

Product Summary

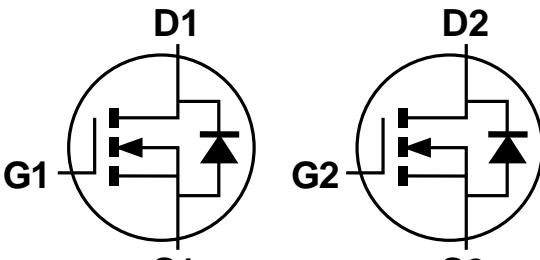
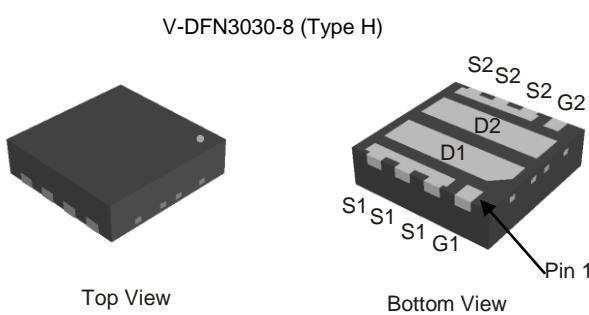
Device	BV _{DSS}	R _{D(S(ON)) MAX}	I _{D MAX} T _A = +25°C
N-Channel	60V	17mΩ @ V _{GS} = 10V	8.8A
		26mΩ @ V _{GS} = 4.5V	6.9A

Description

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

Applications

- Power Management Functions
- Analog Switch



Equivalent Circuit

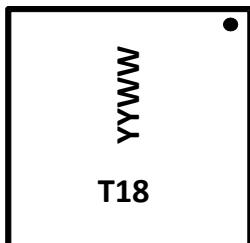
Ordering Information (Note 4)

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:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	8.8 7.1	A
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	11.4 9.1	A
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	3	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	50	A
Avalanche Current (Note 7) $L = 1\text{mH}$			I_{AS}	8	A
Avalanche Energy (Note 7) $L = 1\text{mH}$			E_{AS}	32	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	1.1	W
	$T_A = +70^\circ\text{C}$		0.7	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	108	$^\circ\text{C/W}$
	$t < 10\text{s}$		65	
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	P_D	1.9	W
	$T_A = +70^\circ\text{C}$		1.2	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	66	$^\circ\text{C/W}$
	$t < 10\text{s}$		40	
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	11.4	
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 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	-	-	1.0	μA	$V_{DS} = 48\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
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	$R_{DS(ON)}$	-	13 20	17 26	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 8.2\text{A}$ $V_{GS} = 4.5\text{V}, I_D = 6.7\text{A}$
Diode Forward Voltage	V_{SD}	-	0.75	-	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	-	869	-	pF	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Output Capacitance	C_{oss}	-	226	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	15	-	pF	
Gate Resistance	R_g	-	1.1	-	Ω	
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	-	6.2	-	nC	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$ $V_{DS} = 30\text{V}, I_D = 8.2\text{A}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	-	13.9	-	nC	
Gate-Source Charge	Q_{gs}	-	3.0	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.9	-	nC	
Turn-On Delay Time	$t_{D(ON)}$	-	3.5	-	ns	$V_{DD} = 30\text{V}, V_{GS} = 10\text{V}, I_D = 8.2\text{A}, R_g = 6\Omega$
Turn-On Rise Time	t_R	-	4.6	-	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	-	10.8	-	ns	
Turn-Off Fall Time	t_f	-	3.5	-	ns	
Reverse Recovery Time	t_{RR}	-	20.3	-	ns	$I_F = 8.2\text{A}, di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge	Q_{RR}	-	11.4	-	nC	$I_F = 8.2\text{A}, di/dt = 100\text{A}/\mu\text{s}$

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. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep $T_J = +25^\circ\text{C}$.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.

