

Product Summary

BV _{DSS}	R _{Ds(ON)} Max	I _D T _C = +25°C
100V	3.2mΩ @ V _{GS} = 10V	153A
	4.5mΩ @ V _{GS} = 4.5V	129A

Description and Applications

This MOSFET is designed to minimize the on-state resistance (R_{Ds(ON)}) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

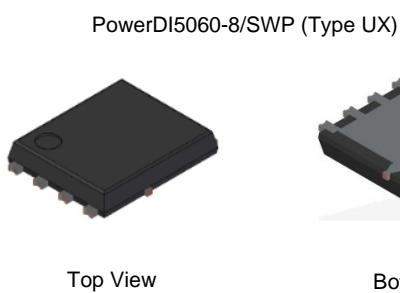
- Engine management systems
- Body control electronics
- DC-DC converters

Features

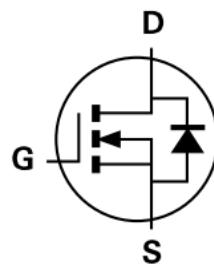
- Rated to +175°C – Ideal for High Ambient Temperature Environments
- 100% Unclamped Inductive Switching (UIS) Test in Production – Ensures More Reliable and Robust End Application
- Low R_{Ds(ON)} – Minimizes On-State Losses
- Low Input Capacitance
- Fast Switching Speed
- Wettable Flank for Improved Optical Inspection
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An automotive-compliant part is available under separate datasheet ([DMTH10H2M2LPSWQ](#))**

Mechanical Data

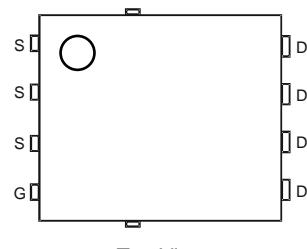
- Package: PowerDI[®]5060-8
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 
- Weight: 0.097 grams (Approximate)



Bottom View



Internal Schematic

Top View
Pin Configuration

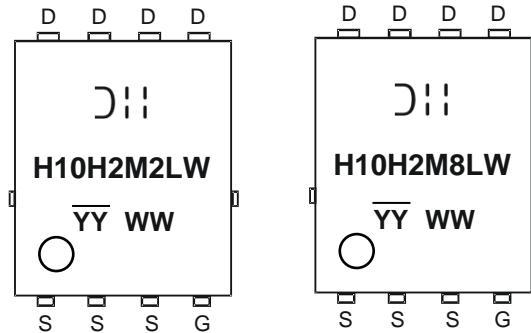
Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMTH10H2M2LPSW-13	PowerDI5060-8/SWP (Type UX)	2500	Tape & Reel

Notes:

1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



DII = Manufacturer's Marking
H10H2M2LW or **H10H2M8LW** = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Two Digits of Year (ex: 25 = 2025)
WW = Week Code (01 to 53)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	100	V
Gate-Source Voltage	V_{GSS}	± 20	V
Continuous Drain Current, $V_{GS} = 10\text{V}$ (Note 6)	I_D	153 108	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)	I_{DM}	612	A
Maximum Continuous Body Diode Forward Current (Note 6)	I_S	153	A
Pulsed Body Diode Forward Current (10 μs Pulse, Duty Cycle = 1%)	I_{SM}	612	A
Avalanche Current, $L = 3\text{mH}$	I_{AS}	25.8	A
Avalanche Energy, $L = 3\text{mH}$	E_{AS}	998.5	mJ

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	4	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	38	°C/W
Total Power Dissipation (Note 6)	P_D	150	W
Thermal Resistance, Junction to Case (Note 6)	$R_{\theta JC}$	1	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +175	°C

Notes: 5. Device mounted on FR-4 substrate PCB, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
 6. Thermal resistance from junction to soldering point (on the exposed drain pad).

