

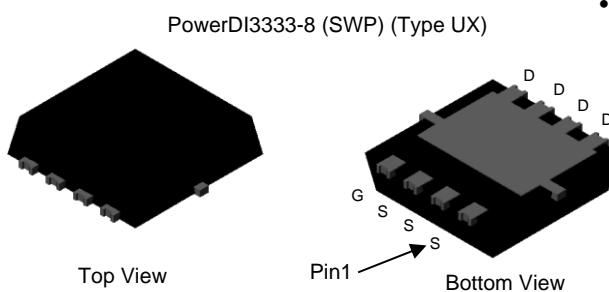
Product Summary

BV _{DSS}	R _{D(S)} Max	I _D Max T _C = +25°C
30V	11mΩ @ V _{GS} = 10V	58
	15.2mΩ @ V _{GS} = 4.5V	49

Description and Applications

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

- Backlighting
- Power-Management Functions
- DC-DC converters



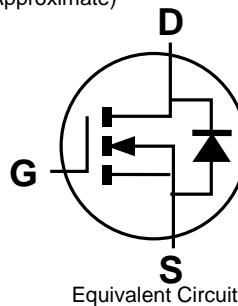
Features and Benefits

- Low R_{D(S)} – ensures on-state losses are minimized
- Small form factor thermally efficient package enables higher density end products
- Occupies just 33% of the board area occupied by SO-8 enabling smaller end product
- **Totally Lead-Free & Fully 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/>

Mechanical Data

- Package: PowerDI®3333-8 (SWP) (Type UX)
- Package 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 208③
- Weight: 0.072 grams (Approximate)



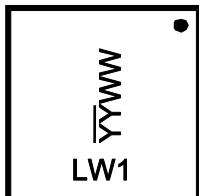
Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN3011LFVW-7	PowerDI3333-8 (SWP) (Type UX)	2,000	Tape & Reel
DMN3011LFVW-13	PowerDI3333-8 (SWP) (Type UX)	3,000	Tape & Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
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



LW1 = Product Type Marking Code

YYWW = Date Code Marking

YY = Last Two Digits of Year (ex: 23 = 2023)

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}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current (Note 7) $V_{GS} = 10\text{V}$	$T_C = +25^\circ\text{C}$ $T_C = +70^\circ\text{C}$	I_D	58 46	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)		I_{DM}	219	A
Maximum Continuous Body Diode Forward Current (Note 7)		I_S	2.6	A
Pulsed Body Diode Forward Current (10 μs Pulse, Duty Cycle = 1%)		I_{SM}	219	A
Avalanche Current, $L = 0.1\text{mH}$ (Note 8)		I_{AS}	26	A
Avalanche Energy, $L = 0.1\text{mH}$ (Note 8)		E_{AS}	34	mJ

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	1.3	W
Thermal Resistance, Junction to Ambient (Note 5)		$R_{\theta JA}$	94	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 6)		P_D	2.6	W
Thermal Resistance, Junction to Ambient (Note 6)		$R_{\theta JA}$	48	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case (Note 7)		$R_{\theta JC}$	2.25	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.4	—	2.25	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	7	11	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 30\text{A}$
		—	10	15.2		$V_{GS} = 4.5\text{V}, I_D = 15\text{A}$
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	1130	—	pF	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Output Capacitance	C_{oss}	—	141	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	104	—	pF	
Gate Resistance	R_g	—	2.49	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	—	10	—	nC	$V_{DS} = 15\text{V}, I_D = 12\text{A}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	—	19.7	—	nC	
Gate-Source Charge	Q_{gs}	—	3.8	—	nC	
Gate-Drain Charge	Q_{gd}	—	1.4	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.4	—	ns	$V_{DD} = 15\text{V}, V_{GS} = 10\text{V}, R_L = 1.25\Omega, R_G = 3\Omega$
Turn-On Rise Time	t_R	—	26.8	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	27.1	—	ns	
Turn-Off Fall Time	t_F	—	20.8	—	ns	
Body Diode Reverse Recovery Time	t_{RR}	—	9.2	—	ns	$I_F = 12\text{A}, di/dt = 500\text{A}/\mu\text{s}$
Body Diode Reverse Recovery Charge	Q_{RR}	—	5.2	—	nC	

Notes:

5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1-inch square copper plate.
7. Thermal resistance from junction to soldering point (on the exposed drain pad).
8. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep $T_J = +25^\circ\text{C}$.
9. Short duration pulse test used to minimize self-heating effect.
10. Guaranteed by design. Not subject to product testing.

