

## Product Summary

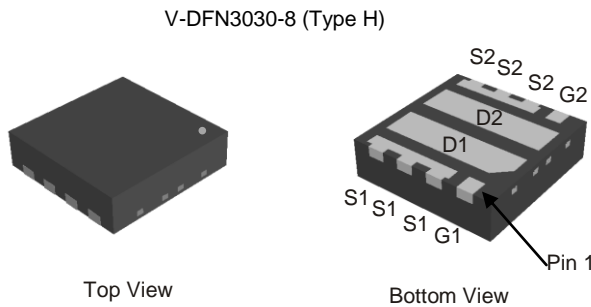
Device	BV <sub>DSS</sub>	R <sub>DS(ON)</sub> MAX	I <sub>D</sub> MAX T <sub>A</sub> = +25°C
N-Channel	60V	17mΩ @ V <sub>GS</sub> = 10V	8.8A
		26mΩ @ V <sub>GS</sub> = 4.5V	6.9A

## Description

This new generation MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

## Applications

- Power Management Functions
- Analog Switch

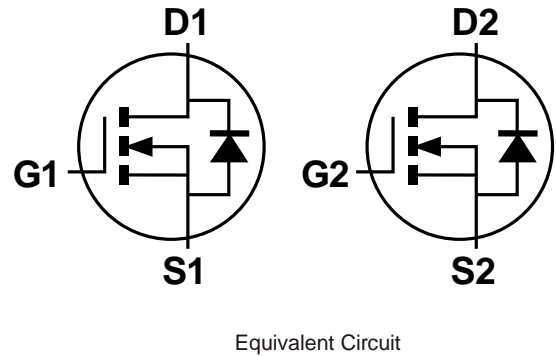


## Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## Mechanical Data

- Case: V-DFN3030-8 (Type H)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu Over Copper Leadframe. Solderable per MIL-STD-202, Method 208 <sup>(e4)</sup>
- Weight: 0.02 grams (Approximate)

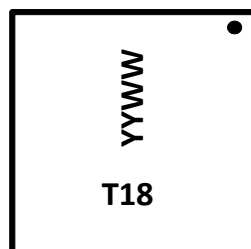


## Ordering Information (Note 4)

Part Number	Case	Packaging
DMT6018LDR-7	V-DFN3030-8 (Type H)	3000/Tape & Reel
DMT6018LDR-13	V-DFN3030-8 (Type H)	10000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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



T18 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 16 for 2016)  
 WW = Week Code (01 to 53)

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V <sub>DSS</sub>	60	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V	Steady State	I <sub>D</sub>	8.8 7.1	A
	t < 10s	I <sub>D</sub>	11.4 9.1	A
Maximum Continuous Body Diode Forward Current (Note 6)		I <sub>S</sub>	3	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I <sub>DM</sub>	50	A
Avalanche Current (Note 7) L = 1mH		I <sub>AS</sub>	8	A
Avalanche Energy (Note 7) L = 1mH		E <sub>AS</sub>	32	mJ