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_D = 1\text{mA}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$\text{V}_{\text{DS}} = 80\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$\text{V}_{\text{GS}} = \pm 20\text{V}$, $\text{V}_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$\text{V}_{\text{GS}(\text{TH})}$	1.3	1.9	2.5	V	$\text{V}_{\text{DS}} = \text{V}_{\text{GS}}$, $\text{I}_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$\text{R}_{\text{DS}(\text{ON})}$	—	2.2	3.2	$\text{m}\Omega$	$\text{V}_{\text{GS}} = 10\text{V}$, $\text{I}_D = 30\text{A}$
		—	3.1	4.5		$\text{V}_{\text{GS}} = 4.5\text{V}$, $\text{I}_D = 20\text{A}$
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	$\text{V}_{\text{GS}} = 0\text{V}$, $\text{I}_S = 20\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	6239	—	pF	$\text{V}_{\text{DS}} = 50\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$, $f = 1\text{MHz}$
Output Capacitance	C_{oss}	—	1523	—		
Reverse Transfer Capacitance	C_{rss}	—	44	—		
Gate Resistance	R_g	—	1.1	—	Ω	$\text{V}_{\text{DS}} = 0\text{V}$, $\text{V}_{\text{GS}} = 0\text{V}$, $f = 1\text{MHz}$
Total Gate Charge ($\text{V}_{\text{GS}} = 4.5\text{V}$)	Q_g	—	58	—	nC	$\text{V}_{\text{DS}} = 50\text{V}$, $\text{I}_D = 30\text{A}$
Total Gate Charge ($\text{V}_{\text{GS}} = 10\text{V}$)	Q_g	—	116	—		
Gate-Source Charge	Q_{gs}	—	21	—		
Gate-Drain Charge	Q_{gd}	—	29	—	ns	$\text{V}_{\text{DD}} = 50\text{V}$, $\text{V}_{\text{GS}} = 10\text{V}$, $\text{I}_D = 30\text{A}$, $\text{R}_g = 3\Omega$
Turn-On Delay Time	$\text{t}_{\text{D}(\text{ON})}$	—	12	—		
Turn-On Rise Time	t_r	—	51	—		
Turn-Off Delay Time	$\text{t}_{\text{D}(\text{OFF})}$	—	94	—		
Turn-Off Fall Time	t_F	—	93	—	nC	$\text{I}_F = 30\text{A}$, $\text{di/dt} = 100\text{A}/\mu\text{s}$
Body Diode Reverse-Recovery Time	t_{RR}	—	74	—		
Body Diode Reverse-Recovery Charge	Q_{RR}	—	172	—	nC	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to product testing.

