

Product Summary

BV _{bss}	R _{DS(ON)} Max	I _D T _C = +25°C
120V	8.9mΩ @ V _{GS} = 10V	80A
	16mΩ @ V _{GS} = 6V	65A

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.

- Switching
- DC-DC converters

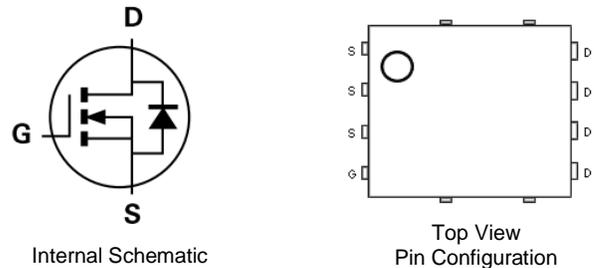


Features

- 100% Unclamped Inductive Switching (UIS) Test in Production – Ensures More Reliable and Robust End Application
- Thermally Efficient Package – Cooler Running Applications
- High Conversion Efficiency
- Low R_{DS(ON)} – Minimizes On-State Losses
- <1.1mm Package Profile – Ideal for Thin Applications
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

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
- Terminal Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.097 grams (Approximate)

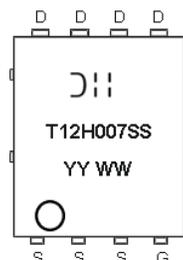


Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMT12H007SPS-13	PowerDI5060-8	2,500	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



= Manufacturer's Marking
 T12H007SS = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 22 = 2022)
 WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	120	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current, V _{GS} = 10V (Note 5)	I _D	T _C = +25°C	80
		T _C = +70°C	64
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	320	A
Continuous Body Diode Forward Current (Note 5)	I _S	80	A
Pulsed Body Diode Forward Current (Note 5)	I _{SM}	320	A
Avalanche Current, L = 3mH	I _{AS}	15.5	A
Avalanche Energy, L = 3mH	E _{AS}	360.4	mJ

