



100V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D T _C = +25°C
100V	9.5mΩ @ V _{GS} = 10V	29.5A

Description and Applications

This new generation N-Channel Enhancement Mode MOSFET is designed to minimize $R_{DS(ON)}$ and yet maintain superior switching performance. This device is ideal for use in Notebook battery power management and Loadswitch.

- Backlighting
- Power Management Functions
- DC-DC Converters

Features and Benefits

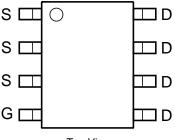
- 100% Unclamped Inductive Switch (UIS) Test in Production
- High Conversion Efficiency
- Low R_{DS(ON)} Minimizes On State Losses
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

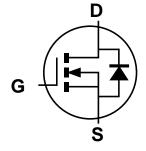
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.074 grams (Approximate)



Top View



Top View Internal Schematic



Equivalent circuit

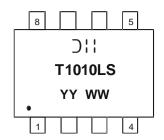
Ordering Information (Note 4)

Part Number	Case	Packaging
DMT10H010LSS-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.
- 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



] | = Manufacturer's Marking T1010LS = Product Type Marking Code YYWW = Date Code Marking YY or YY = Year (ex: 15 = 2015) WW = Week (01 to 53)



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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	100	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Prain Current (Note C) V 40V	Steady State	$T_A = +25$ °C $T_A = +70$ °C	I _D	11.5 9.2	А
Continuous Drain Current (Note 6), V _{GS} = 10V			I _D	29.5 18.6	А
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	75	Α		
Maximum Continuous Body Diode Forward Current (Note 6)			Is	3	Α
Avalanche Current (Note 8), L=0.3mH			I _{AS}	10	Α
Avalanche Energy (Note 8), L=0.3mH			E _{AS}	15	mJ

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

Characteristic		Symbol	Value	Unit	
Total Power (Note 5)		P_D	1.4	W	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	7	90	°C/W	
Thermal Resistance, Junction to Ambient (Note 5)	t<10s	$R_{\theta JA}$	48.8	C/vv	
Total Power Dissipation (Note 6)		P_D	1.9	W	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	7	66	•c/W	
Thermal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{\theta JA}$	35.8	C/VV	
Thermal Resistance, Junction to Case (Note 6)		$R_{ heta JC}$	10.1	°C/W	
Operating and Storage Temperature Range		$T_{J,}T_{STG}$	-55 to +150	°C	

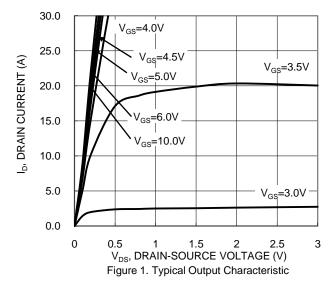
Electrical Characteristics (T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	100	_	_	V	$V_{GS} = 0V$, $I_D = 1mA$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μA	$V_{DS} = 80V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(TH)}	1.4	1.9	2.8	V	$V_{DS} = V_{GS}, I_D = 250 \mu A$	
		1	8	9.5		$V_{GS} = 10V, I_D = 13A$	
Static Drain-Source On-Resistance	R _{DS(ON)}		9	12	mΩ	$V_{GS} = 6V, I_D = 13A$	
		I	10	14.5		$V_{GS} = 4.5V, I_D = 5A$	
Diode Forward Voltage	V _{SD}	_	0.8	1.3	V	$V_{GS} = 0V, I_{S} = 13A$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	1	2592	_		$V_{DS} = 50V$, $V_{GS} = 0V$ f = 1MHz	
Output Capacitance	Coss	_	792	_	pF		
Reverse Transfer Capacitance	C _{rss}	_	45	_			
Gate Resistance	Rg	-	2	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge	Qg	_	53.7	_		501/ 1 404	
Gate-Source Charge	Q _{gs}	_	10.6	_	nC	$V_{DD} = 50V, I_D = 13A,$	
Gate-Drain Charge	Q_{gd}	_	8.2	_		$V_{GS} = 10V$	
Turn-On Delay Time	t _{D(ON)}	_	11.6	_			
Turn-On Rise Time	t _R	_	14.1	_	ns	$V_{DD} = 50V, V_{GS} = 10V,$ $I_{D} = 13A, R_{g} = 6\Omega$	
Turn-Off Delay Time	t _{D(OFF)}	_	42.9		115		
Turn-Off Fall Time	t _F	_	22				
Reverse Recovery Time	t _{RR}	_	49.8	_	ns I do A divide do A A		
Reverse Recovery Charge	Q _{RR}	-	85.1	_	nC	$I_F = 13A$, di/dt = 100A/ μ s	

5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.

Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate
 Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject to product testing.





