

Product Summary

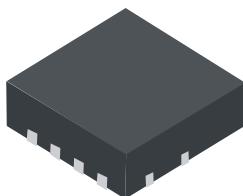
BV_{DSS}	R_{DSON} Max	I_D Max T_C = +25°C
-30V	6mΩ @ V _{GS} = -10V	-70A
	13mΩ @ V _{GS} = -4.5V	-45A

Description

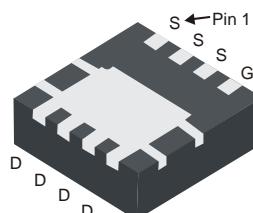
This MOSFET is designed to minimize the on-state resistance (R_{DSON}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

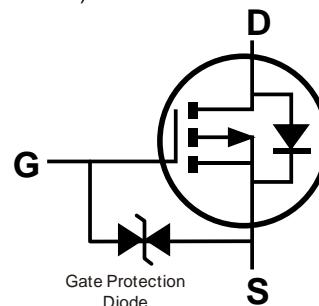
- Backlighting
- Power Management Functions
- DC-DC Converters



Top View



Bottom View



Equivalent Circuit

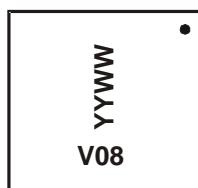
Ordering Information (Note 4)

Part Number	Case	Packaging
DMP3007SFG-7	PowerDI3333-8	2,000/Tape & Reel
DMP3007SFG-13	PowerDI3333-8	3,000/Tape & Reel

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. 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



V08= Product Type Marking Code
 YYYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 16 = 2016)
 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}	± 25	V
Continuous Drain Current (Note 7) $V_{GS} = -10\text{V}$	Steady State	$T_C = +25^\circ\text{C}$ $T_C = +70^\circ\text{C}$	I_D	-70 -55	A
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	-3.0	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	-120	A
Avalanche Current (Notes 8) $L = 1\text{mH}$			I_{AS}	-16	A
Avalanche Energy (Notes 8) $L = 1\text{mH}$			E_{AS}	130	mJ

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	$T_A = +25^\circ\text{C}$	P_D	1.2	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	105	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	P_D	2.8	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	45	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Case (Note 7)		$R_{\theta JC}$	3.0	$^\circ\text{C}/\text{W}$
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	$V_{DS} = -24\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1.0	—	-3.0	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	4.3	6	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -11.5\text{A}$
		—	6.6	13		$V_{GS} = -4.5\text{V}, I_D = -8.5\text{A}$
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}	—	2826	—	pF	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	606	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	305	—	pF	
Gate Resistance	R_g	—	23	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge ($V_{GS} = -4.5\text{V}$)	Q_g	—	31.2	—	nC	$V_{DS} = -15\text{V}, I_D = -11.5\text{A}$
Total Gate Charge ($V_{GS} = -10\text{V}$)	Q_g	—	64.2	—	nC	
Gate-Source Charge	Q_{gs}	—	10.6	—	nC	
Gate-Drain Charge	Q_{gd}	—	11.6	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.8	—	ns	$V_{DD} = -15\text{V}, V_{GS} = -10\text{V}, R_g = 6\Omega, I_D = -11.5\text{A}$
Turn-On Rise Time	t_R	—	4.3	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	306	—	ns	
Turn-Off Fall Time	t_F	—	125	—	ns	
Reverse Recovery Time	t_{RR}	—	19	—	ns	$I_S = -11.5\text{A}, dI/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge	Q_{RR}	—	9.8	—	nC	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