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T <sub>A</sub> = +25°C	P <sub>D</sub>	1.1	W
	T <sub>A</sub> = +70°C		0.7	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R <sub>θJA</sub>	108	°C/W
	t < 10s		65	
Total Power Dissipation (Note 6)	T <sub>A</sub> = +25°C	P <sub>D</sub>	1.9	W
	T <sub>A</sub> = +70°C		1.2	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R <sub>θJA</sub>	66	°C/W
	t < 10s		40	
Thermal Resistance, Junction to Case (Note 6)		R <sub>θJC</sub>	11.4	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	60	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250µA
Zero Gate Voltage Drain Current T <sub>J</sub> = +25°C	I <sub>DSS</sub>	-	-	1.0	µA	V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1.0	-	3.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	13	17	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 8.2A
		-	20	26		
Diode Forward Voltage	V <sub>SD</sub>	-	0.75	-	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>ISS</sub>	-	869	-	pF	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>OSS</sub>	-	226	-	pF	
Reverse Transfer Capacitance	C <sub>RSS</sub>	-	15	-	pF	
Gate Resistance	R <sub>g</sub>	-	1.1	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	-	6.2	-	nC	V <sub>DS</sub> = 30V, I <sub>D</sub> = 8.2A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	-	13.9	-	nC	
Gate-Source Charge	Q <sub>gs</sub>	-	3.0	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	1.9	-	nC	
Turn-On Delay Time	t <sub>D(ON)</sub>	-	3.5	-	ns	V <sub>DD</sub> = 30V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 8.2A, R <sub>g</sub> = 6Ω
Turn-On Rise Time	t <sub>R</sub>	-	4.6	-	ns	
Turn-Off Delay Time	t <sub>D(OFF)</sub>	-	10.8	-	ns	
Turn-Off Fall Time	t <sub>F</sub>	-	3.5	-	ns	
Reverse Recovery Time	t <sub>RR</sub>	-	20.3	-	ns	
Reverse Recovery Charge	Q <sub>RR</sub>	-	11.4	-	nC	I <sub>F</sub> = 8.2A, di/dt = 100A/µs

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
  - I<sub>AS</sub> and E<sub>AS</sub> ratings are based on low frequency and duty cycles to keep T<sub>J</sub> = +25°C.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