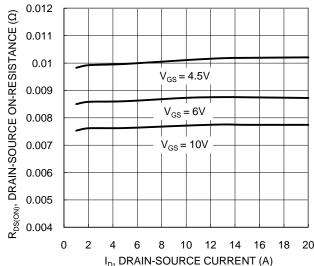


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

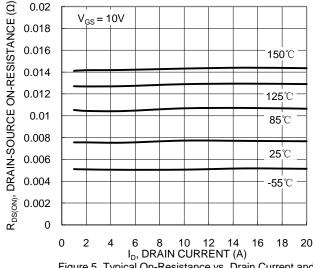
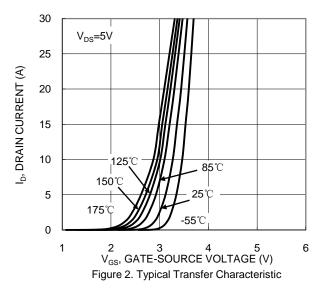
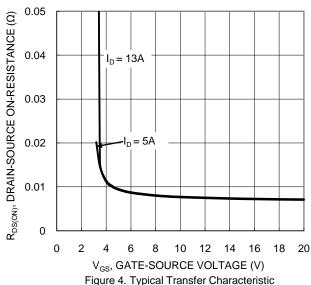
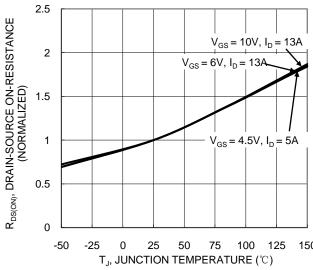


Figure 5. Typical On-Resistance vs. Drain Current and Temperature











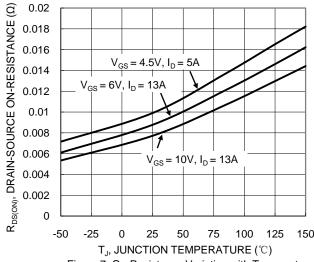


Figure 7. On-Resistance Variation with Temperature

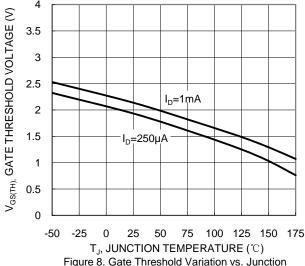
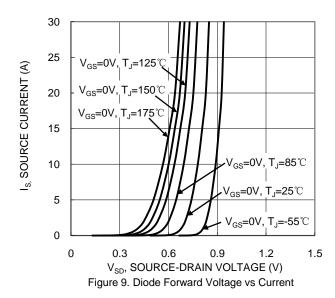


Figure 8. Gate Threshold Variation vs. Junction Temperature



10 8 Vgs (V) $= 50V, I_D = 13A$ 6 4 2 0 20 25 30 35 40 45 50 5 10 15 Qg - (nC) Figure 11. Gate Charge

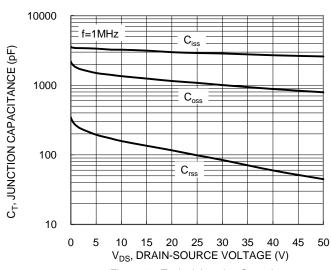
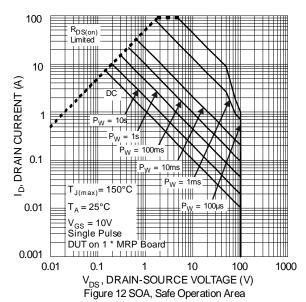
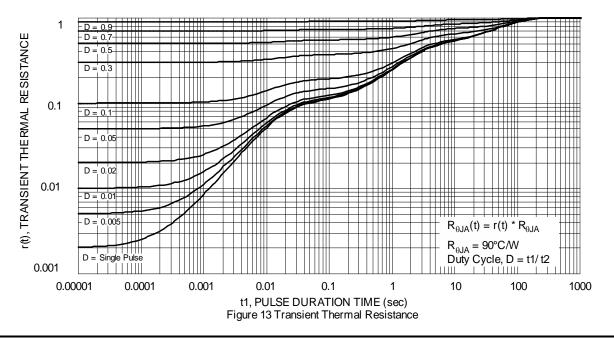


Figure 10. Typical Junction Capacitance



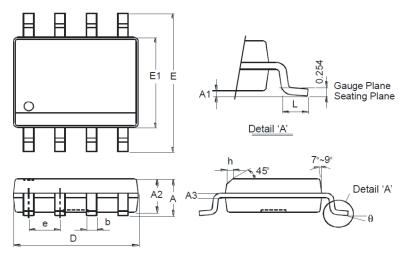




Package Outline Dimensions

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

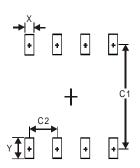




SO-8					
Dim	Min	Max			
Α	-	1.75			
A1	0.10	0.20			
A2	1.30	1.50			
А3	0.15	0.25			
b	0.3	0.5			
D	4.85	4.95			
Е	5.90	6.10			
E1	3.85	3.95			
е	1.27 Typ				
h	-	0.35			
L	0.62	0.82			
θ	0°	8°			
All Dimensions in mm					

Suggested Pad Layout

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



| Dimensions | Value (in mm) | X | 0.60 | Y | 1.55 | C1 | 5.4 |

1.27

C2

SO-8



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