



**THE DATASHEET OF
DMS3014SSS-13**

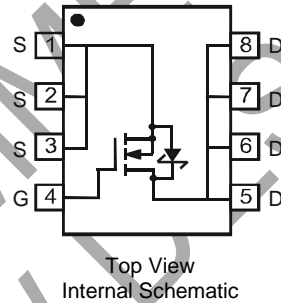


Features

- DIOFET Utilizes a Unique Patented Process to Monolithically Integrate a MOSFET and a Schottky in a Single Die to Deliver:
 - Low $R_{DS(ON)}$ —Minimizes Conduction Losses
 - Low V_{SD} —Reduces Losses Due to Body Diode Conduction
 - Low Q_{rr} —Lower Q_{rr} of the Integrated Schottky Reduces Body Diode Switching Losses
 - Low Gate Capacitance (Q_g/Q_{gs}) Ratio—Reduces Risk of Shoot-Through or Cross Conduction Currents at High Frequencies
 - Avalanche Rugged— I_{AR} and E_{AR} Rated
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Page 5
- Weight: 0.072 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
DMS3014SSS-13	SO-8	2500/Tape & Reel

- Note:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/>.

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	30	V
Gate-Source Voltage	V _{GSS}	±12	V
Continuous Drain Current (Note 5) V _{GS} = 4.5V	I _D	10.4	A
Steady State		6.6	
Pulsed Drain Current (Note 6)	I _{DM}	63	A
Avalanche Current (Notes 6 & 7)	I _{AR}	30	A
Repetitive Avalanche Energy (Notes 6 & 7) L = 0.1mH	E _{AR}	45	mJ

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1.55	W
Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 5)	R _{θJA}	81.3	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Notes: 5. Device mounted on 1in x 1in FR-4 PCB with 2oz. Copper. The value in any given application depends on the user's specific board design.
6. Repetitive rating, pulse width limited by junction temperature.
7. I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep T_J = 25°C.

Electrical Characteristics @ T_A = 25°C unless otherwise stated

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV _{DSS}	30	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	100	μA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	1.0	-	2.2	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	9	13	mΩ	V _{GS} = 10V, I _D = 10.4A
		—	10	14		V _{GS} = 4.5V, I _D = 10.4A
Forward Transfer Admittance	Y _{fs}	—	23	—	S	V _{DS} = 5V, I _D = 10.4A
Diode Forward Voltage	V _{SD}	—	0.37	0.5	V	V _{GS} = 0V, I _S = 1A
Maximum Body-Diode + Schottky Continuous Current	I _S	—	—	5	A	—
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	2296	—	pF	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	164	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	120	—	pF	
Gate Resistance	R _g	0.26	1.3	2.34	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge V _{GS} = 4.5V	Q _g	—	19.3	—	nC	V _{DS} = 15V, V _{GS} = 10V, I _D = 10.4A
Total Gate Charge V _{GS} = 10V	Q _g	—	45.7	—	nC	
Gate-Source Charge	Q _{gs}	—	5.0	—	nC	
Gate-Drain Charge	Q _{gd}	—	2.9	—	nC	
Turn-On Delay Time	t _{D(on)}	—	5.5	—	ns	V _{GS} = 10V, V _{DS} = 15V, R _G = 3Ω, R _L = 1.2Ω
Turn-On Rise Time	t _r	—	24.4	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	33.1	—	ns	
Turn-Off Fall Time	t _f	—	6.6	—	ns	

Notes: 8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to production testing.