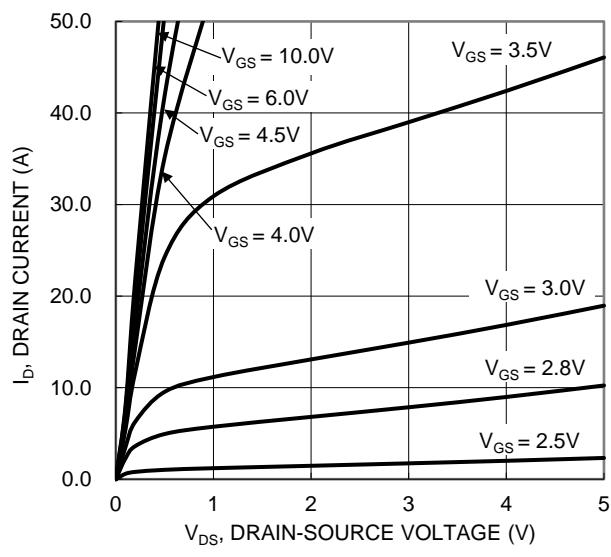


Figure 1. Typical Output Characteristic

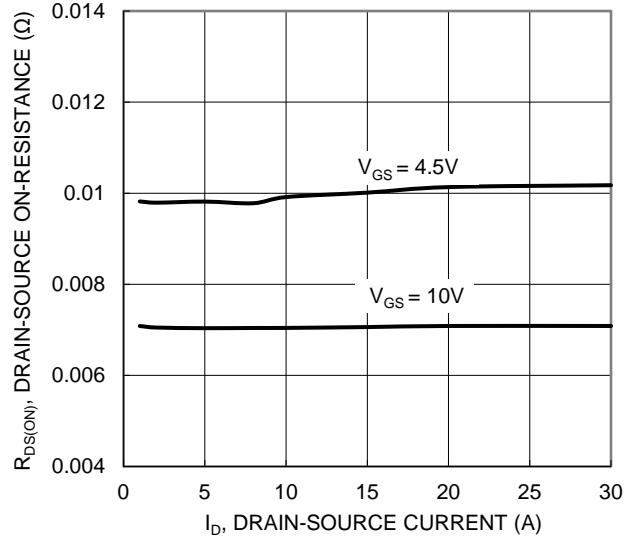


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