7. Thermal resistance from junction to soldering point (on the exposed drain pad).

8. I_{AS} and E_{AS} rating 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.

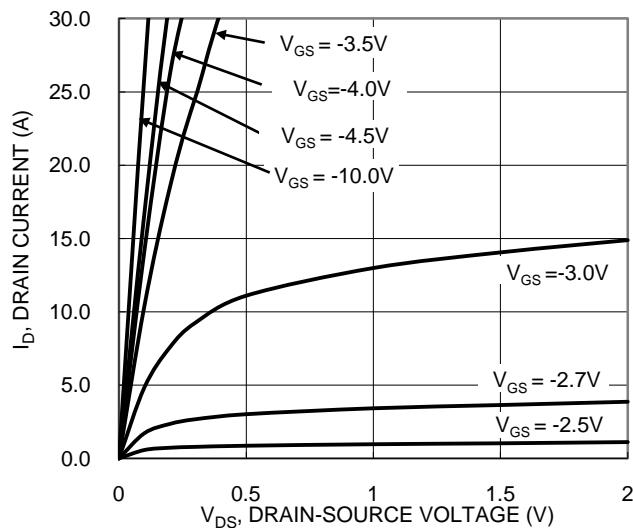


Figure 1. Typical Output Characteristic

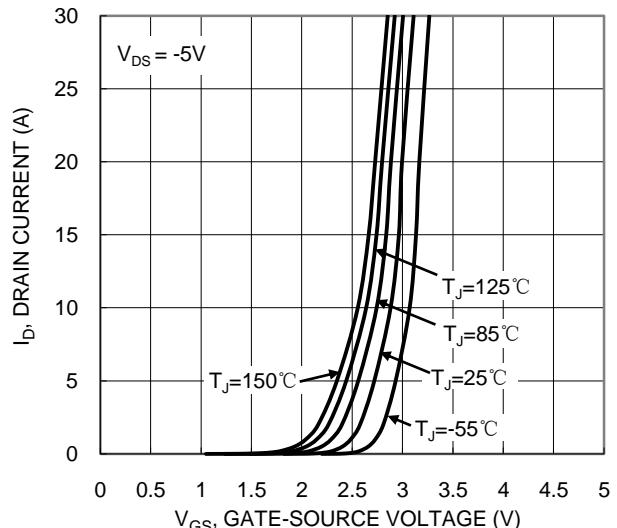