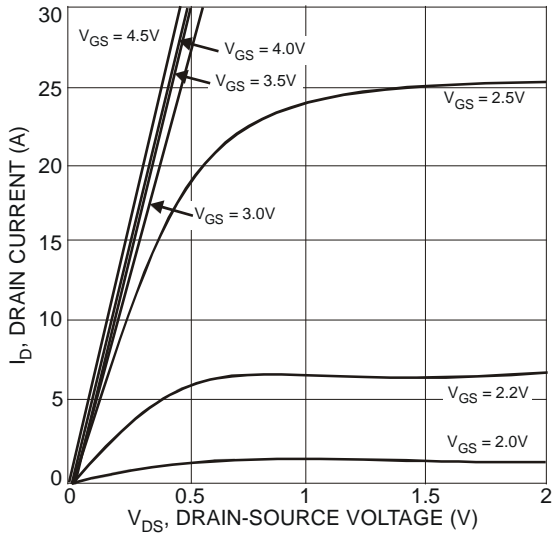


Fig. 1 Typical Output Characteristic

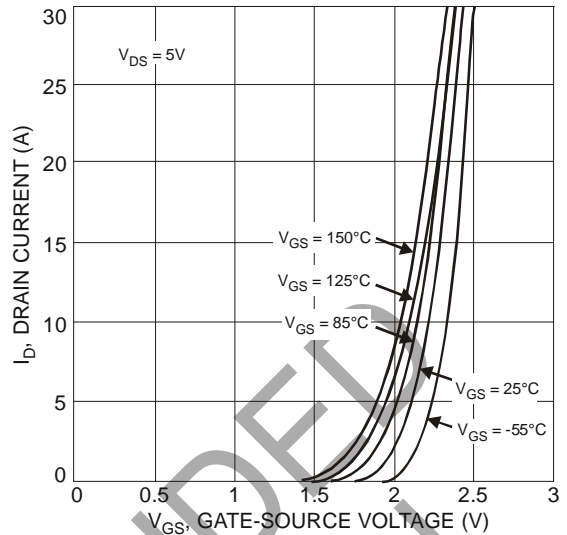


Fig. 2 Typical Transfer Characteristic

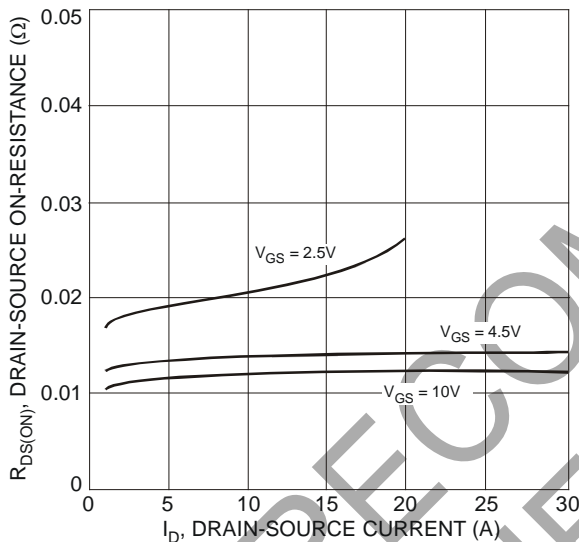


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

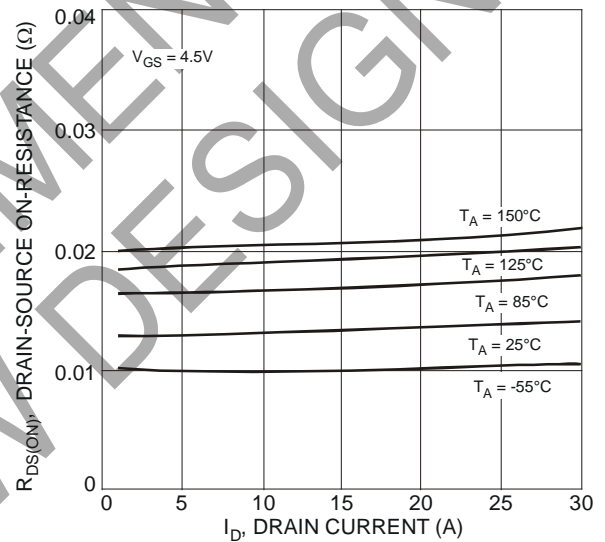


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