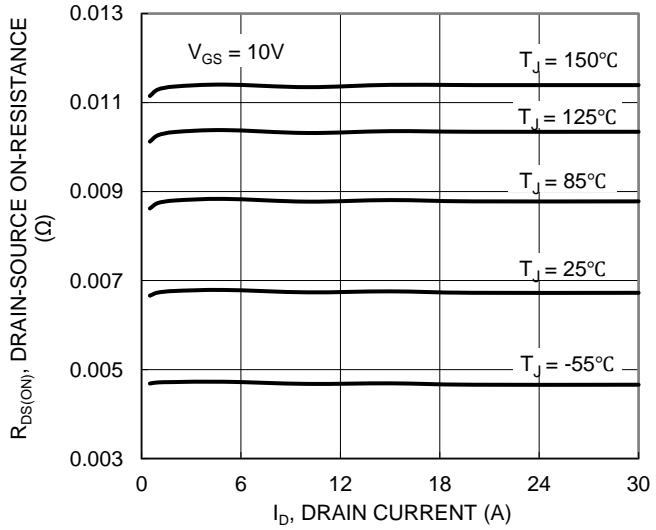


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

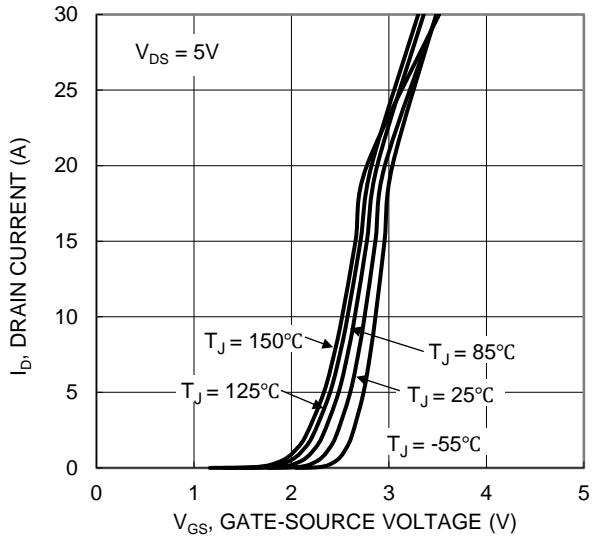


Figure 2. Typical Transfer Characteristic