Figure 2. Typical Transfer Characteristic

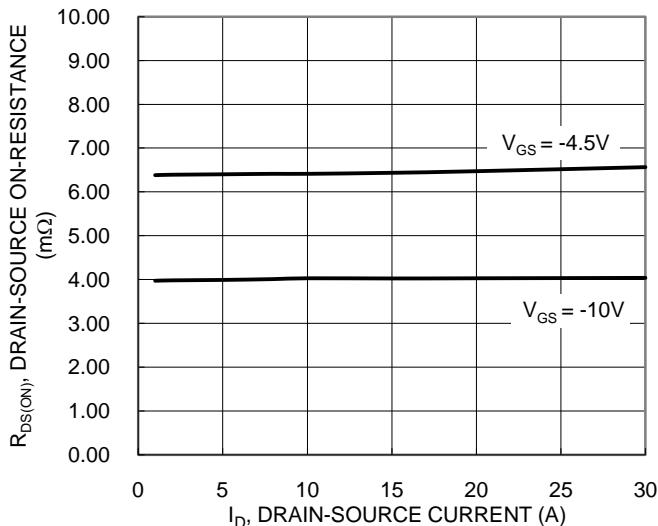


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

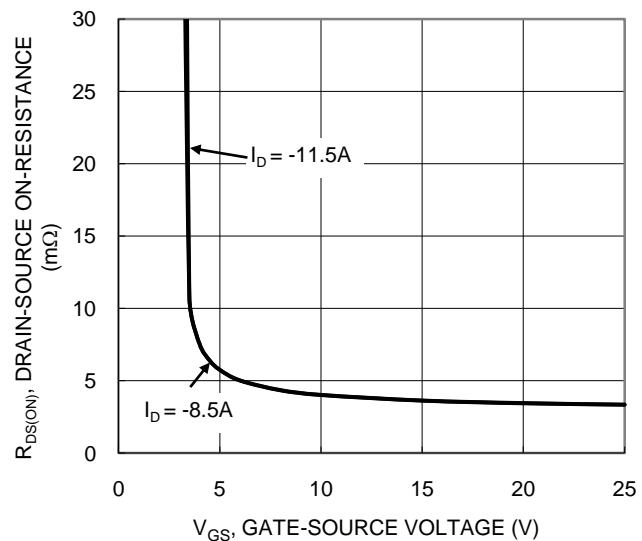


Figure 4. Typical Transfer Characteristic

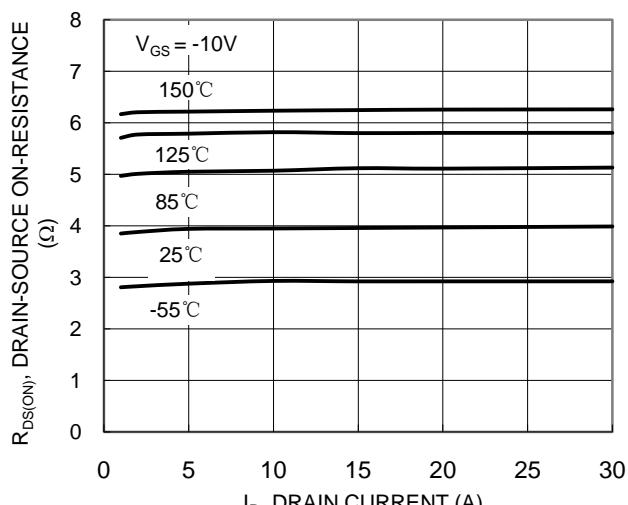


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

