30V P-CHANNEL ENHANCEMENT MODE MOSFET
PowerDI5060-8

Product Summary

BV_{DSS}	$R_{DS(ON)}$	I_D T_C = +25°C
-30V	3.8mΩ @ V_{GS} = -10V	-87A
	6.0mΩ @ V_{GS} = -5V	-71A

Features

- 100% Unclamped Inductive Switch (UIS) Test in Production
- 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 or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Description

This new generation MOSFET is designed to minimize $R_{DS(ON)}$ yet maintain superior switching performance. This device is ideal for use in notebook battery power management and load switches.

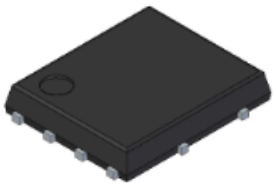
Applications

- Switches

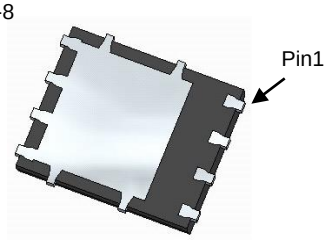
Mechanical Data

- 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)

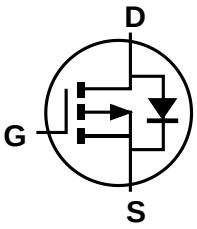
Site 1: PowerDI5060-8



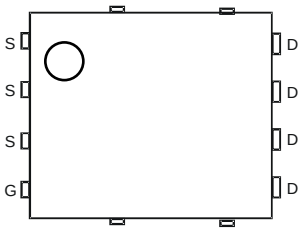
Top View



Bottom View

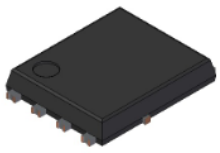


Internal Schematic

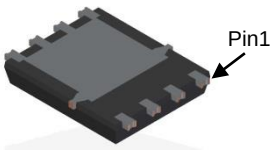


Top View
Pin Configuration

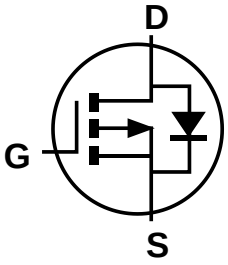
Site 2: PowerDI5060-8/SWP (Type UX)



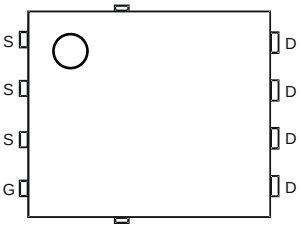
Top View



Bottom View



Internal Schematic



Top View
Pin Configuration

Ordering Information (Note 4)

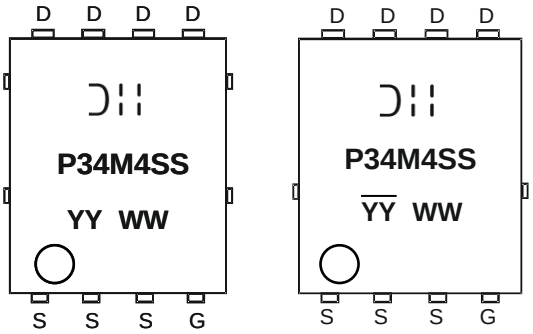
Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMP34M4SPS-13	PowerDI5060-8	2,500	Tape & Reel
DMP34M4SPS-13	PowerDI5060-8/SWP (Type UX)	2,500	Tape & Reel

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/.

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Marking Information



= Manufacturer's Marking
P34M4SS = Product Type Marking Code
YYWW or YYWW = Date Code Marking
YY or YY = Last Two Digits of Year (ex: 25 = 2025)
WW = Week Code (01 to 53)

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}	±25	V
Continuous Drain Current, V_{GS} = -10V (Note 5) (Package Limited)	T_C = +25°C T_C = +70°C	I_D	-87 -71	A
Continuous Drain Current, V_{GS} = -10V (Note 6)	T_A = +25°C T_A = +70°C	I_D	-21 -17	A
Pulsed Drain Current (380µs Pulse, Duty Cycle = 1%)		I_{DM}	-350	A
Maximum Continuous Body Diode Forward Current (Note 6)		I_S	-2.9	A
Pulsed Body Diode Forward Current (380µs Pulse, Duty Cycle = 1%)		I_{SM}	-350	A
Avalanche Current, L = 0.1mH (Note 7)		I_{AS}	-60	A
Avalanche Energy, L = 0.1mH (Note 7)		E_{AS}	180	mJ