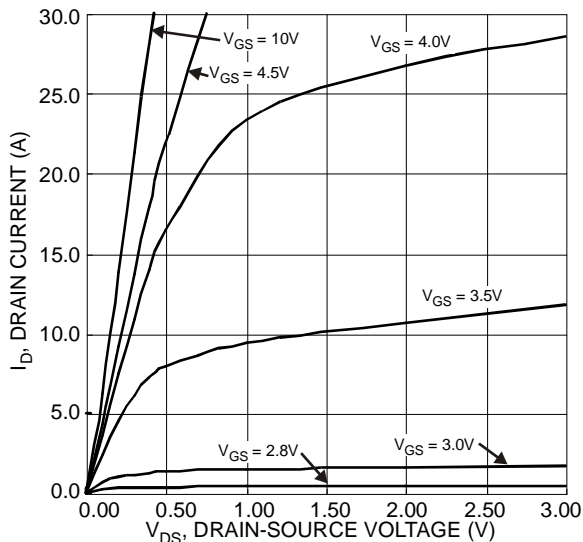


Figure 1 Typical Output Characteristics

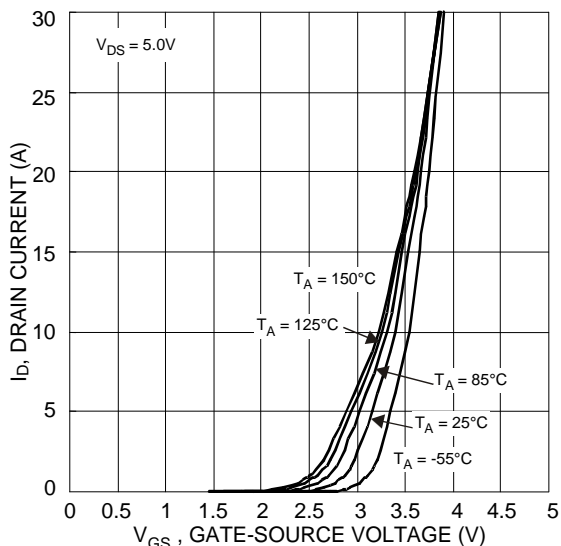


Figure 2 Typical Transfer Characteristics

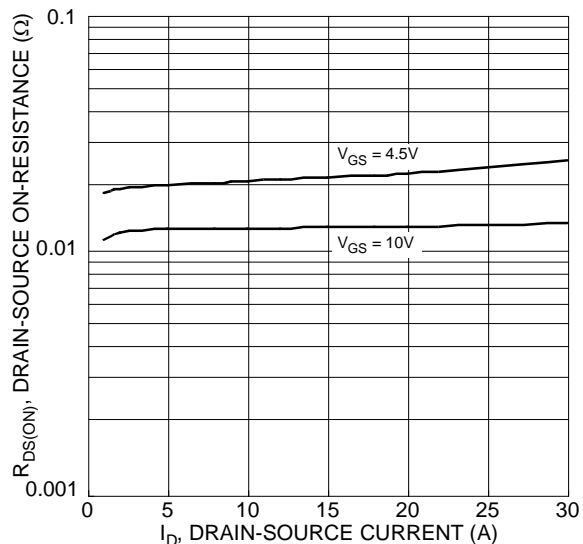


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

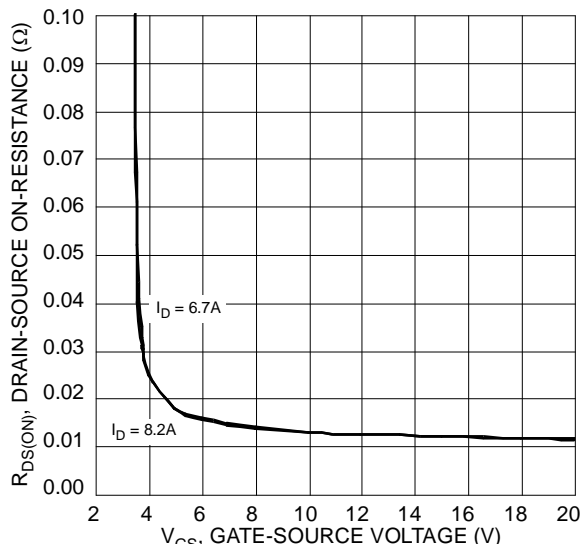


Figure 4 Typical Transfer Characteristics

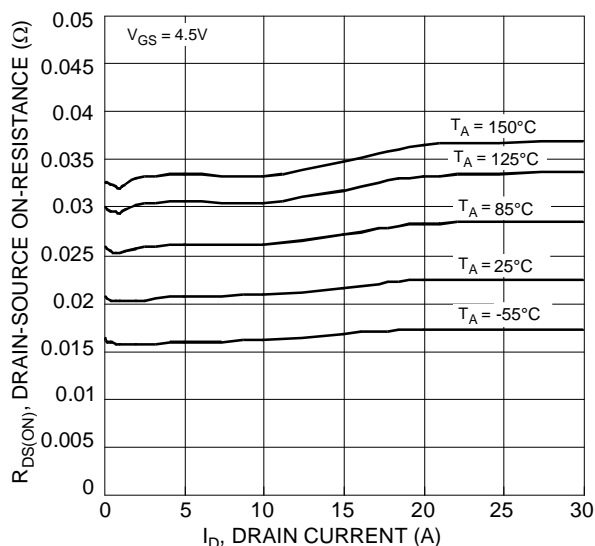


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

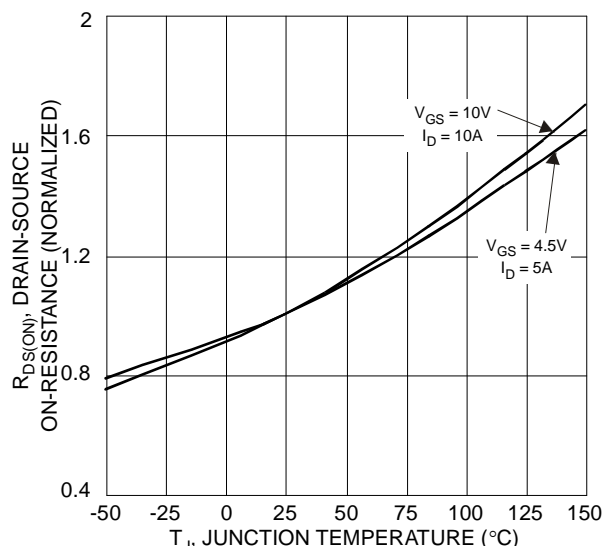