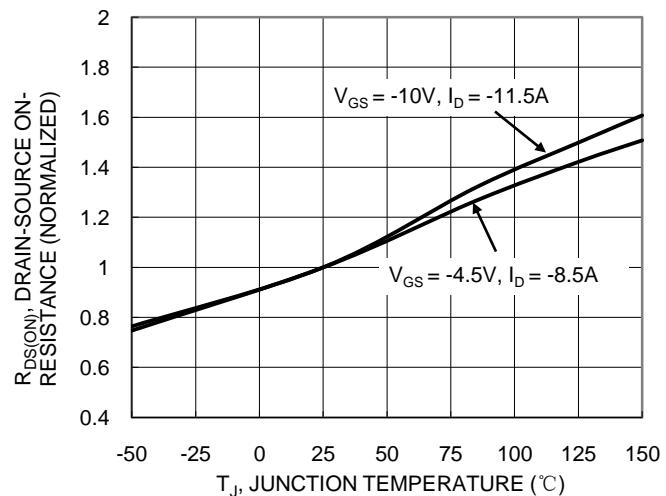


Figure 6. On-Resistance Variation with Temperature

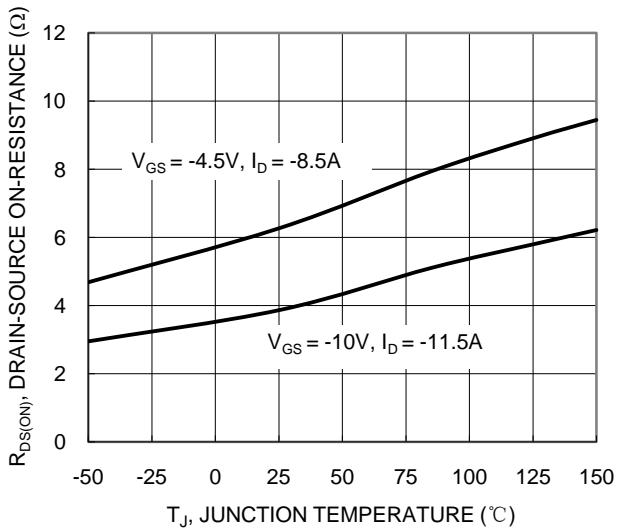


Figure 7. On-Resistance Variation with Temperature

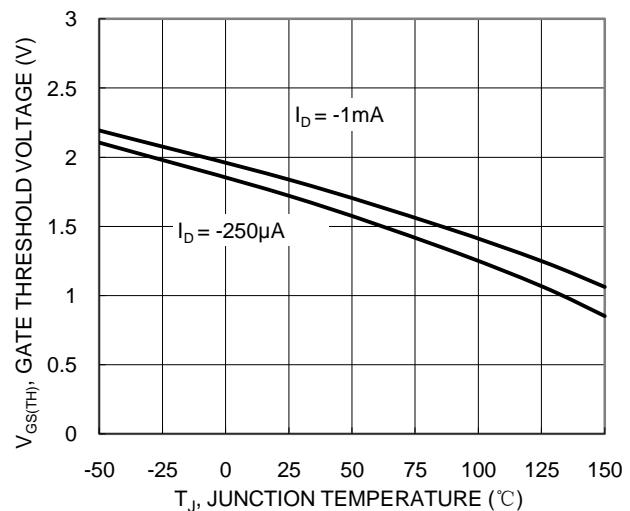


Figure 8. Gate Threshold Variation vs. Junction Temperature