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 8)		P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 8)	Steady State	$R_{\theta JA}$	94	°C/W
Total Power Dissipation (Note 6)		P_D	3.0	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	47	°C/W
Total Power Dissipation (Note 5)		P_D	100	W
Thermal Resistance, Junction to Case (Note 5)		$R_{\theta JC}$	1.4	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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 1inch square copper plate.
7. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.
8. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	µA	V_{DS} = -24V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1.6	—	-2.6	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	2.9	3.8	mΩ	V_{GS} = -10V, I_D = -20A
		—	4.9	6.0		V_{GS} = -5V, I_D = -20A
Diode Forward Voltage	V_{SD}	—	-0.7	-1.2	V	V_{GS} = 0V, I_S = -1A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	3,775	—	pF	V_{DS} = -15V, V_{GS} = 0V f = 1MHz
Output Capacitance	C_{oss}	—	932	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	500	—	pF	
Gate Resistance	R_g	—	21	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge	Q_g	—	127	—	nC	V_{DS} = -15V, V_{GS} = -10V I_D = -20A
Gate-Source Charge	Q_{gs}	—	24.5	—	nC	
Gate-Drain Charge	Q_{gd}	—	28.5	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	6.9	—	ns	V_{DD} = -15V, V_{GEN} = -10V R_{GEN} = 3Ω, I_D = -20A
Turn-On Rise Time	t_R	—	4.0	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	372	—	ns	
Turn-Off Fall Time	t_F	—	160	—	ns	
Reverse-Recovery Time	t_{RR}	—	26.5	—	ns	I_F = -20A, dI/dt = 500A/µs
Reverse-Recovery Charge	Q_{RR}	—	37.3	—	nC	

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

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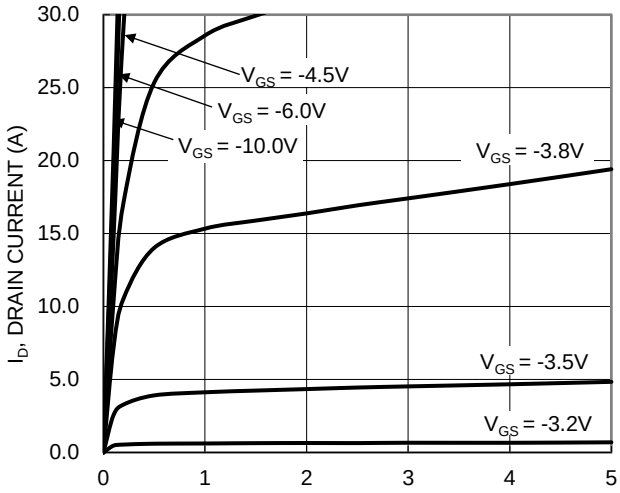