Figure 6 On-Resistance Variation with Temperature

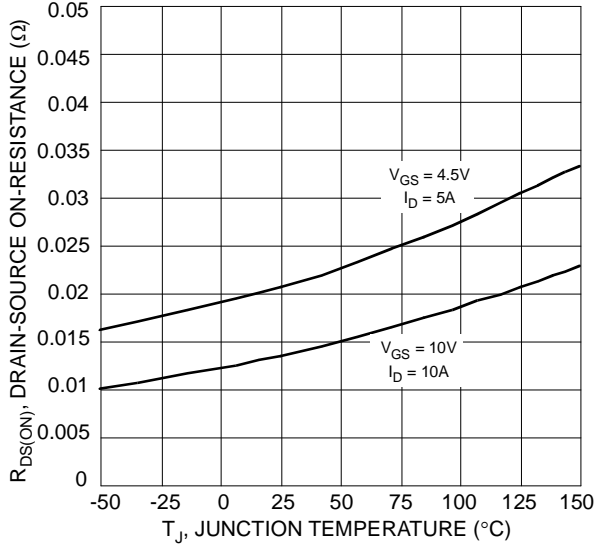


Figure 7 On-Resistance Variation with Temperature

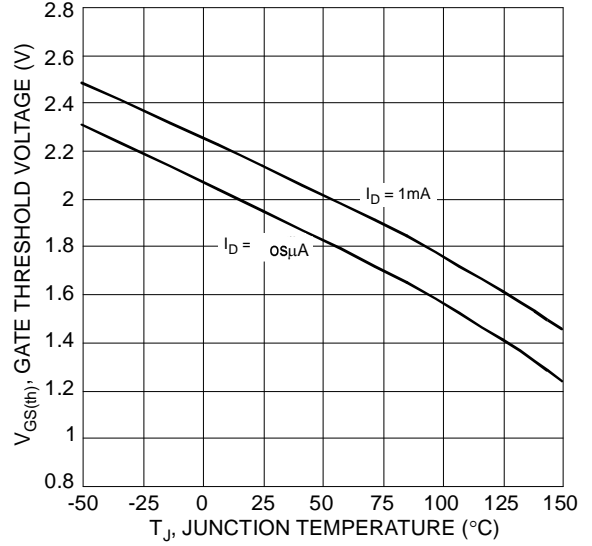


Figure 8 Gate Threshold Variation vs. Junction Temperature

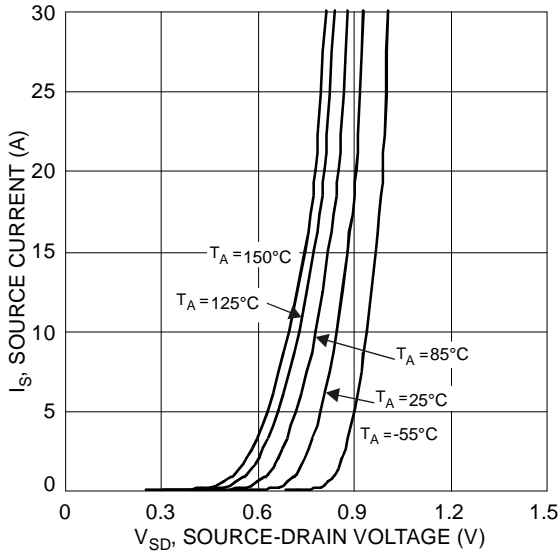


Figure 9 Diode Forward Voltage vs. Current

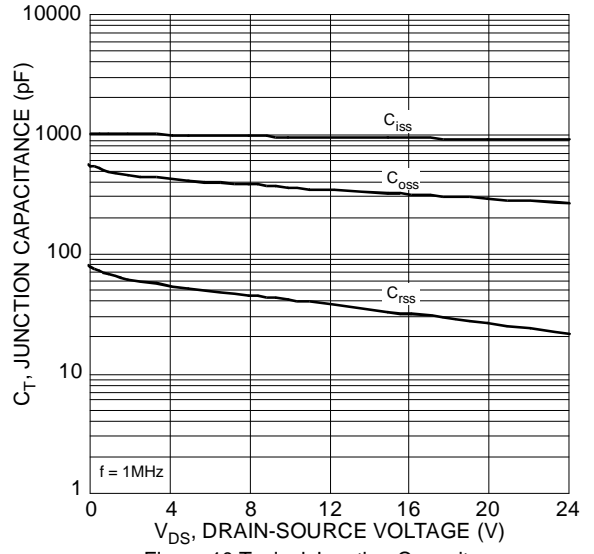


Figure 10 Typical Junction Capacitance

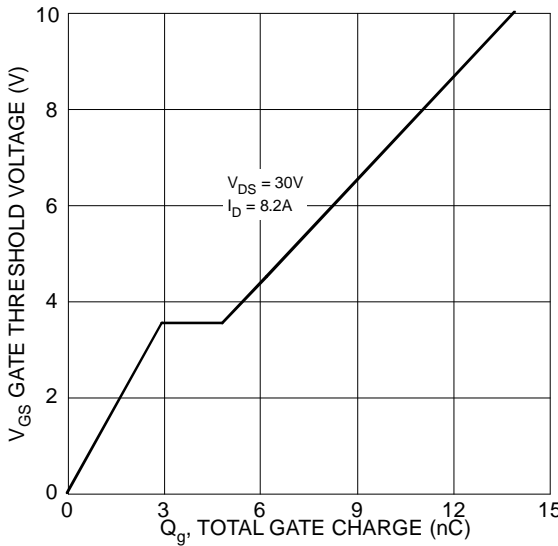


Figure 11 Gate Charge