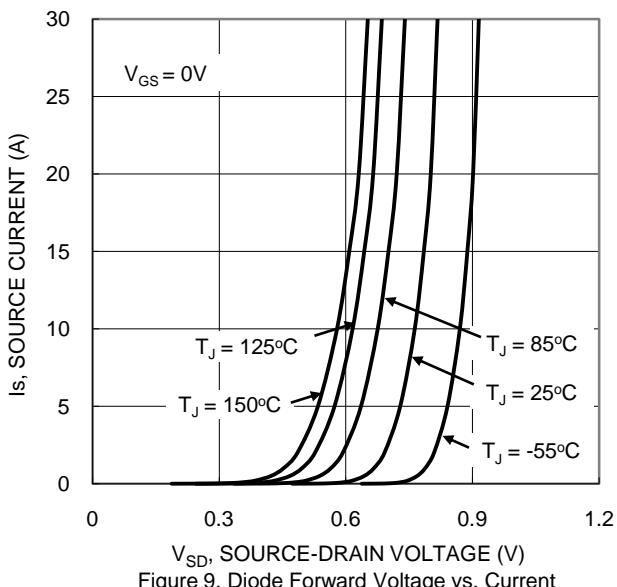


Figure 9. Diode Forward Voltage vs. Current

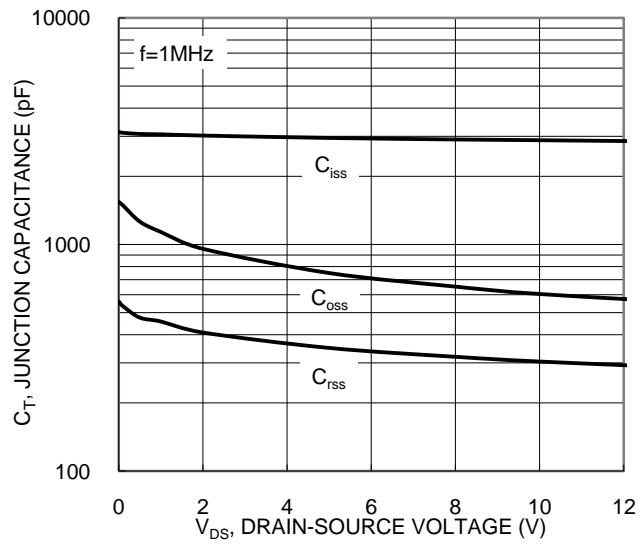


Figure 10. Typical Junction Capacitance

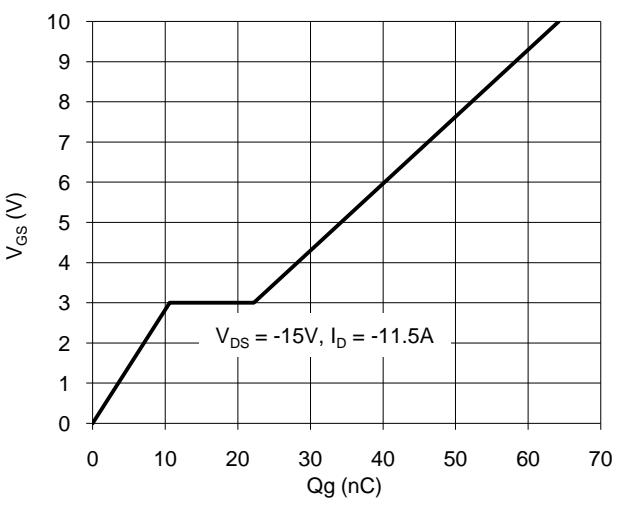


Figure 11. Gate Charge

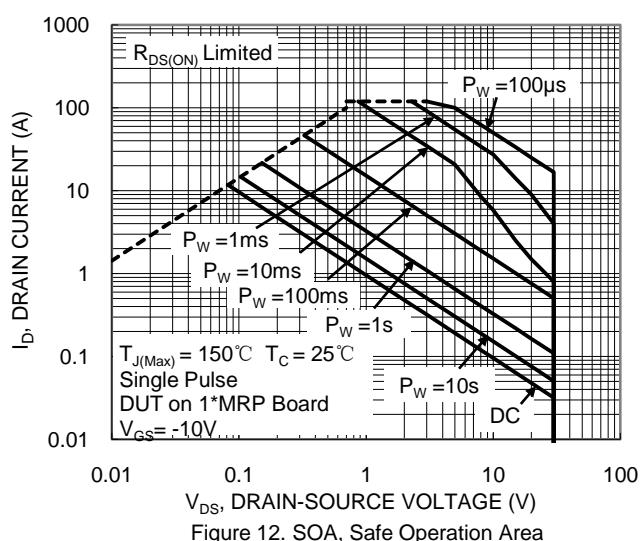


Figure 12. SOA, Safe Operation Area