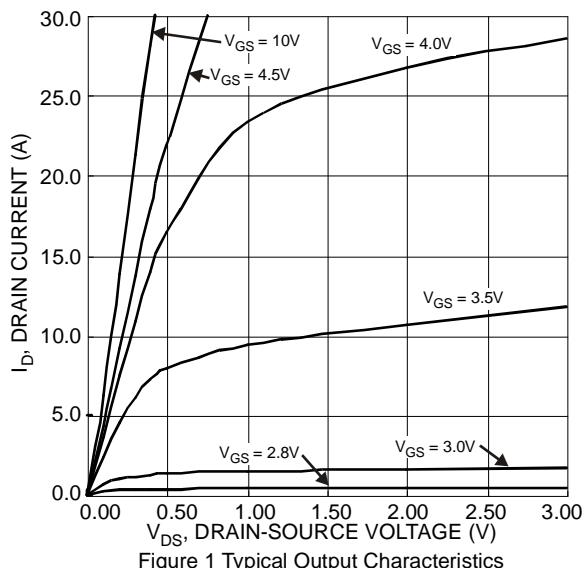


Figure 1 Typical Output Characteristics

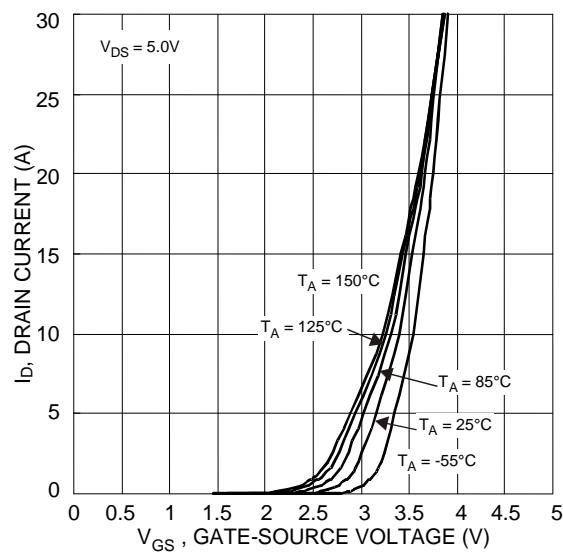


Figure 2 Typical Transfer Characteristics

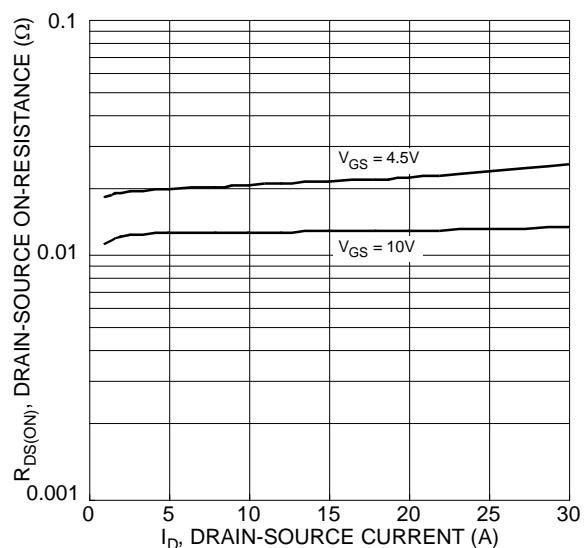


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

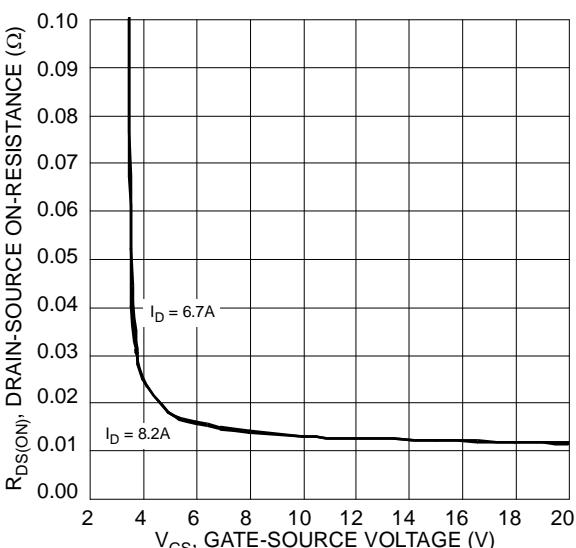


Figure 4 Typical Transfer Characteristics

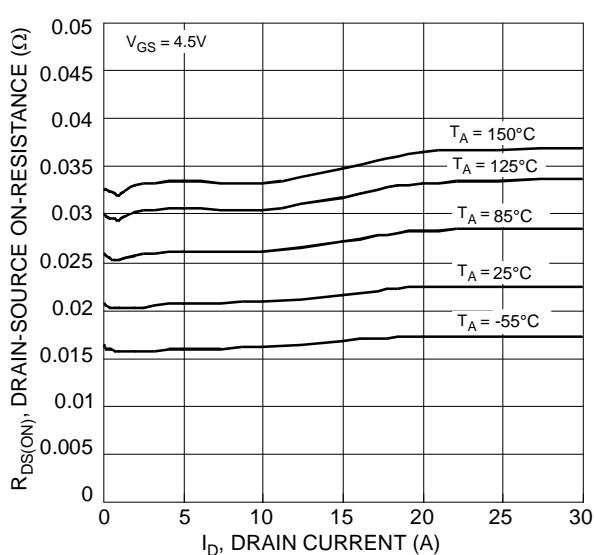


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