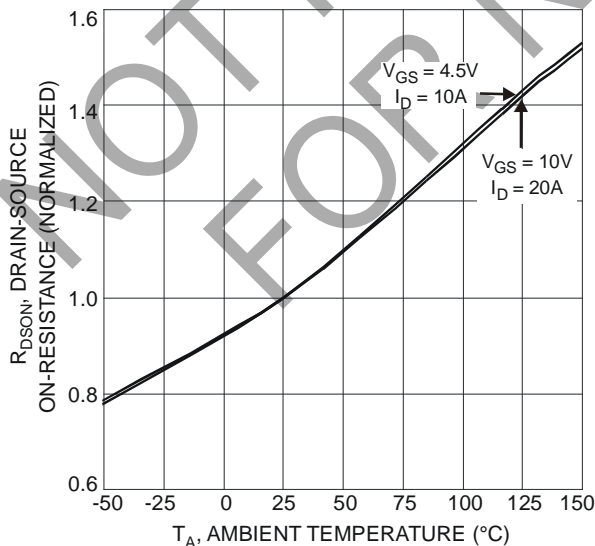


Fig. 5 On-Resistance Variation with Temperature

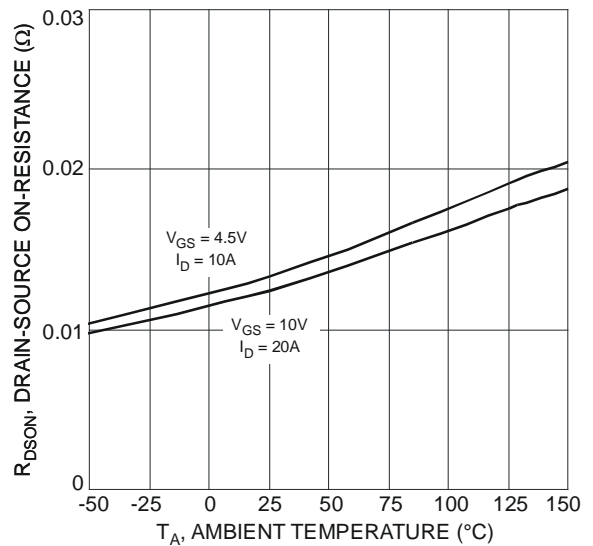


Fig. 6 On-Resistance Variation with Temperature

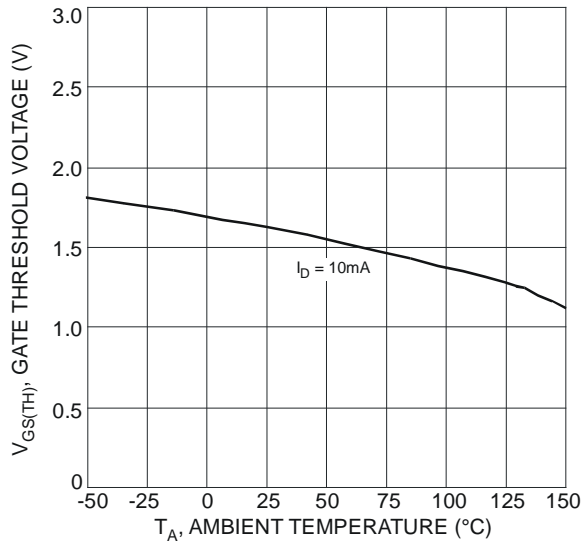


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

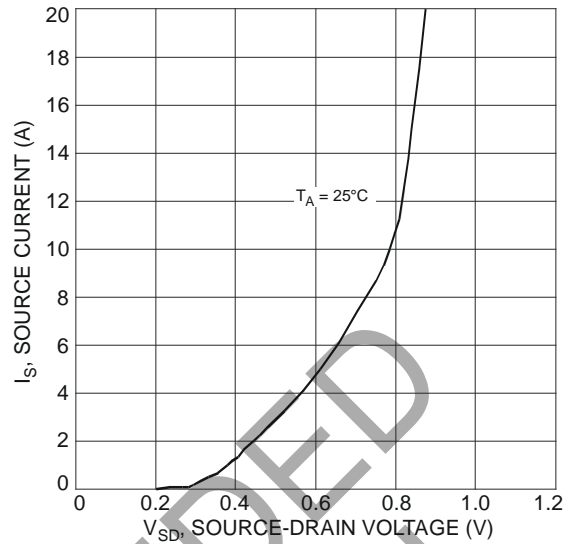


Fig. 8 Diode Forward Voltage vs. Current