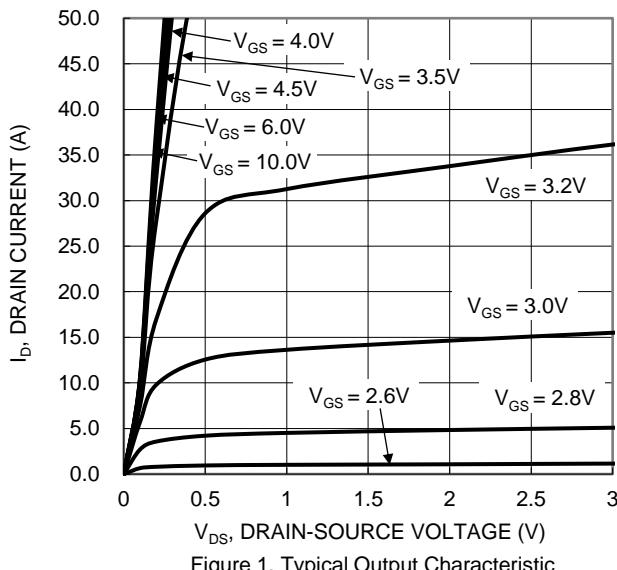


Figure 1. Typical Output Characteristic

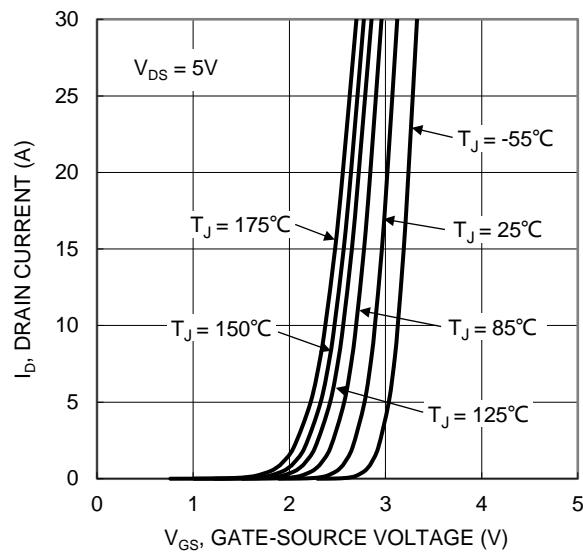


Figure 2. Typical Transfer Characteristic

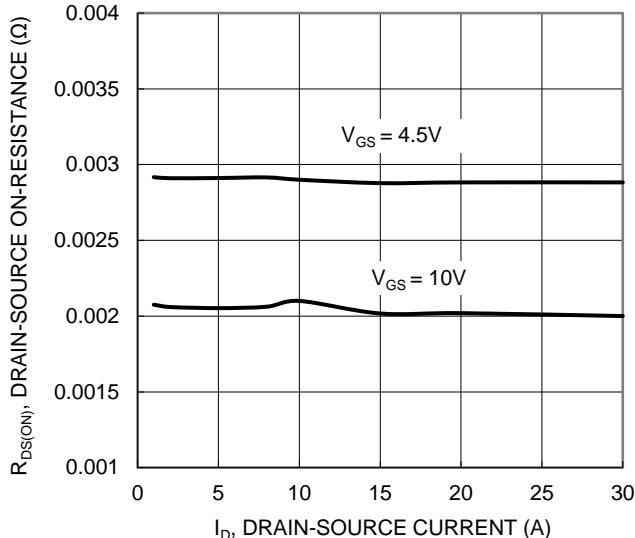


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

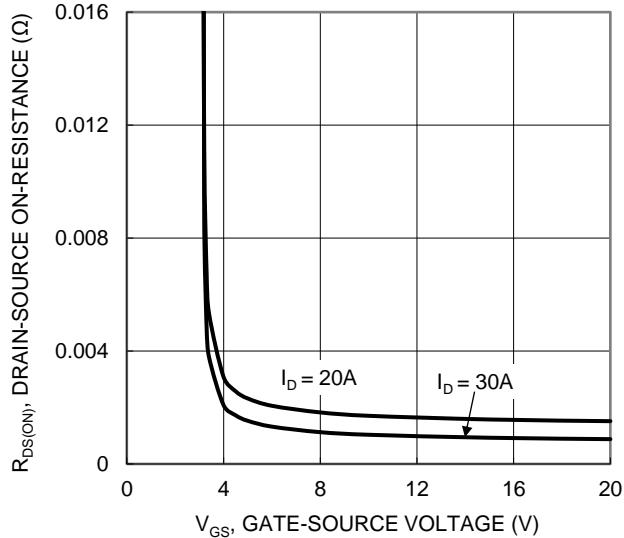


Figure 4. Typical Transfer Characteristic