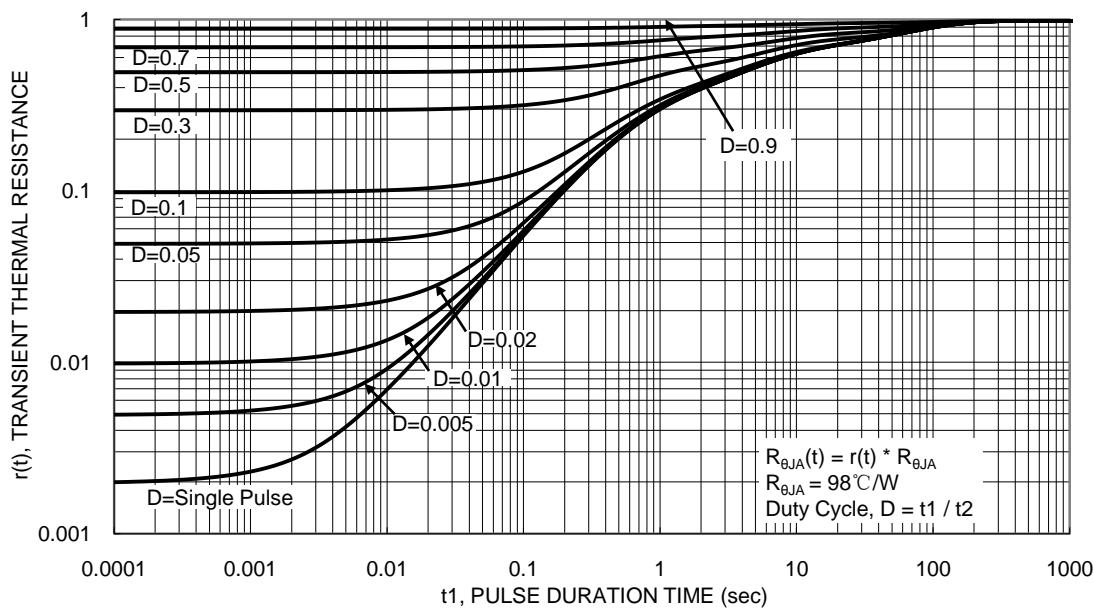
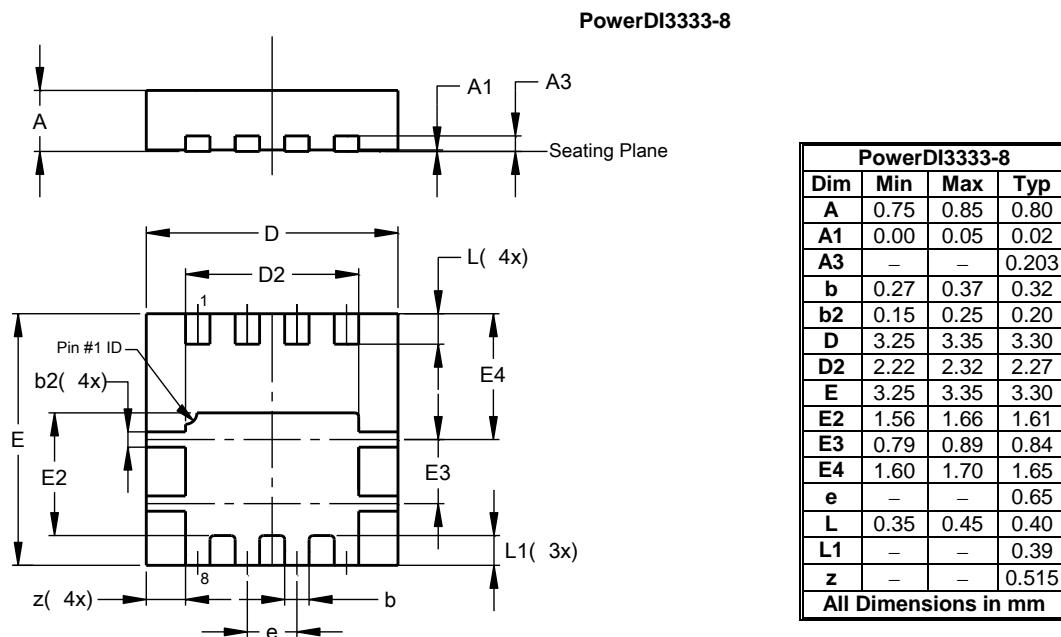


Figure 13. Transient Thermal Resistance

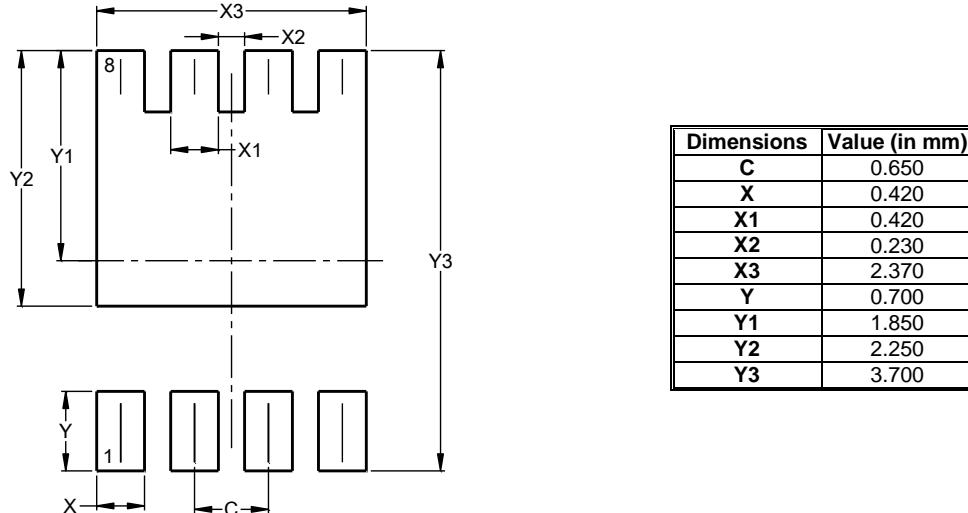
Package Outline Dimensions

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



Suggested Pad Layout

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