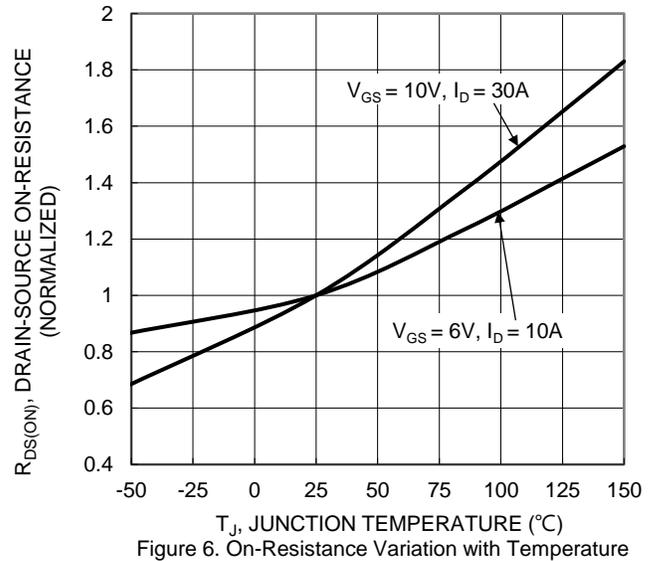
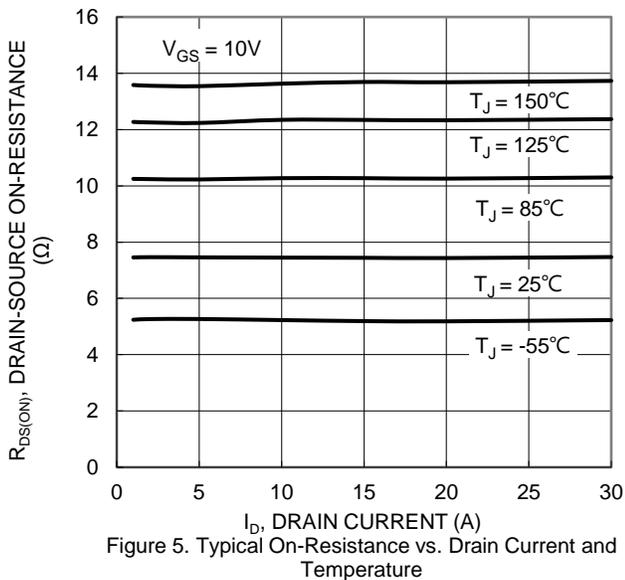
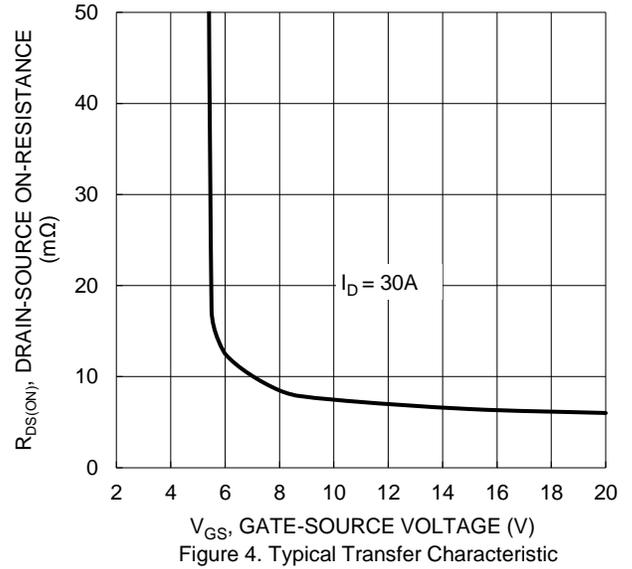
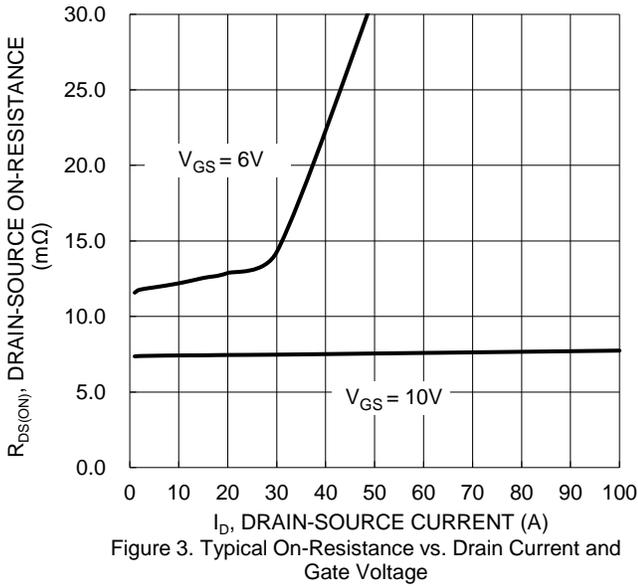
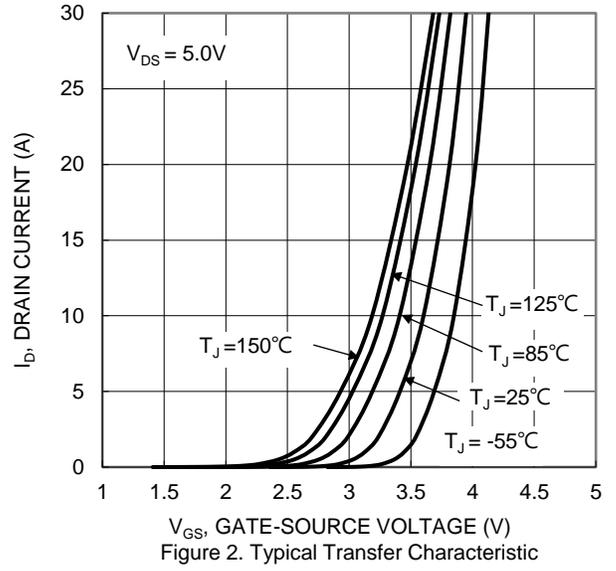
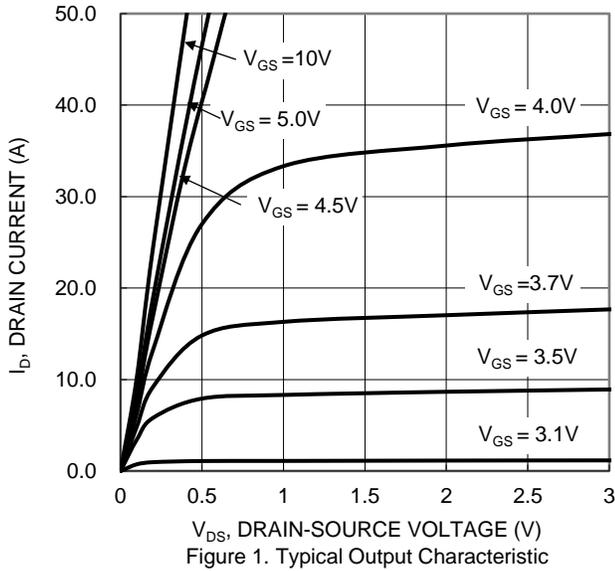
Thermal Characteristics