Figure 1. Typical Output Characteristic

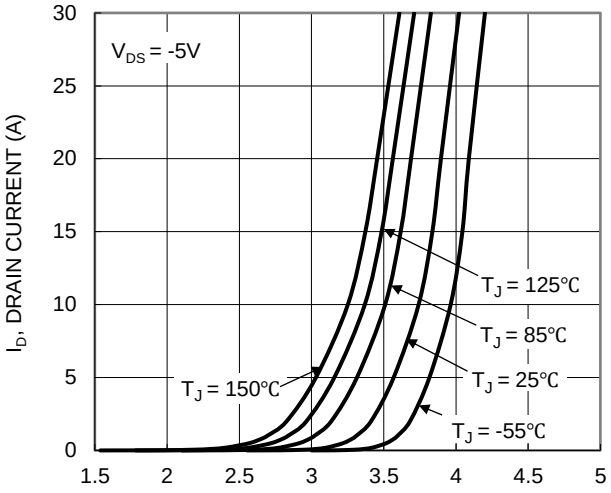


Figure 2. Typical Transfer Characteristic

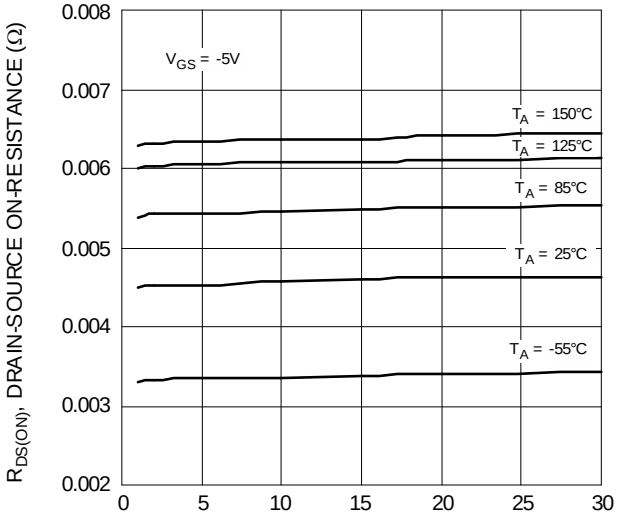


Figure 3 Typical On-Resistance vs.
Drain Current and Junction Temperature

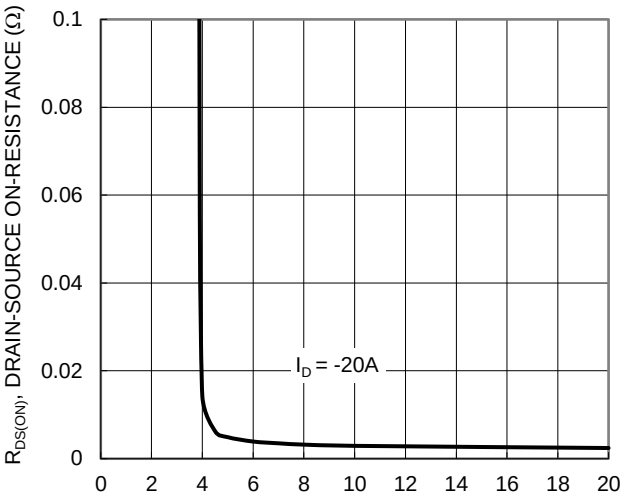


Figure 4. Typical Transfer Characteristic