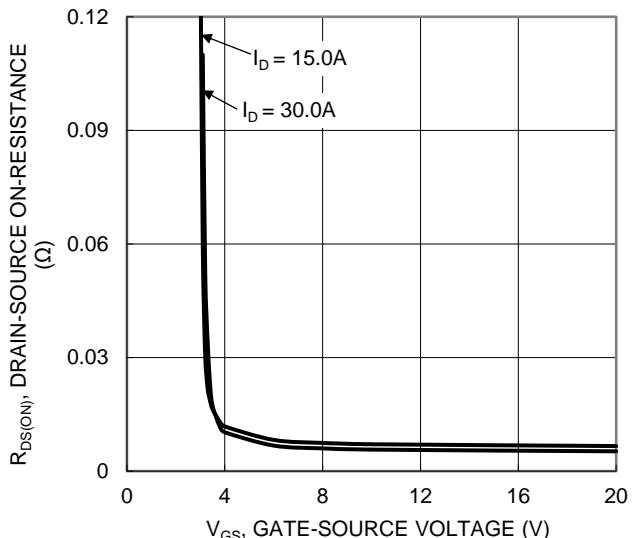


Figure 4. Typical Transfer Characteristic

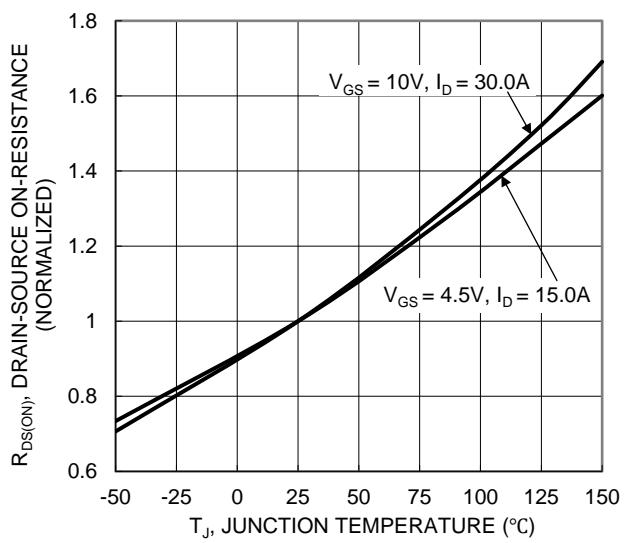
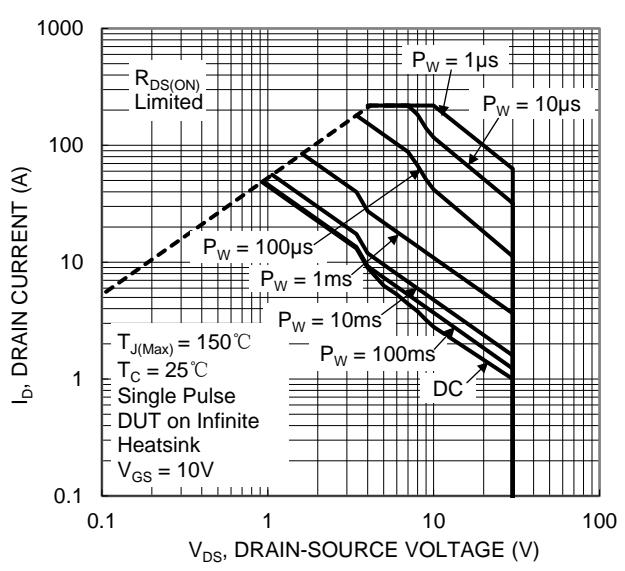
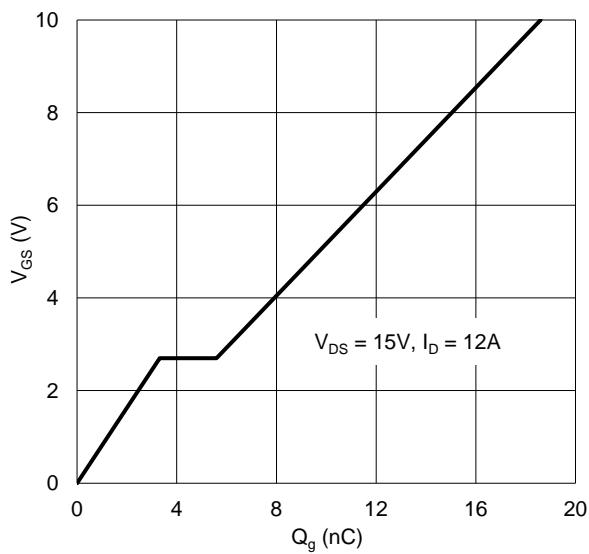