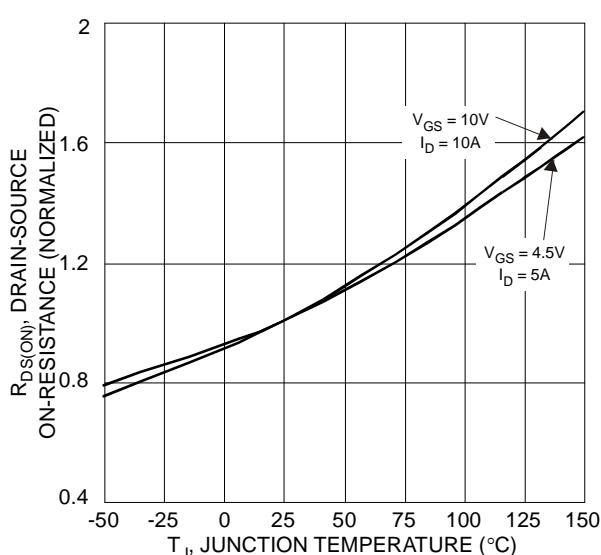


Figure 6 On-Resistance Variation with Temperature

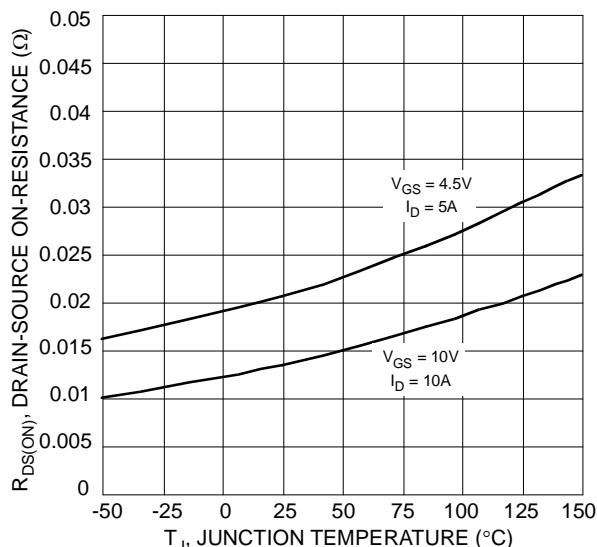


Figure 7 On-Resistance Variation with Temperature

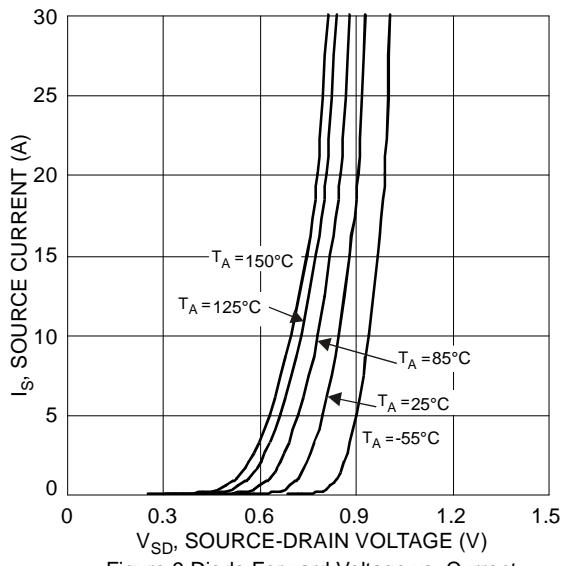


Figure 9 Diode Forward Voltage vs. Current

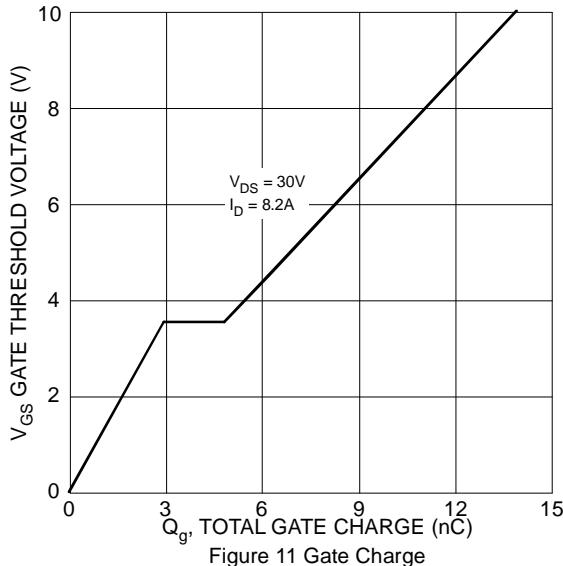


Figure 11 Gate Charge

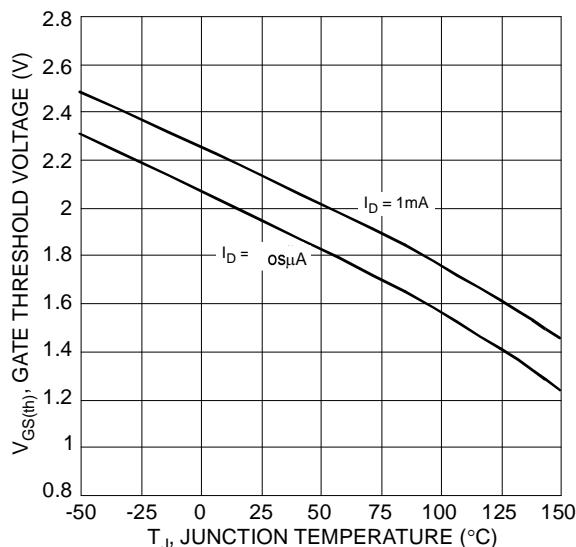


Figure 8 Gate Threshold Variation vs. Junction Temperature