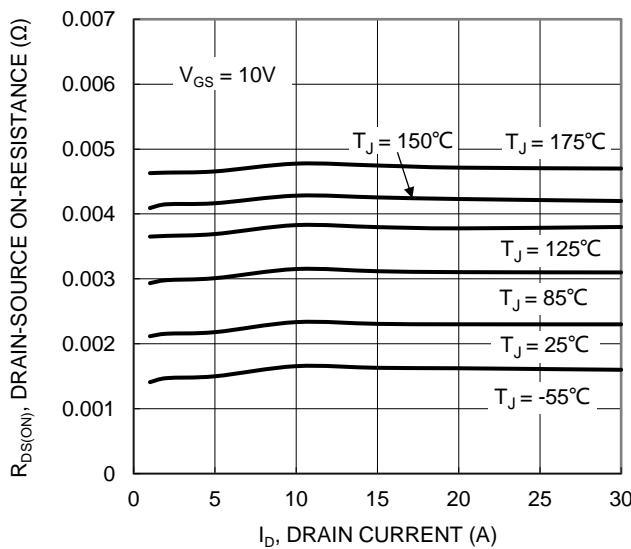


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

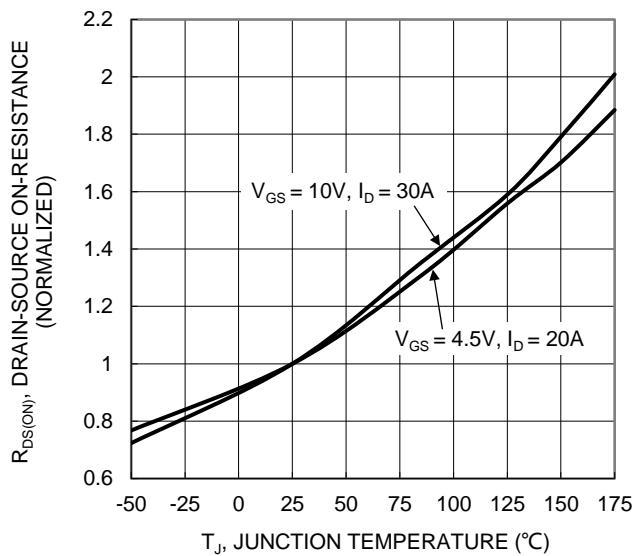
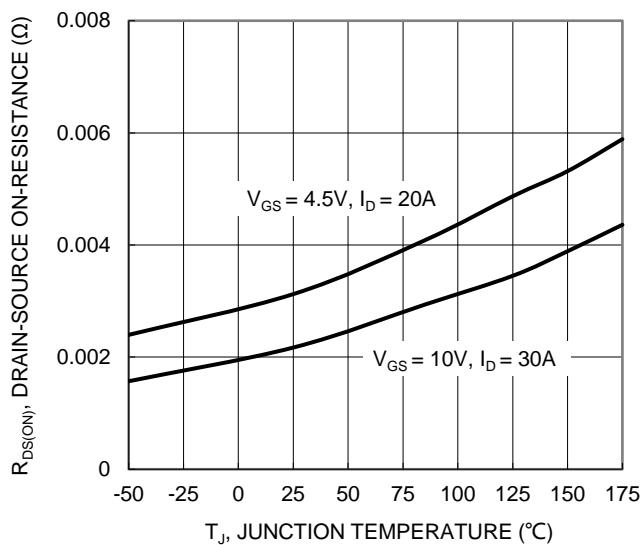
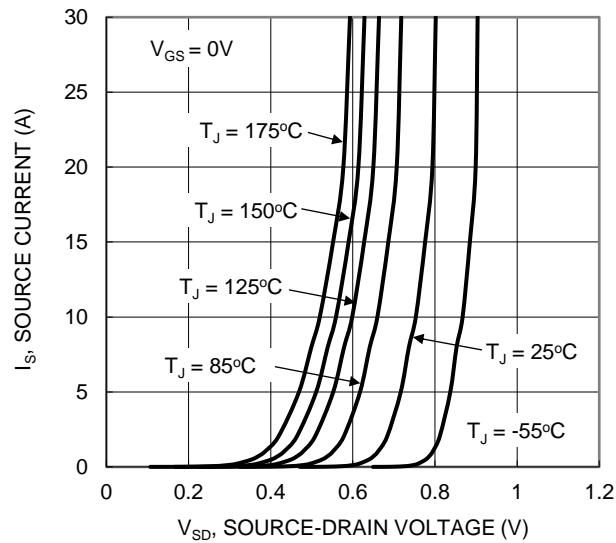


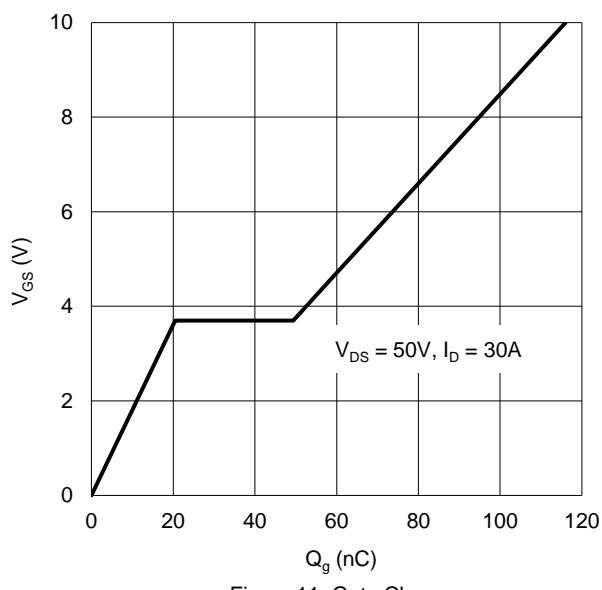
Figure 6. On-Resistance Variation with Junction Temperature