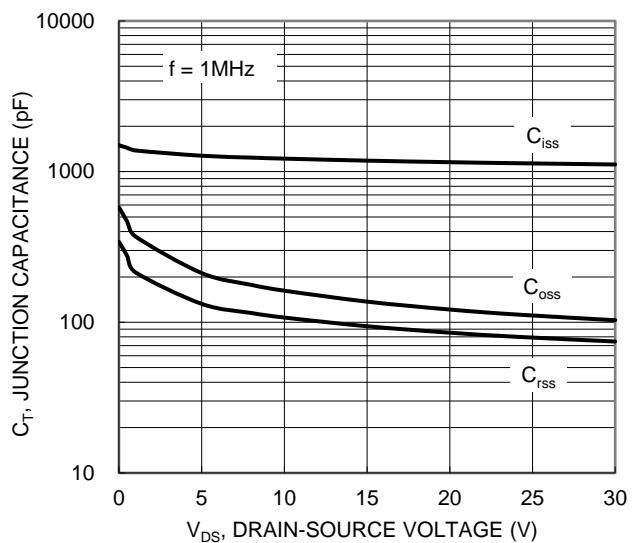
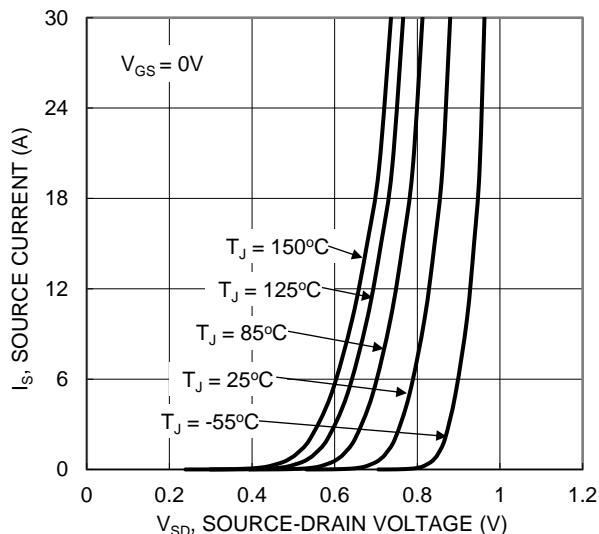
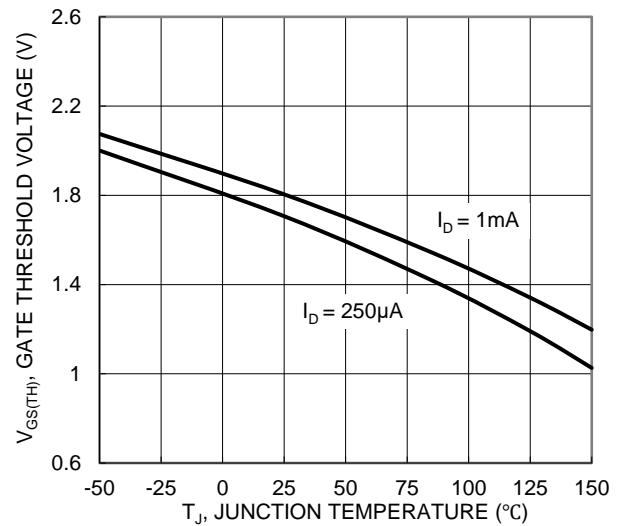
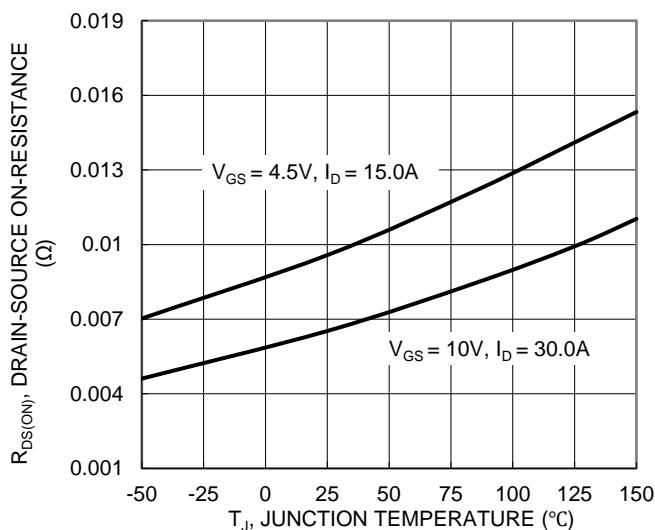