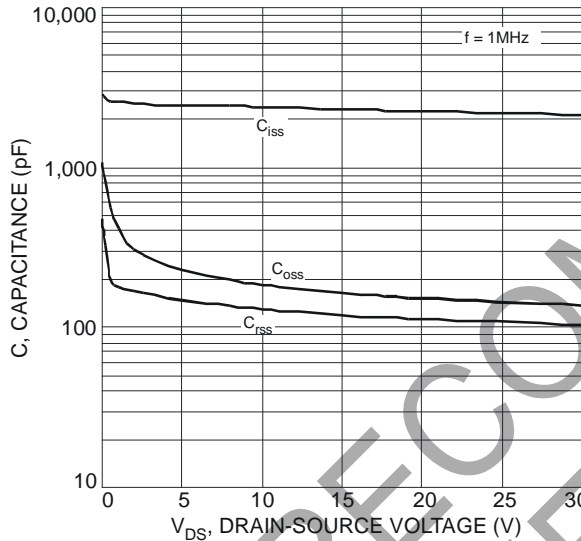


Fig. 9 Typical Total Capacitance

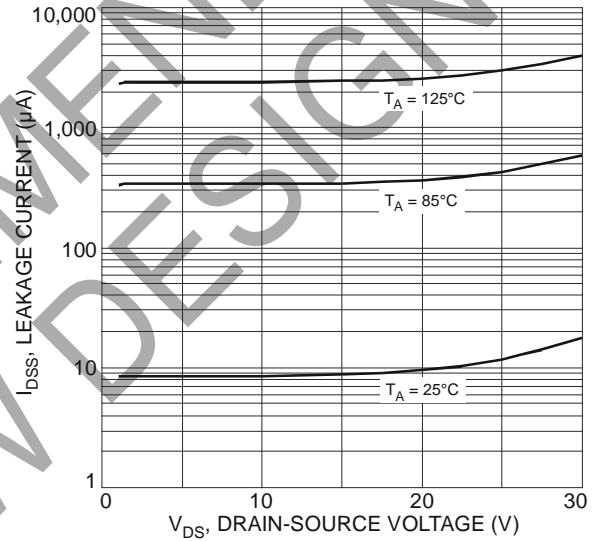


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

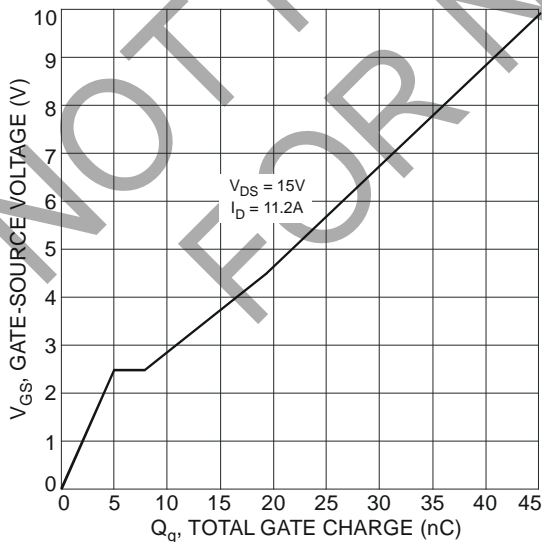


Fig. 11 Gate-Source Voltage vs. Total Gate Charge

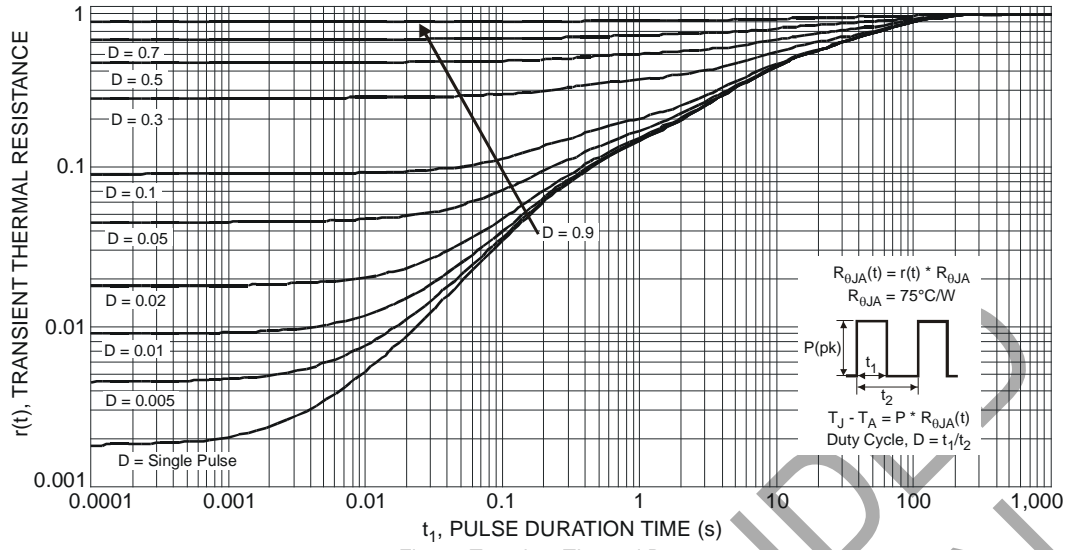
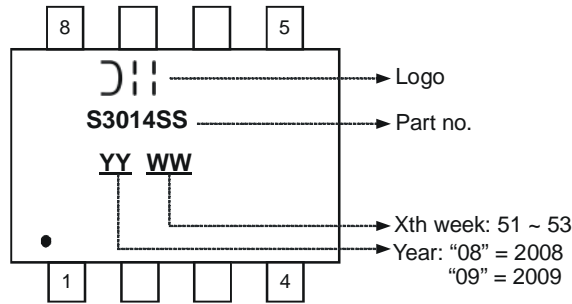