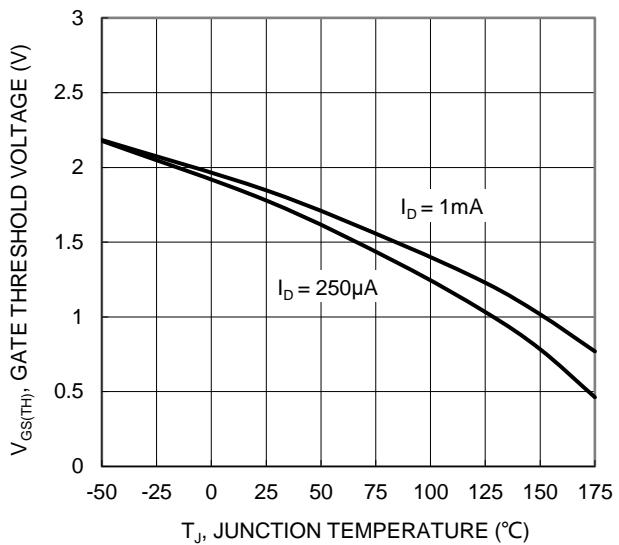
$V_{GS} = 4.5V, I_D = 20A$
 $V_{GS} = 10V, I_D = 30A$



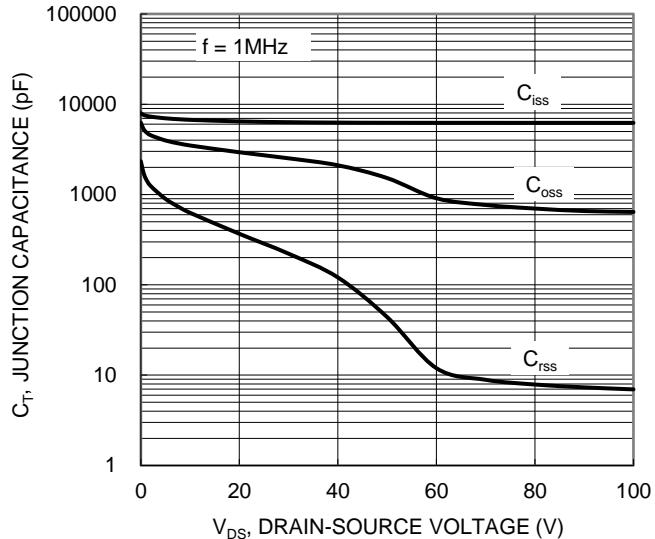
$V_{GS} = 0V$
 $T_J = 175^{\circ}C$
 $T_J = 150^{\circ}C$
 $T_J = 125^{\circ}C$
 $T_J = 85^{\circ}C$
 $T_J = 25^{\circ}C$
 $T_J = -55^{\circ}C$