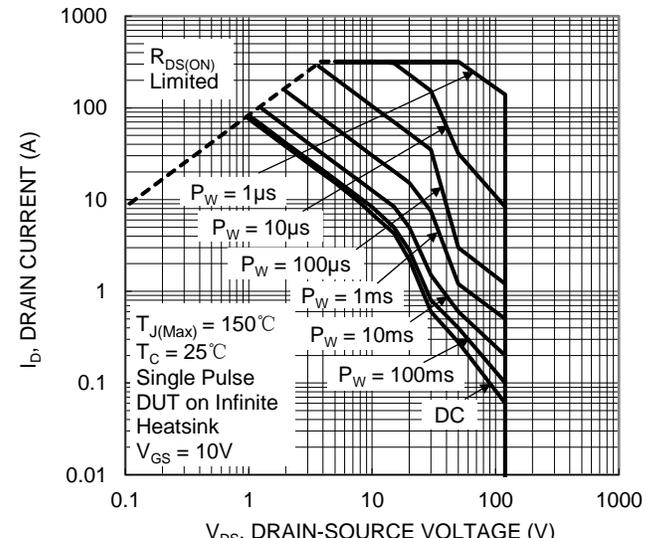
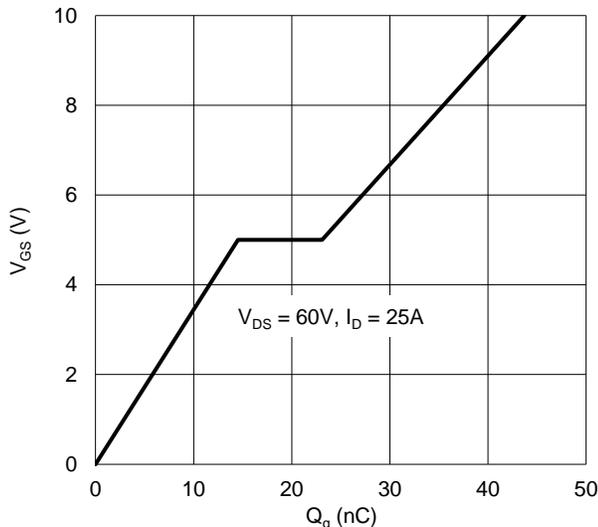
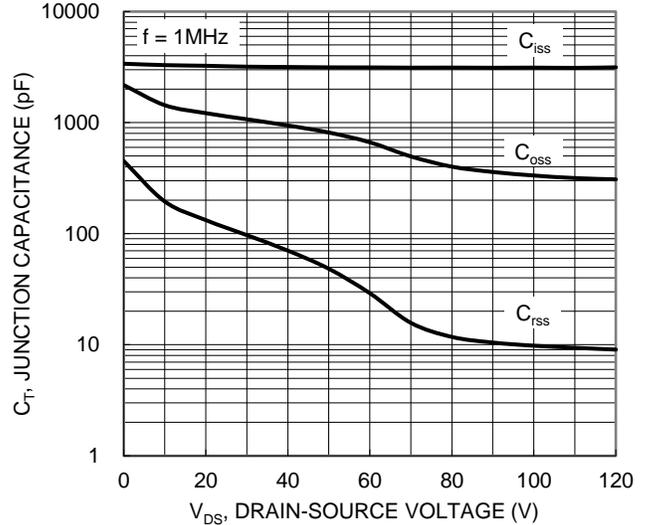
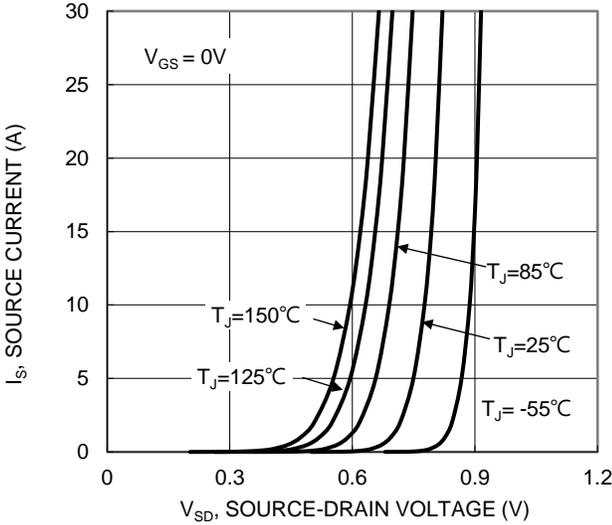
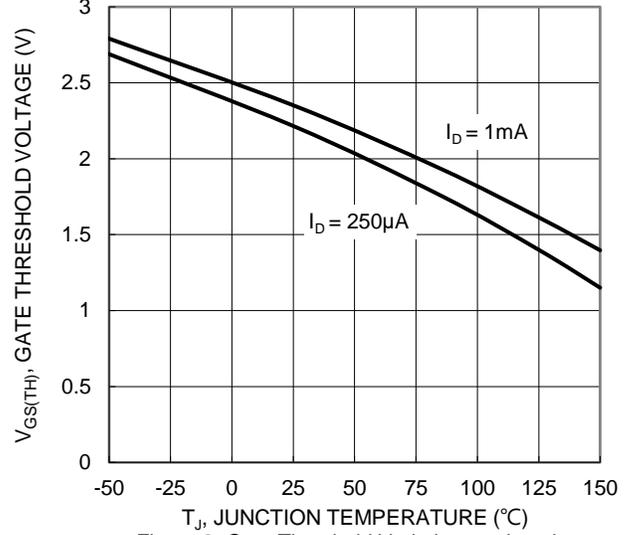
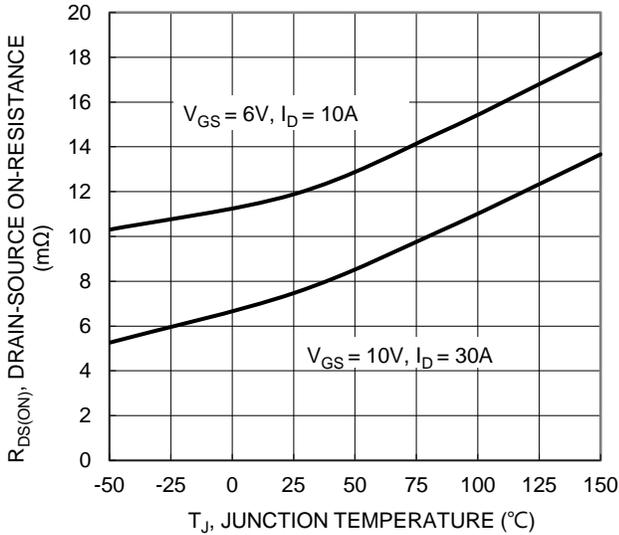
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P _D	2.9	W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	43	°C/W
Total Power Dissipation (Note 5)	P _D	104	W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	1.2	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	120	—	—	V	V _{GS} = 0V, I _D = 10mA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	µA	V _{DS} = 96V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	2	—	4	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	7.5	8.9	mΩ	V _{GS} = 10V, I _D = 30A
		—	12	16		V _{GS} = 6V, I _D = 10A
Diode Forward Voltage	V _{SD}	—	0.8	1.2	V	V _{GS} = 0V, I _S = 30A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	3142	—	pF	V _{DS} = 60V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	665	—		
Reverse Transfer Capacitance	C _{rss}	—	29	—		
Gate Resistance	R _G	—	1.9	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (V _{GS} = 6V)	Q _g	—	27	—	nC	V _{DS} = 60V, I _D = 25A
Total Gate Charge (V _{GS} = 10V)	Q _g	—	44	—		
Gate-Source Charge	Q _{gs}	—	15	—		
Gate-Drain Charge	Q _{gd}	—	9	—		
Turn-On Delay Time	t _{D(ON)}	—	12.5	—	ns	V _{DD} = 60V, V _{GS} = 10V I _D = 25A, R _G = 2.7Ω
Turn-On Rise Time	t _R	—	13.7	—		
Turn-Off Delay Time	t _{D(OFF)}	—	24.4	—		
Turn-Off Fall Time	t _F	—	10.9	—		
Reverse Recovery Time	t _{RR}	—	55	—	ns	I _F = 25A, di/dt = 100A/µs
Reverse Recovery Charge	Q _{RR}	—	105	—	nC	

