SI2351DS

MOSFET PRODUCT SUMMARY			
V_{DS} (V)	$R_{DS(on)}$ (Ω)	I_D (A)[a]	Q_g (Typ.)
- 20	0.115 at V_{GS} = - 4.5 V	- 3.0	3.2 nC
	0.205 at V_{GS} = - 2.5 V	- 2.2	

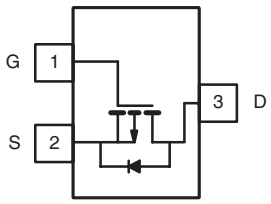
FEATURES

- **Halogen-free Option Available**
- TrenchFET® Power MOSFET
- PWM Optimized
- 100 % R_g Tested

Pb-free

RoHS
COMPLIANT

TO-236
(SOT-23)



Top View
Si2351DS (G1)*
* Marking Code

Ordering Information: Si2351DS-T1-E3 (Lead (Pb)-free)
Si2351DS-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}	- 20	V
Gate-Source Voltage		V_{GS}	± 12	
Continuous Drain Current (T_J = 150 °C)	T_C = 25 °C	I_D	- 2.8	A
	T_C = 70 °C		- 2.4	
	T_A = 25 °C		- 2.2[b, c]	
	T_A = 70 °C		- 1.8[b, c]	
Pulsed Drain Current		I_{DM}	- 10	
Continuous Source-Drain Diode Current	T_C = 25 °C	I_S	- 2.0	
	T_A = 25 °C		- 0.91[b, c]	
Maximum Power Dissipation	T_C = 25 °C	P_D	2.1	W
	T_C = 70 °C		1.5	
	T_A = 25 °C		1.0[b, c]	
	T_A = 70 °C		0.7[b, c]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typical**	**Maximum**	**Unit**
Maximum Junction-to-Ambient[b, d]	≤ 5 s	R_{thJA}	90	115	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	60	75	

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 130 °C/W.

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MOSFET SPECIFICATIONS T_J = 25 °C, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{DS} = 0 V, I_D = - 250 µA	- 20			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = - 250 µA		- 16.7		mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			2.1		
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = - 250 µA	- 0.6		- 1.5	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = - 20 V, V_{GS} = 0 V			- 1	µA
		V_{DS} = - 20 V, V_{GS} = 0 V, T_J = 55 °C			- 10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≥ - 5 V, V_{GS} = - 4.5 V	- 10			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = - 4.5 V, I_D = - 2.4 A		0.092	0.115	Ω
		V_{GS} = - 2.5 V, I_D = - 1.8 A		0.164	0.205	
Forward Transconductance[a]	g_{fs}	V_{DS} = - 10 V, I_D = - 2.4 A		5.5		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS} = - 10 V, V_{GS} = 0 V, f = 1 MHz		250		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge	Q_g	V_{DS} = - 10 V, V_{GS} = - 5.0 V, I_D = - 2.4 A		3.4	5.1	nC
		V_{DS} = - 10 V, V_{GS} = - 4.5 V, I_D = - 2.4 A		3.2	5	
Gate-Source Charge	Q_{gs}			0.5		
Gate-Drain Charge	Q_{gd}			1.4		
Gate Resistance	R_g	f = 1 MHz		8.5	13	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = - 10 V, R_L = 5.26 Ω I_D ≅ - 1.9 A, V_{GEN} = - 4.5 V, R_G = 1 Ω		9	14	ns
Rise Time	t_r			30	45	
Turn-Off Delay Time	$t_{d(off)}$			32	48	
Fall Time	t_f			16	24	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C = 25 °C			- 2.0	A
Pulse Diode Forward Current[a]	I_{SM}				- 10	
Body Diode Voltage	V_{SD}	I_S = - 2.0 A		- 0.8	- 1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = - 2.0 A, di/dt = 100 A/µs, T_J = 25 °C		17	26	ns
Body Diode Reverse Recovery Charge	Q_{rr}			5	8	nC
Reverse Recovery Fall Time	t_a			14		ns
Reverse Recovery Rise Time	t_b			3		

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