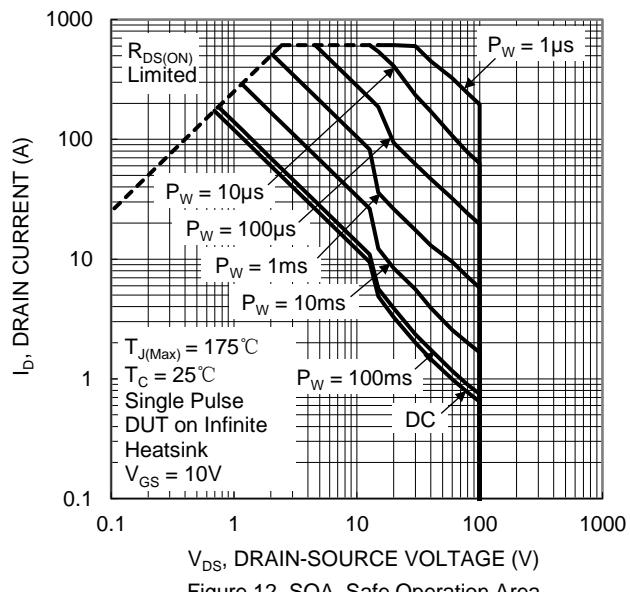
$V_{DS} = 50V, I_D = 30A$



$I_D = 1mA$
 $I_D = 250\mu A$



$f = 1MHz$



$T_{J(\text{Max})} = 175^{\circ}C$
 $T_C = 25^{\circ}C$
Single Pulse
DUT on Infinite
Heatsink
 $V_{GS} = 10V$

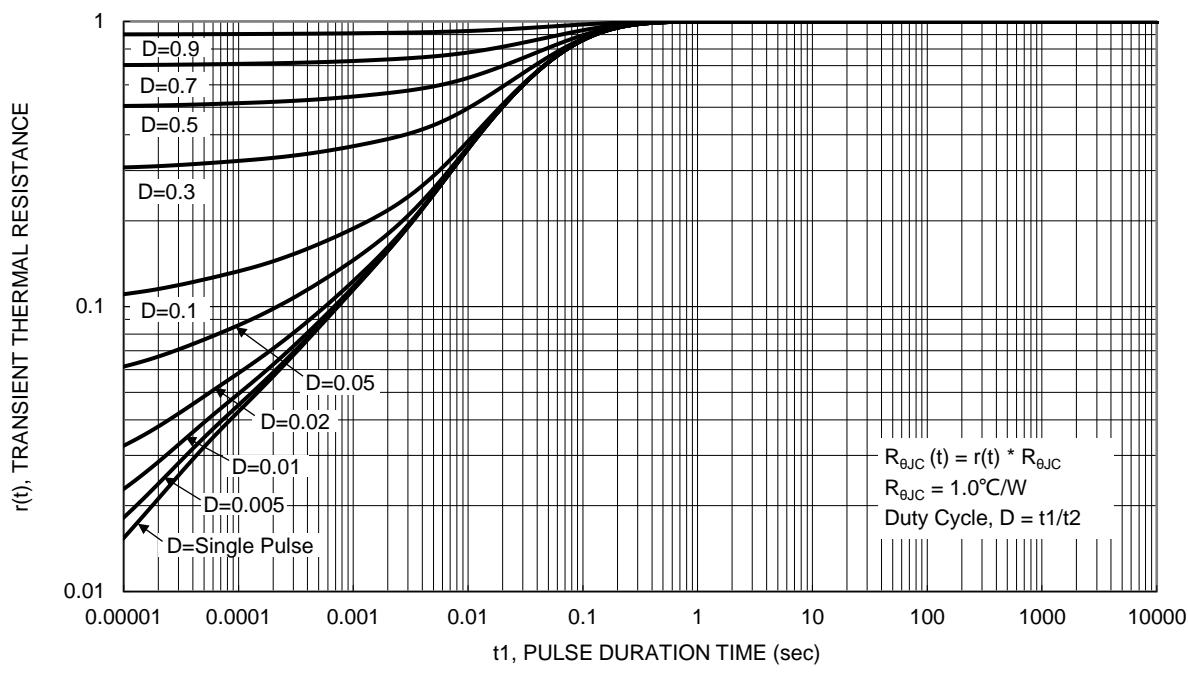
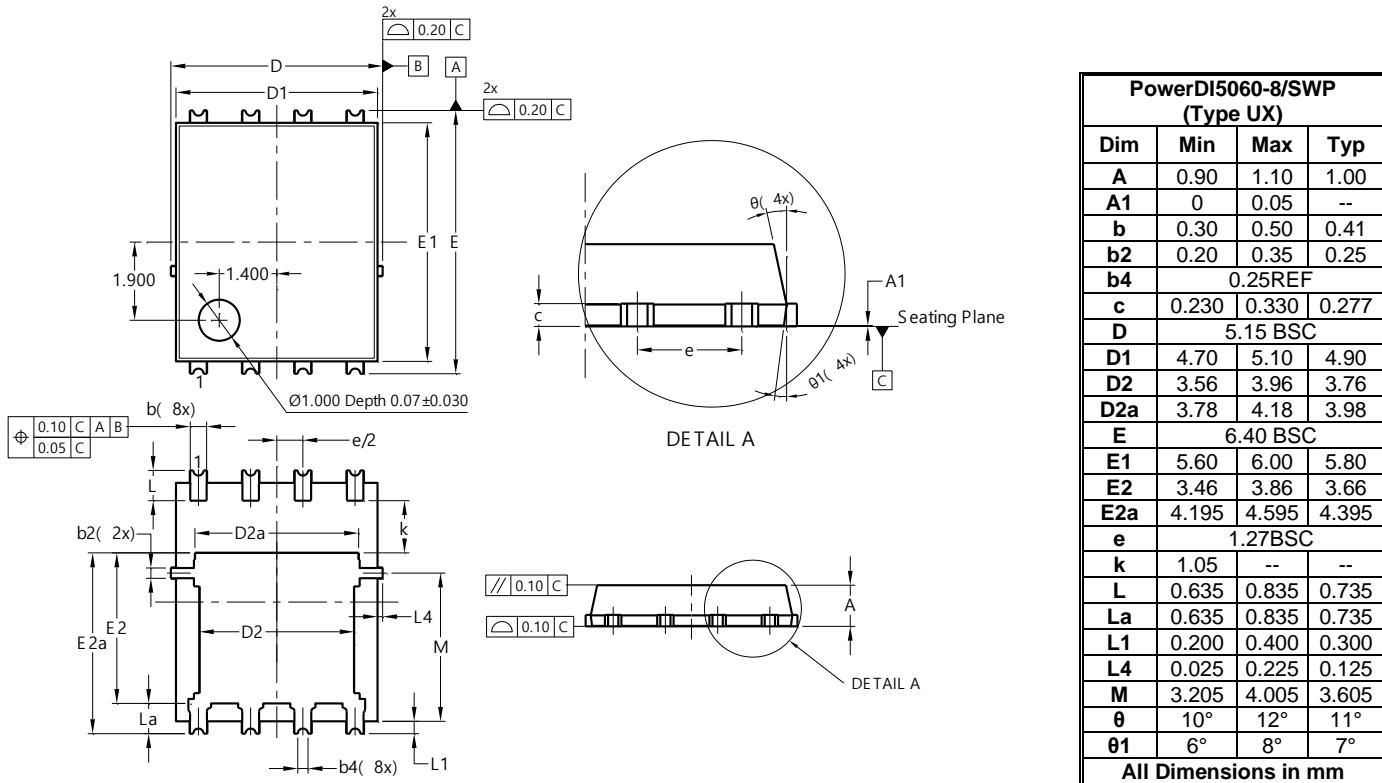