- Notes: 5. Thermal resistance from junction to soldering point (on the exposed drain pad).
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1 inch square copper plate.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.





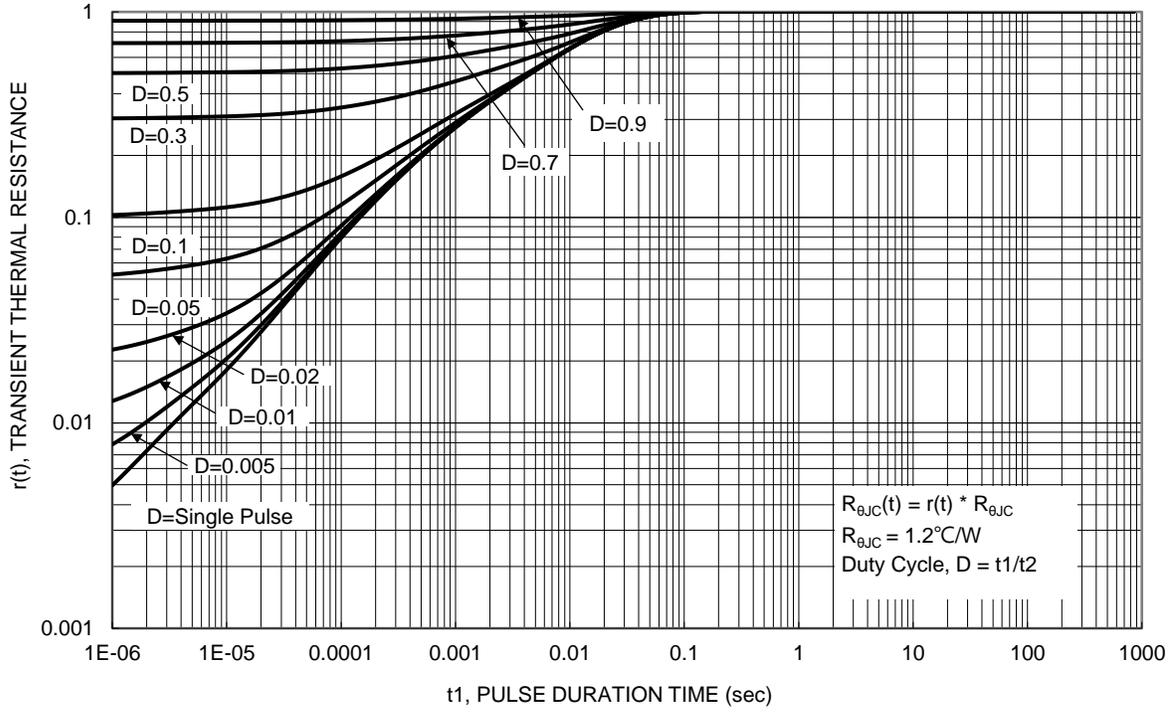
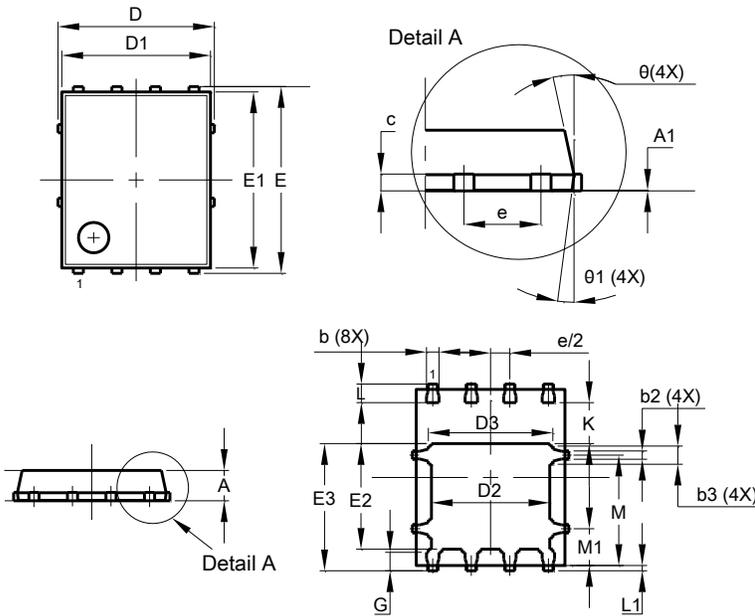


