
Reverse Transfer Capacitance	C _{rss}			27		
Total Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 3.4 A		10	15	nC
		V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 3.4 A		5.7	8.6	
Gate-Source Charge	Q _{gs}			0.85		
Gate-Drain Charge	Q _{gd}			0.75		
Gate Resistance	R _g	f = 1 MHz	0.6	3	6	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 4.3 Ω I _D ≅ 3.5 A, V _{GEN} = 4.5 V, R _g = 1 Ω		6	12	ns
Rise Time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			20	40	
Fall Time	t _f			10	20	
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15 V, R _L = 4.3 Ω I _D ≅ 3.5 A, V _{GEN} = 8 V, R _g = 1 Ω		5	10	
Rise Time	t _r			10	20	
Turn-Off Delay Time	t _{d(off)}			17	30	
Fall Time	t _f			10	20	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			1.5	A
Pulse Diode Forward Current	I _{SM}				20	
Body Diode Voltage	V _{SD}	I _S = 3.5 A, V _{GS} = 0 V		0.8	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	30	ns
Body Diode Reverse Recovery Charge	Q _{rr}			6	12	nC
Reverse Recovery Fall Time	t _a			8		ns
Reverse Recovery Rise Time	t _b			7		

Notes:

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