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

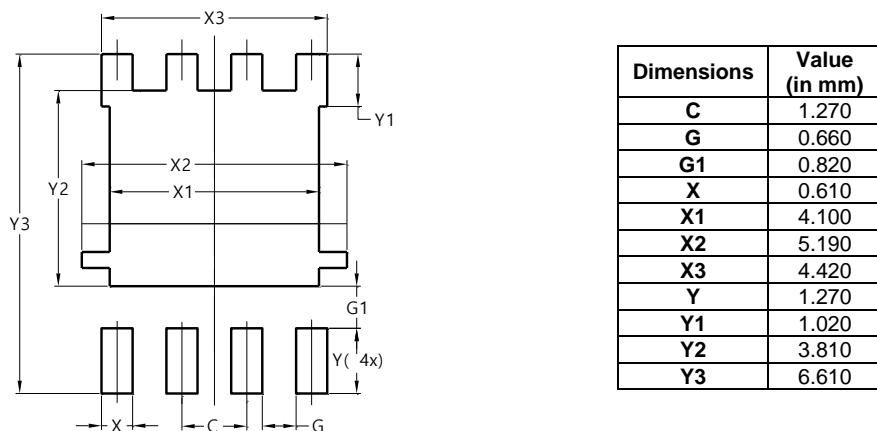
PowerDI5060-8/SWP (Type UX)



Suggested Pad Layout

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

PowerDI5060-8/SWP (Type UX)



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