



P-CHANNEL ENHANCEMENT MODE MOSFET WITH INTEGRATED SCHOTTKY DIODE

Product Summary

	MOSFET						
V _{(BR)DSS}	R _{DS(on) max}	I _D					
-20V	85mΩ @ V _{GS} = -10V	-3.3A					
-200	125mΩ @ V_{GS} = -4.5 V	-2.8A					
SCHOTTKY DIODE							
V_{R}	V _{F max}	lo					
20V	400mV @ I _F = 0.5A	1.0A					
20 V	470mV @ I _F = 1.0A	1.UA					

Description

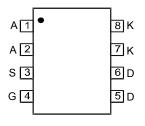
This new generation MOSFET has been designed to minimize the onstate resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- DC-DC Converters
- Power Management Functions
- Backlighting



Top View



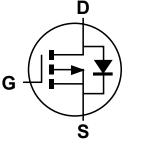
Top View Internal Schematic

Features and Benefits

- Low Input Capacitance
- MOSFET with Low R_{DS(ON)} Minimize Conduction Losses
- Schottky Diode with Low Forward Voltage Drop
- · Fast Switching Speed
- 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
- Terminals: Finish Matte Tin annealed over Copper leadframe Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.074 grams (approximate)



Q1 P-Channel MOSFET



D1 Schottky Diode

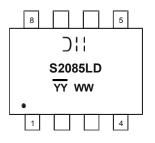
Ordering Information (Note 4)

Part Number	Case	Packaging
DMS2085LSD-13	SO-8	2,500/Tape & Reel

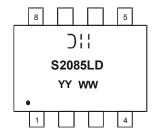
Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 2. See http://www.diodes.com/quality/lead_free.html 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/products/packages.html.

Marking Information



Chengdu A/T Site



Shanghai A/T Site

);; = Manufacturer's Marking S2085LD = Product Type Marking Code YYWW = Date Code Marking YY or YY = Year (ex: 13 = 2013) WW = Week (01 - 53)

YY = Date Code Marking for SAT (Shanghai Assembly/ Test site)
YY = Date Code Marking for CAT (Chengdu Assembly/ Test site)



Maximum Ratings – P-CHANNEL MOSFET – Q1 (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units		
Drain-Source Voltage	V_{DSS}	-20	V		
Gate-Source Voltage	V_{GSS}	±20	V		
Continuous Prain Current (Note 6) V = 40V	Steady State	T _A = +25°C T _A = +70°C	I _D	-3.3 -2.7	Α
Continuous Drain Current (Note 6) V _{GS} = 10V	t<10s	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	-4.3 -3.4	Α
Maximum Body Diode Forward Current (Note 6)	Is	-1.5	Α		
Pulsed Drain Current (10µs pulse, duty cycle = 10	I _{DM}	-11.2	Α		
Avalanche Current (Notes 7) L = 5mH	I _{AR}	-5	Α		
Avalanche Energy (Notes 7) L = 5mH	E _{AR}	50	mJ		

Maximum Ratings – SCHOTTKY – D1 (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	20	٧
Average Rectified Output Current (Note 7, t<10s)	I _O	1	Α
Peak Repetitive Forward Current (Note 7, t<10s)	I _{FRM}	2	Α
Non-Repetitive Peak Forward Surge Current (Note 7, t<10s) Single half sine-wave superimposed on rated load	I _{FSM}	20	А

Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units	
Total Power Dissipation (Note 5)	T _A = +25°C	D	1.1	W	
Total Fower Dissipation (Note 5)	T _A = +70°C	P_{D}	1.8		
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	Б	108	°C/W	
Thermal Resistance, Junction to Ambient (Note 5)	t<10s	$R_{ heta JA}$	65		
Total Power Dissipation (Note 6)	T _A = +25°C	0	1.8	W	
Total Fower Dissipation (Note 6)	T _A = +70°C	P_{D}	2.3		
Thermal Begintance, Junction to Ambient (Note 6)	Steady state	В	78	°C/W	
Thermal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{ heta JA}$	50		
Thermal Resistance, Junction to Case (Note 6)	$R_{ heta JC}$	22			
Operating and Storage Temperature Range		$T_{J,}T_{STG}$	-55 to +150	°C	