Figure 6. On-Resistance Variation with Temperature



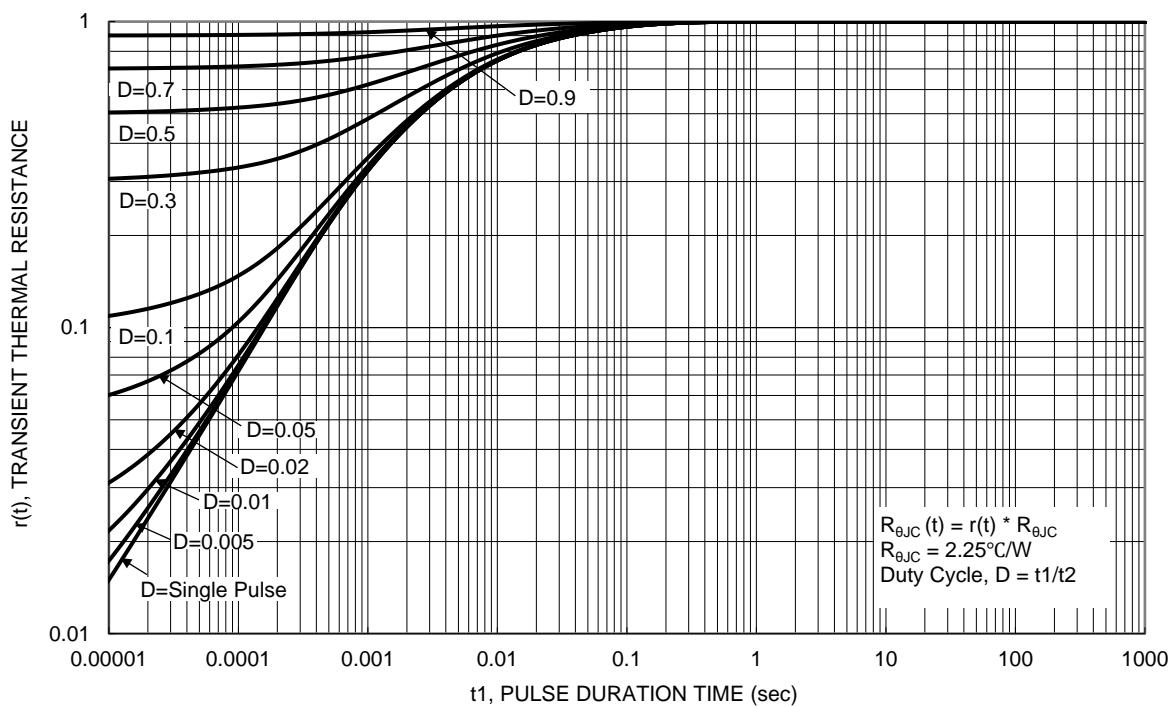
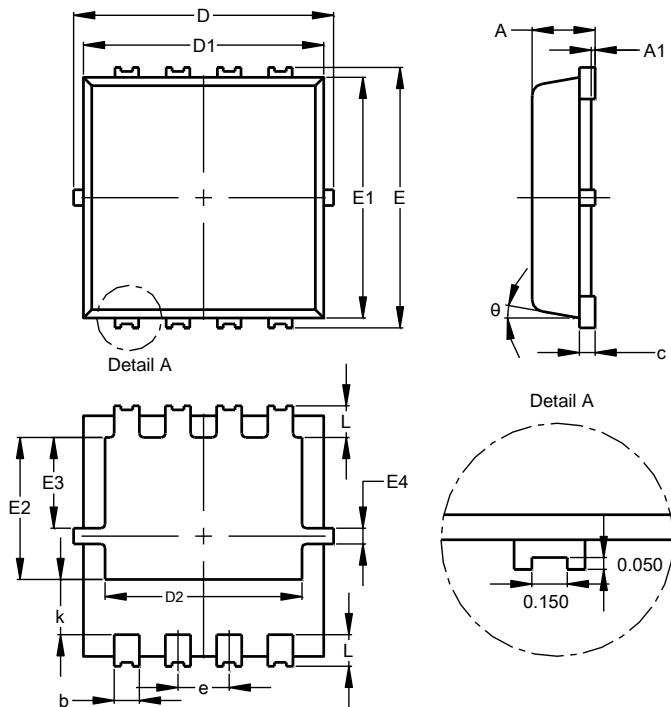


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

PowerDI3333-8 (SWP) (Type UX)



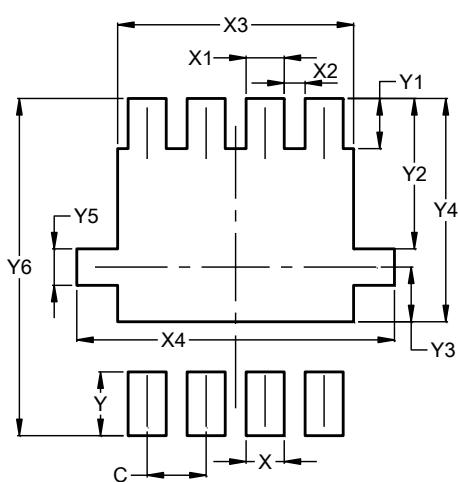
PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	--
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	—	—	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40
θ	0°	12°	10°

All Dimensions in mm

Suggested Pad Layout

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

PowerDI3333-8 (SWP) (Type UX)



Dimensions	Value (in mm)
C	0.650
X	0.420
X1	0.420
X2	0.230
X3	2.600
X4	3.500
Y	0.700
Y1	0.550
Y2	1.650
Y3	0.600
Y4	2.450
Y5	0.400
Y6	3.700

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