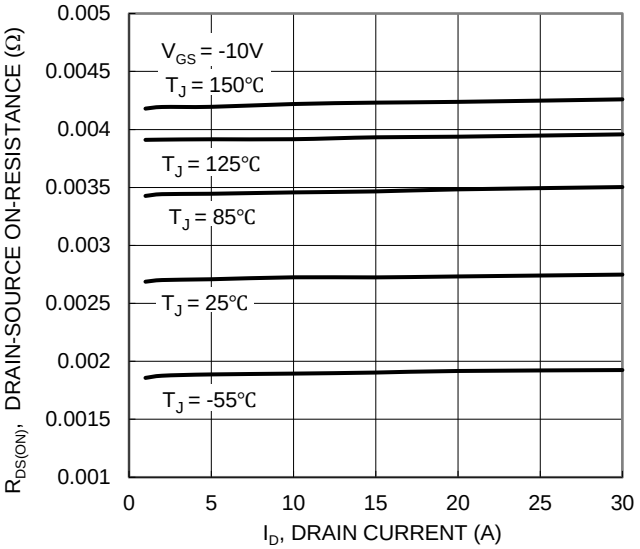


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

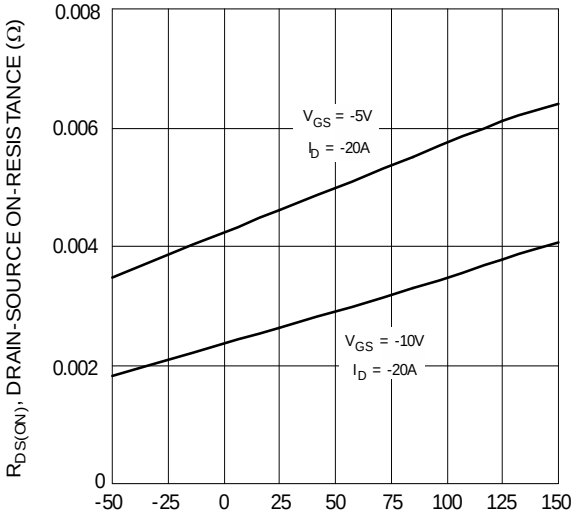


Figure 6 On-Resistance Variation with Junction Temperature

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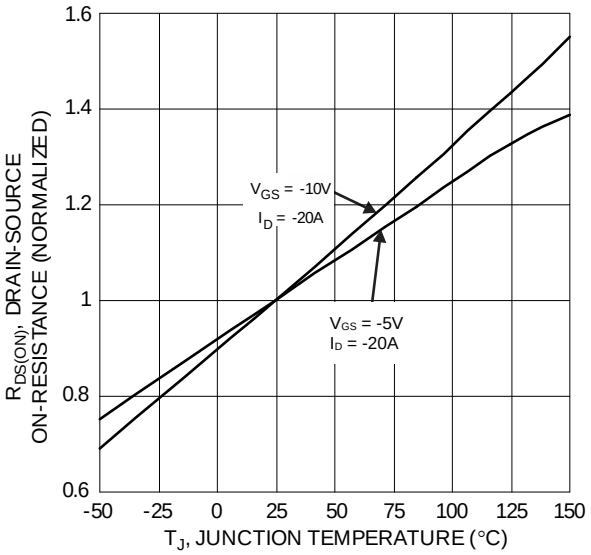