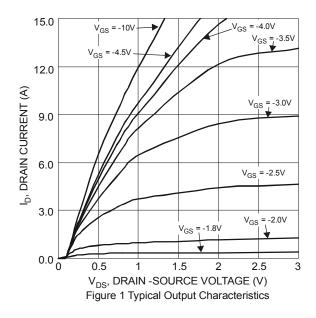


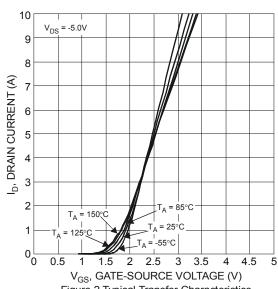
Electrical Characteristics P-Channel Q1 (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)							
Drain-Source Breakdown Voltage	BV _{DSS}	-20	_	_	V	$V_{GS} = 0V, I_D = -250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}		_	-1	μΑ	V _{DS} = -20V, V _{GS} = 0V	
Gate-Source Leakage	I _{GSS}		_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(th)}	-0.5	-1.5	-2.2	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
Statia Dunin Cauras On Basistanas	J		70	85	0	$V_{GS} = -10V, I_D = -3.05A$	
Static Drain-Source On-Resistance	R _{DS(ON)}		100	125	mΩ	V _{GS} = -4.5V, I _D = -1.50A	
Diode Forward Voltage	V_{SD}		-0.8	-1.0	V	V _{GS} = 0V, I _S = -1.0A	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}		353	_		V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz	
Output Capacitance	Coss		49		pF		
Reverse Transfer Capacitance	C_{rss}		41	_		I - I.UIVITZ	
Gate Resistance	R_{G}		6.2		Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$	
Total Gate Charge (V _{GS} = -4.5V)	Q_g		3.7				
Total Gate Charge (V _{GS} = -10V)	Q_g		7.8	_	nC	45)/ 4	
Gate-Source Charge	Q_{gs}		1.1	_	nC	V _{DS} = -15V, I _D = -3A	
Gate-Drain Charge	Q_{gd}		1.3	_			
Turn-On Delay Time	t _{D(on)}		3.3	_			
Turn-On Rise Time	t _r	_	3.0	_	·- O	V _{DS} = -15V,R _L = 15Ω	
Turn-Off Delay Time	t _{D(off)}		14	_	nS	$V_{GS} = -10V$, $R_{G} = 6\Omega$	
Turn-Off Fall Time	t _f		6.8	_			
Body Diode Reverse Recovery Time	t _{rr}	_	33		nS	I _S = -3.05A, dI/dt = 100A/µs	
Body Diode Reverse Recovery Charge	Qrr	_	46		nC	I _S = -3.05A, dI/dt = 100A/µs	

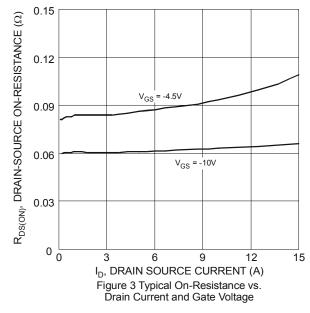
Notes:

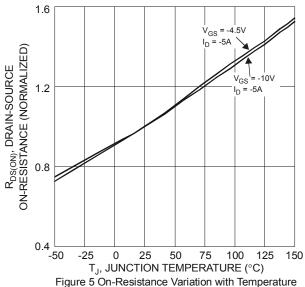
- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
- 7. I_{AS} and E_{AS} rating are based on low frequency and duty cycles to keep T_J = +25°C
- 8. Short duration pulse test used to minimize self-heating effect.
- 9. Guaranteed by design. Not subject to product testing.