Fig. 12 Transient Thermal Response

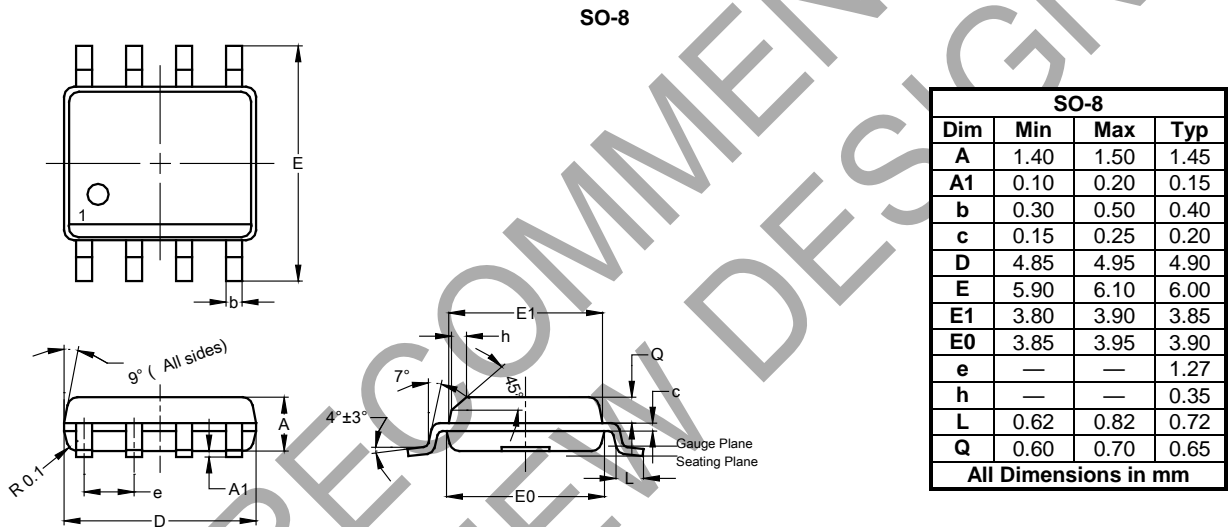
NOT RECOMMENDED FOR NEW DESIGN

Marking Information



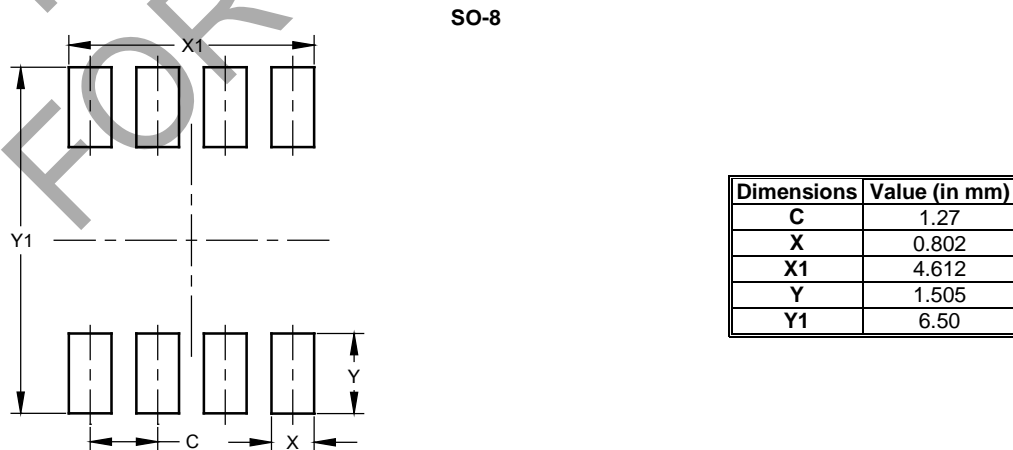
Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



Suggested Pad Layout

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