Figure 7 On-Resistance Variation with Junction Temperature

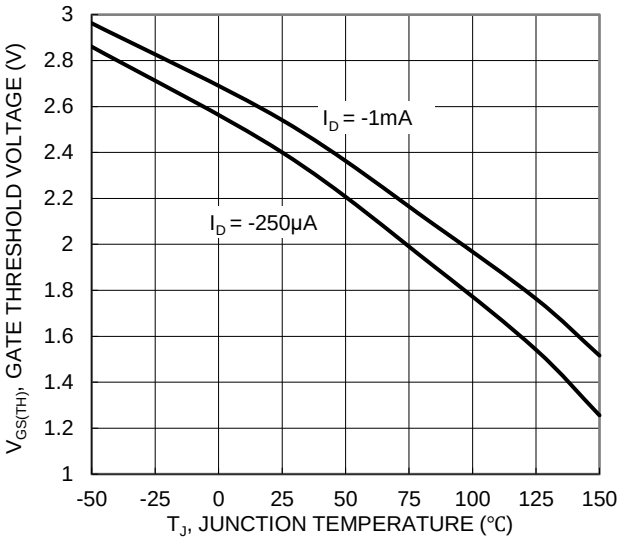


Figure 8. Gate Threshold Variation vs. Junction Temperature

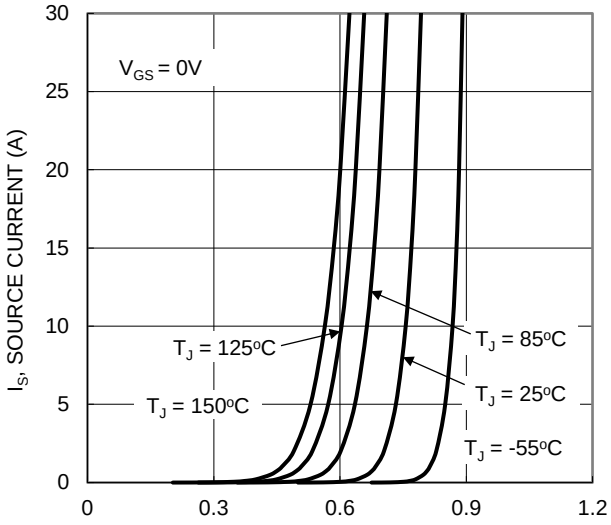


Figure 9. Diode Forward Voltage vs. Current

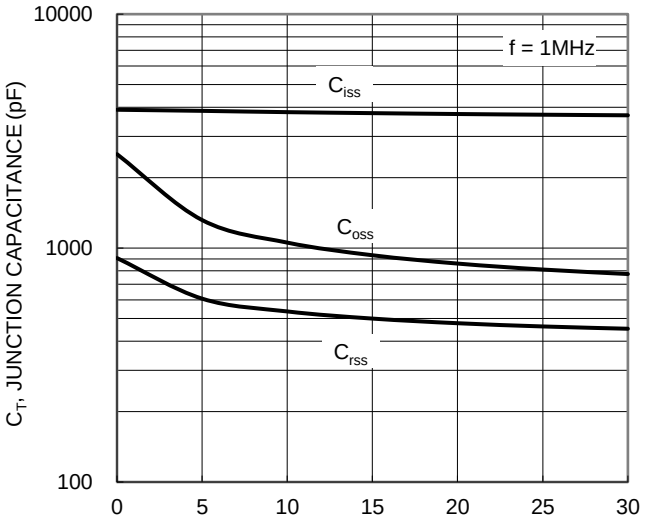


Figure 10. Typical Junction Capacitance

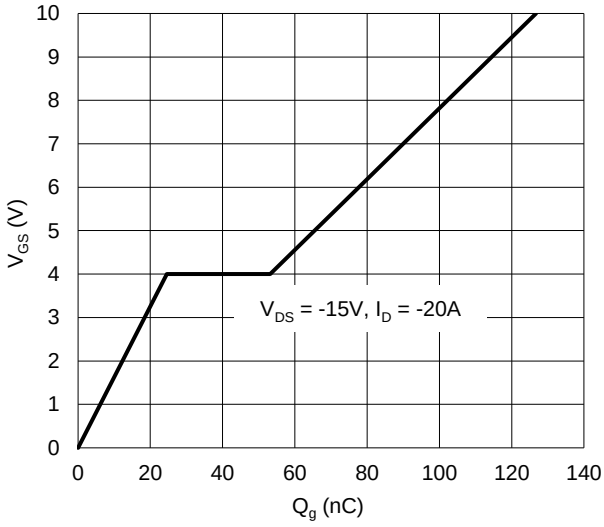


Figure 11. Gate Charge