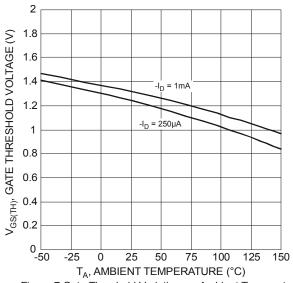
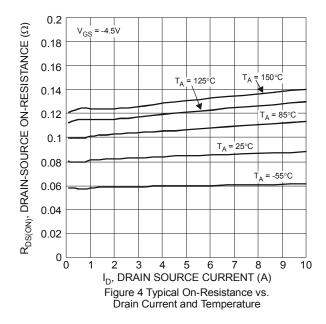
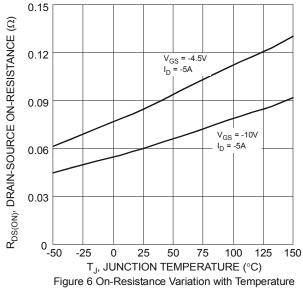


Figure 7 Gate Threshold Variation vs. Ambient Temperature





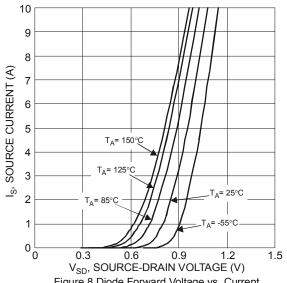
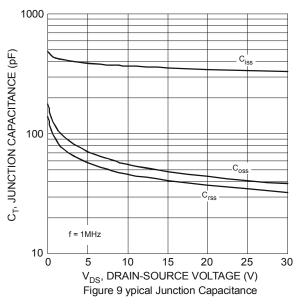
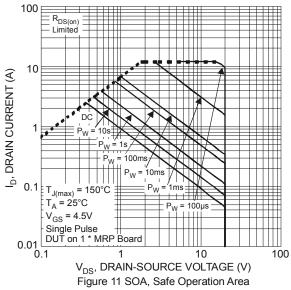
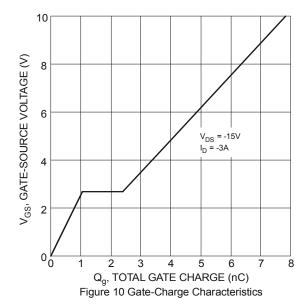


Figure 8 Diode Forward Voltage vs. Current







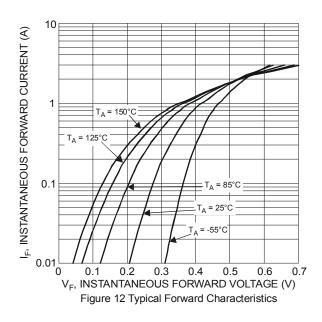


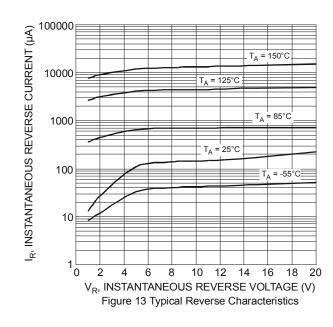


Electrical Characteristics – SCHOTTKY – D1 (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	$V_{(BR)R}$	20	35		V	I _R = 1mA
Forward Voltage (Note 8)	VF	_	_	0.40 0.47	· · · · · · · · · · · · · · · · · · ·	I _F = 0.5A I _F = 1.0A
Reverse Current (Note 8)	I _R		30	80	μΑ	V _R = 20V

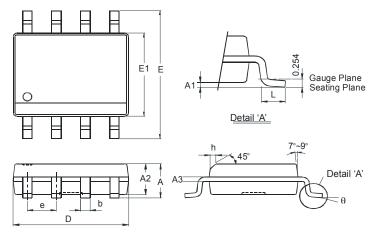
Notes: 8. Short duration pulse test used to minimize self-heating effect.





Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

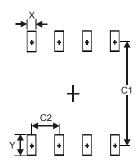


SO-8						
Dim	Min Max					
Α	-	1.75				
A 1	0.10	0.20				
A2	1.30	1.50				
A3	0.15	0.25				
b	0.3 0.5					
D	4.85 4.95					
Е	5.90 6.10					
E1	3.85 3.95					
е	e 1.27 Typ					
h	- 0.35					
L	0.62	0.82				
θ	0°	8°				
All Dimensions in mm						



Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Х	0.60
Υ	1.55
C1	5.4
C2	1.27

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многоканальный

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