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI5060-8

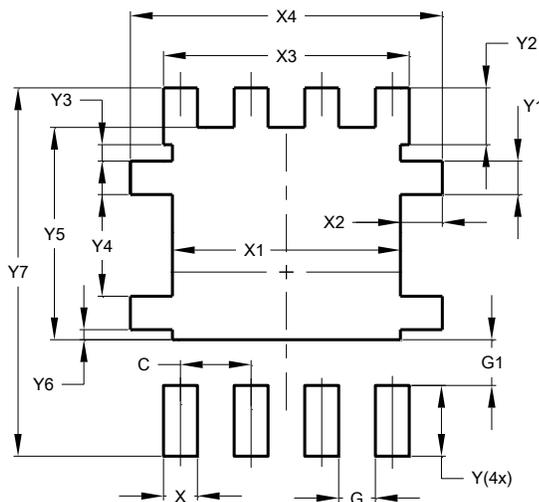


PowerDI5060-8			
Dim	Min	Max	Typ
A	0.90	1.10	1.00
A1	0.00	0.05	-
b	0.33	0.51	0.41
b2	0.200	0.350	0.273
b3	0.40	0.80	0.60
c	0.230	0.330	0.277
D	5.15 BSC		
D1	4.70	5.10	4.90
D2	3.70	4.10	3.90
D3	3.90	4.30	4.10
E	6.15 BSC		
E1	5.60	6.00	5.80
E2	3.28	3.68	3.48
E3	3.99	4.39	4.19
e	1.27 BSC		
G	0.51	0.71	0.61
K	0.51	-	-
L	0.51	0.71	0.61
L1	0.100	0.200	0.175
M	3.235	4.035	3.635
M1	1.00	1.40	1.21
θ	10°	12°	11°
θ1	6°	8°	7°
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI5060-8



Dimensions	Value (in mm)
C	1.270
G	0.660
G1	0.820
X	0.610
X1	4.100
X2	0.755
X3	4.420
X4	5.610
Y	1.270
Y1	0.600
Y2	1.020
Y3	0.295
Y4	1.825
Y5	3.810
Y6	0.180
Y7	6.610

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