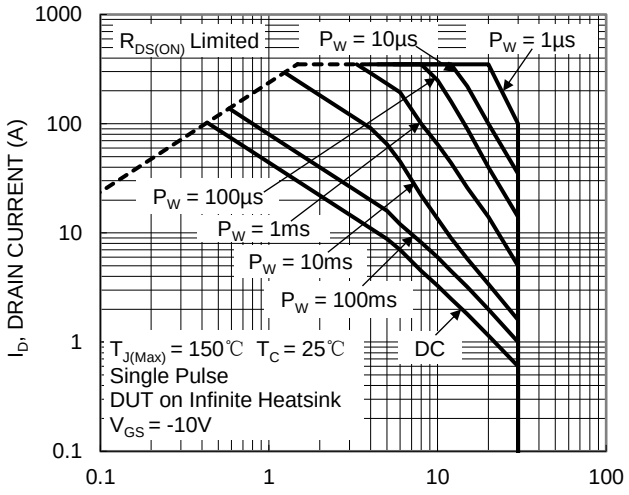


Figure 12. SOA, Safe Operation Area

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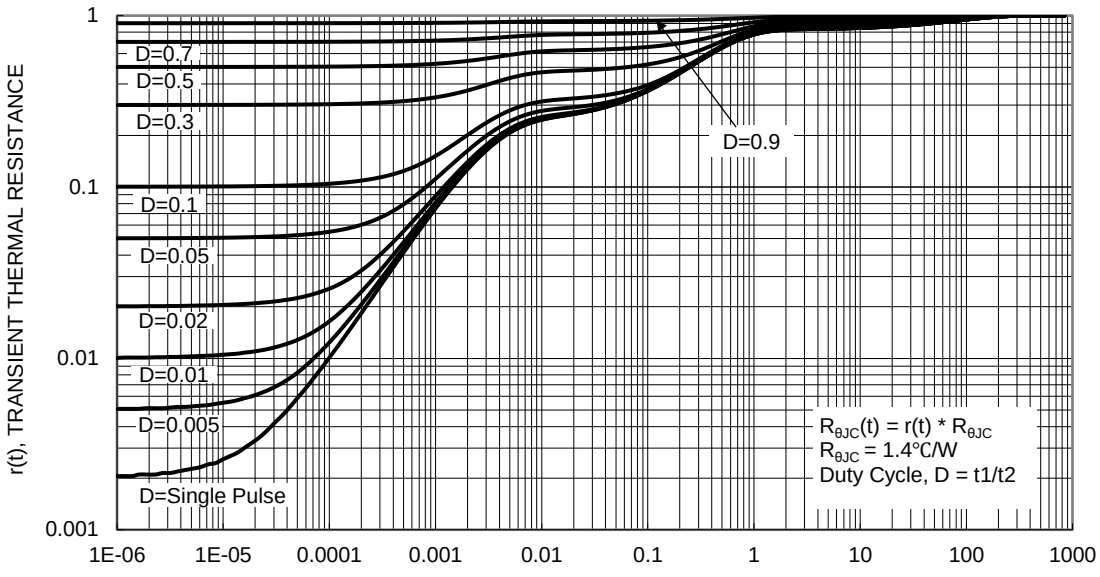


Figure 13. Transient Thermal Resistance

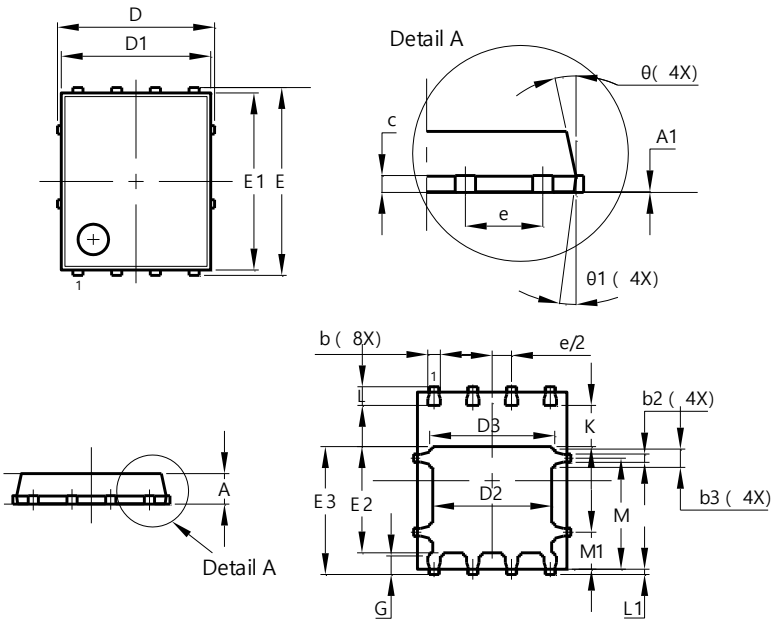
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Package Outline Dimensions

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

Site 1:

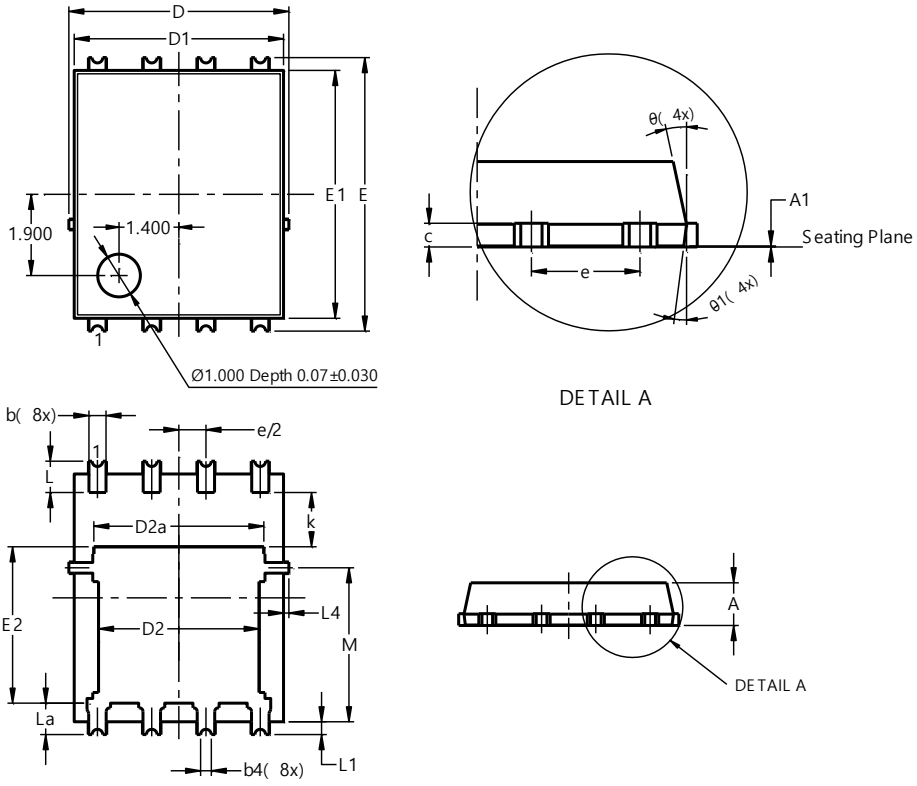
PowerDI5060-8



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			

Site 2:

PowerDI5060-8/SWP (Type UX)



PowerDI5060-8/SWP (Type UX)			
Dim	**Min**	**Max**	**Typ**
A	0.90	1.10	1.00
A1	0	0.05	--
b	0.30	0.50	0.41
b2	0.20	0.35	0.25
b4	0.25REF		
c	0.230	0.330	0.277
D	5.15 BSC		
D1	4.70	5.10	4.90
D2	3.56	3.96	3.76
D2a	3.78	4.18	3.98
E	6.40 BSC		
E1	5.60	6.00	5.80
E2	3.46	3.86	3.66
E2a	4.195	4.595	4.395
e	1.27BSC		
k	1.05	--	--
L	0.635	0.835	0.735
La	0.635	0.835	0.735
L1	0.200	0.400	0.300
L1a	0.050REF		
L4	0.025	0.225	0.125
M	3.205	4.005	3.605
θ	10°	12°	11°
θ1	6°	8°	7°
All Dimensions in mm			

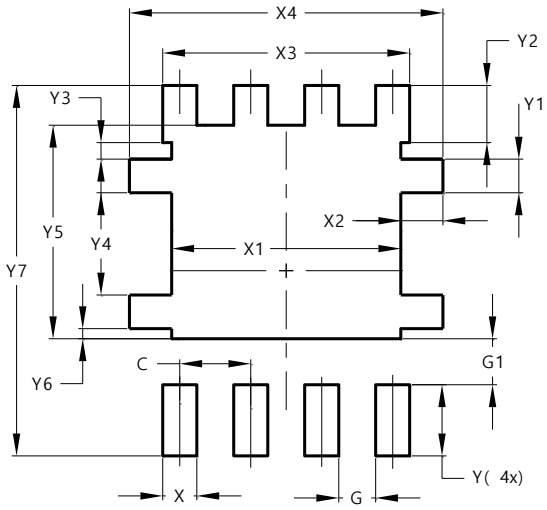
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Suggested Pad Layout

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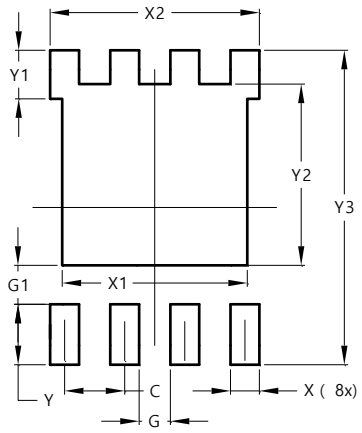
PowerDI5060-8



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

Site 2:

PowerDI5060-8/SWP (Type UX)



Dimensions	Value (in mm)
C	1.270
G	0.660
G1	0.820
X	0.610
X1	4.100
X2	4.420
Y	1.270
Y1	1.020
Y2	3.810
Y3	6.610

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Elektronik komponent tedarikinde Entegreci

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Toplu alım ve teklif

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Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

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