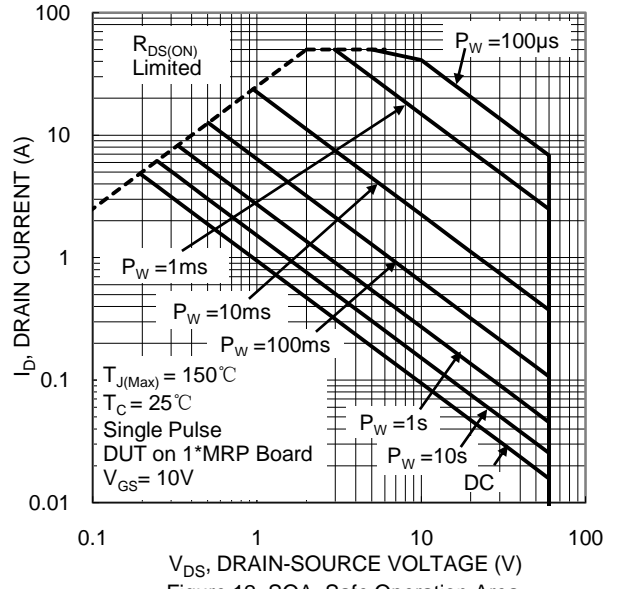


Figure 12. SOA, Safe Operation Area

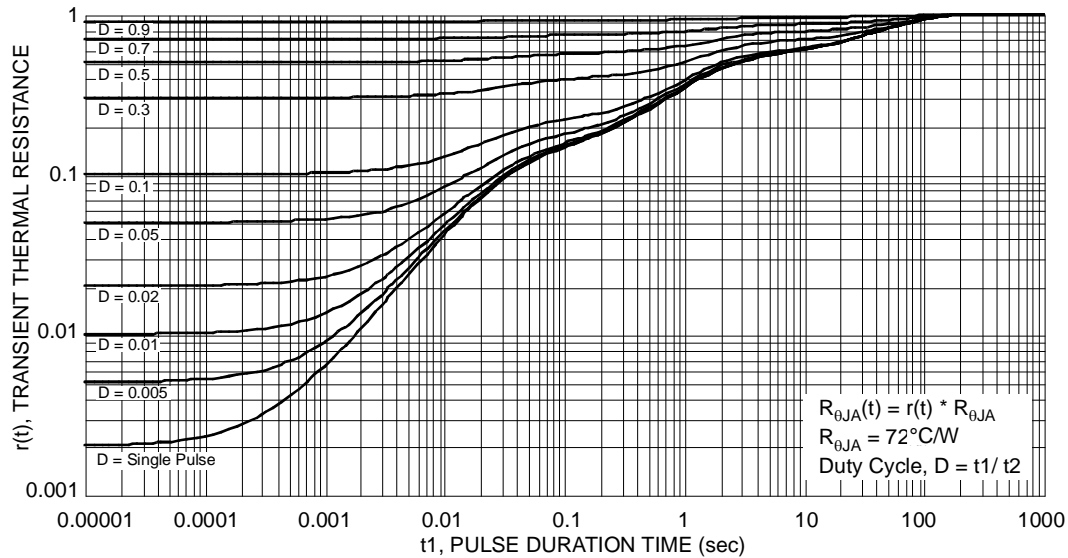
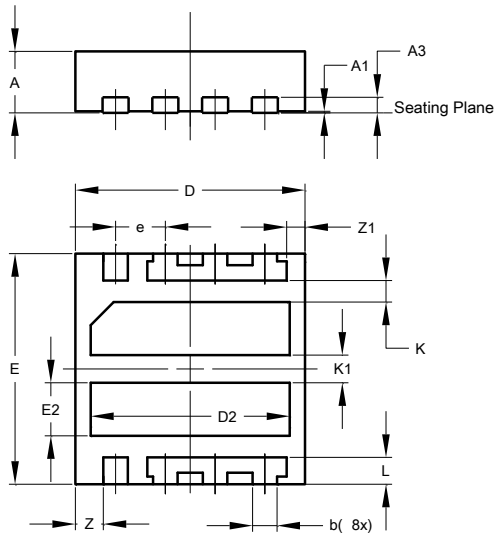


Figure 12 Transient Thermal Resistance

## Package Outline Dimensions

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

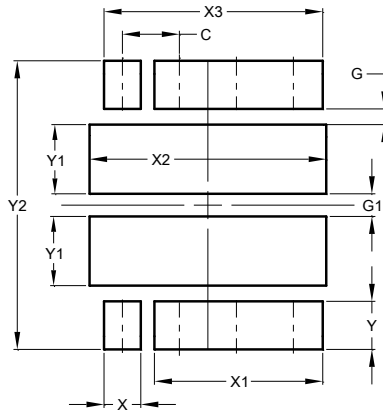
### V-DFN3030-8 (Type H)



V-DFN3030-8 (Type H)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0	0.05	0.02
A3	0.203 BSC		
b	0.27	0.37	0.32
D	2.95	3.05	3.00
D2	2.50	2.70	2.60
e	0.65 BSC		
E	2.95	3.05	3.00
E2	0.59	0.79	0.69
L	0.30	0.40	0.35
K	0.28 BSC		
K1	0.36 BSC		
Z	0.365 BSC		
Z1	0.24 BSC		
<b>All Dimensions in mm</b>			

## Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.  
**V-DFN3030-8 (Type H)**



Dimensions	Value (in mm)
<b>C</b>	0.650
<b>G</b>	0.180
<b>G1</b>	0.260
<b>X</b>	0.420
<b>X1</b>	1.920
<b>X2</b>	2.700
<b>X3</b>	2.495
<b>Y</b>	0.550
<b>Y1</b>	0.790
<b>Y2</b>	3.300

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