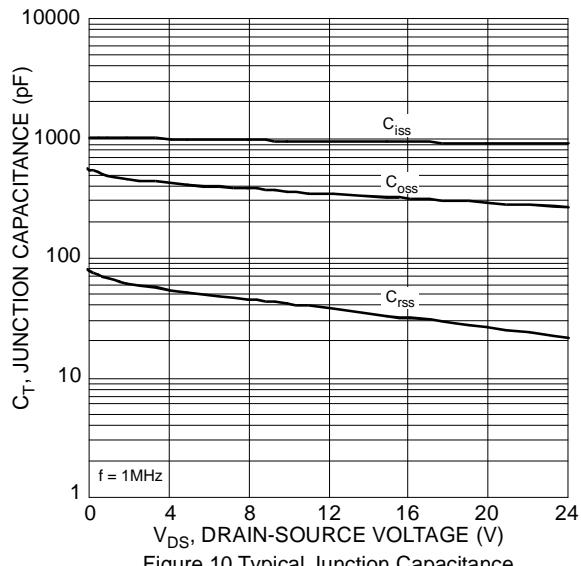


Figure 10 Typical Junction Capacitance

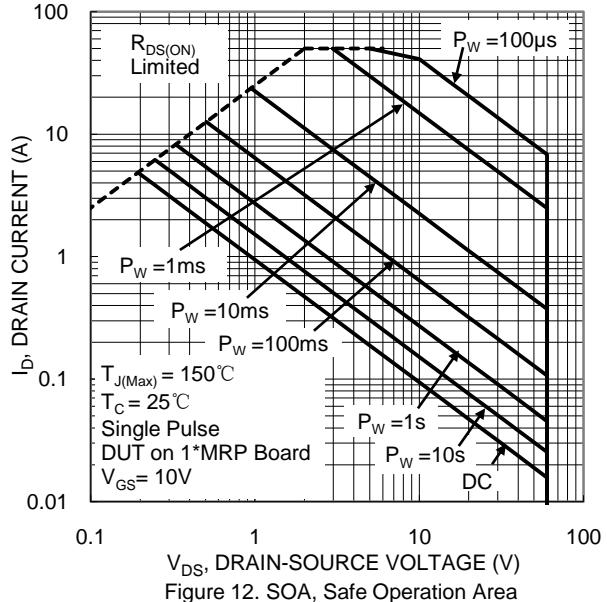


Figure 12. SOA, Safe Operation Area

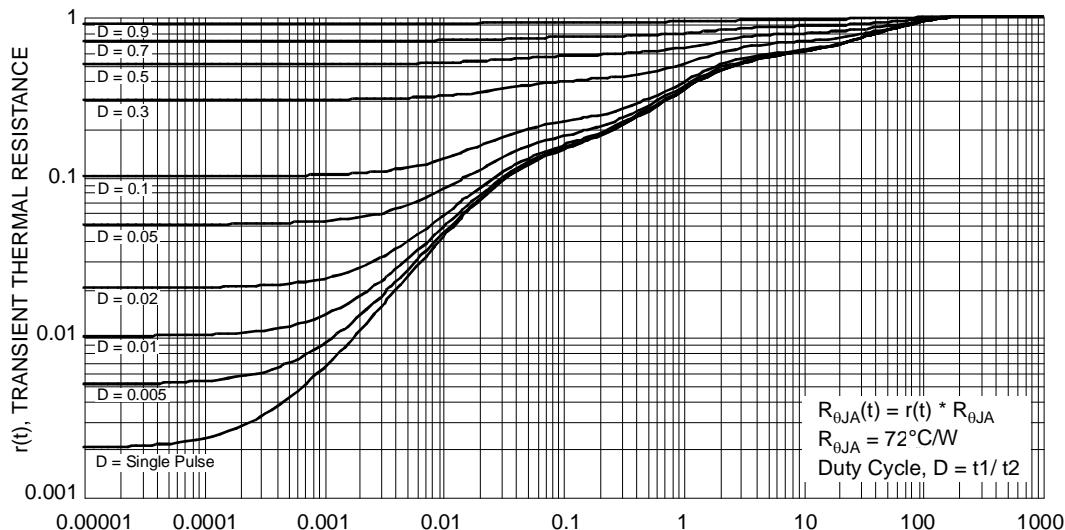
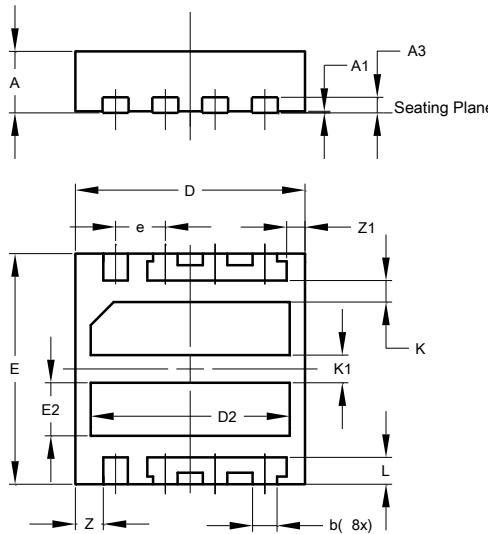


Figure 12 Transient Thermal Resistance

Package Outline Dimensions

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

V-DFN3030-8 (Type H)

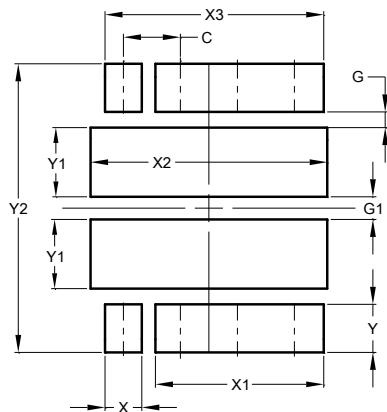


V-DFN3030-8 (Type H)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0	0.05	0.02
A3	0.203	BSC	
b	0.27	0.37	0.32
D	2.95	3.05	3.00
D2	2.50	2.70	2.60
e	0.65 BSC		
E	2.95	3.05	3.00
E2	0.59	0.79	0.69
L	0.30	0.40	0.35
K	0.28 BSC		
K1	0.36 BSC		
Z	0.365 BSC		
Z1	0.24 BSC		

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)
C	0.650
G	0.180
G1	0.260
X	0.420
X1	1.920
X2	2.700
X3	2.495
Y	0.550
Y1	0.790
Y2	3.300

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