

## Product Summary

$BV_{DSS}$	$R_{DS(ON)} \text{ Max}$	$I_D \text{ Max}$ $T_A = +25^\circ\text{C}$
$-250V$	$14\Omega @ V_{GS} = -10V$	$-0.26A$
	$18\Omega @ V_{GS} = -3.5V$	$-0.23A$

## Description and Applications

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

- General Purpose Interfacing Switch
- Load Switching
- Battery Management Application
- Power Management Functions

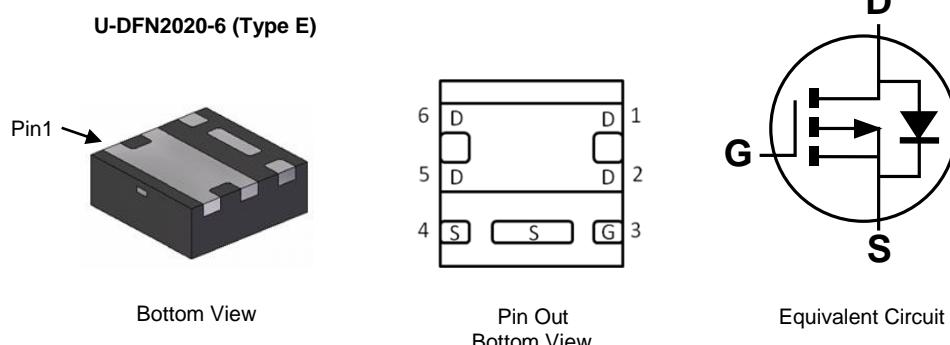
## Features and Benefits

- 0.6mm Profile – Ideal for Low-Profile Applications
- PCB Footprint of  $4\text{mm}^2$
- Low Gate Threshold Voltage
- Low On-Resistance
- 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-Q100/101/200, 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

- Case: U-DFN2020-6
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 
- Weight: 0.0065 grams (Approximate)



## Ordering Information (Note 4)

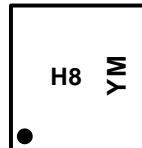
Part Number	Marking	Reel Size (inches)	Quantity per Reel
DMP25H18DLFDE-7	H8	7	3,000
DMP25H18DLFDE-13	H8	13	10,000

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 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.
- 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information

Site 1

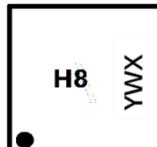


H8 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: H = 2020)  
 M = Month (ex: 9 = September)

Date Code Key

Year	2014	...	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	B	...	H	I	J	K	L	M	N	O	P	R
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Site 2



H8 = Product Type Marking Code  
 YWX = Date Code Marking  
 Y = Year (ex: 0 = 2020)  
 W = Week (ex: a = Week 27; z Represents Week 52 and 53)  
 X = Internal Code (ex: U = Monday)

Date Code Key

Year	2014	...	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	4	...	0	1	2	3	4	5	6	7	8	9
Week	1-26			27-52				53				
Code	A-Z			a-z				z				
Internal Code	Sun		Mon		Tue		Wed		Thu		Fri	
Code	T		U		V		W		X		Y	

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	-250	V
Gate-Source Voltage			$V_{GSS}$	$\pm 40$	V
Continuous Drain Current (Note 6) $V_{GS} = -10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	-0.26 -0.21	A
Pulsed Drain Current (10 $\mu\text{s}$ Pulse, Duty Cycle $\leq 1\%$ )			$I_{DM}$	-1.0	A
Maximum Body Diode Continuous Current (Note 6)			$I_S$	-0.26	A

**Thermal Characteristics**

Characteristic		Symbol	Value	Unit
Total Power Dissipation	(Note 5)	$P_D$	0.6	W
	(Note 6)		1.4	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	191	°C/W
	(Note 6)		86	
Thermal Resistance, Junction to Case	(Note 6)	$R_{\theta JC}$	17	
Operating and Storage Temperature Range		$T_J, T_{STG}$	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-250	—	—	V	$V_{GS} = 0\text{V}, I_D = -1\text{mA}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	$I_{DSS}$	—	—	-1	$\mu\text{A}$	$V_{DS} = -250\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 40\text{V}, V_{DS} = 0\text{V}$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.5	-1.7	-2.5	V	$V_{DS} = V_{GS}, I_D = -1\text{mA}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	10	14	$\Omega$	$V_{GS} = -10\text{V}, I_D = -200\text{mA}$
			13	18		$V_{GS} = -3.5\text{V}, I_D = -100\text{mA}$
Diode Forward Voltage	$V_{SD}$	—	-0.8	-1.2	V	$V_{GS} = 0\text{V}, I_S = -200\text{mA}$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	81	—	pF	$V_{DS} = -25\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	14	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	4	—	pF	
Gate Resistance	$R_g$	—	13	—	$\Omega$	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge ( $V_{GS} = -10\text{V}$ )	$Q_g$	—	2.8	—	nC	$V_{DS} = -25\text{V}, I_D = -200\text{mA}$
Gate-Source Charge	$Q_{gs}$	—	0.3	—	nC	
Gate-Drain Charge	$Q_{gd}$	—	0.6	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	7.5	—	ns	$V_{DS} = -30\text{V}, I_D = -200\text{mA}$
Turn-On Rise Time	$t_R$	—	25	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	124	—	ns	
Turn-Off Fall Time	$t_F$	—	95	—	ns	
Reverse Recovery Time	$t_{RR}$	—	85	—	ns	$I_F = -1.0\text{A}, di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge	$Q_{RR}$	—	294	—	$\mu\text{C}$	

Notes:

- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
- Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate.
- Short duration pulse test used to minimize self-heating effect.
- Guaranteed by design. Not subject to production testing.

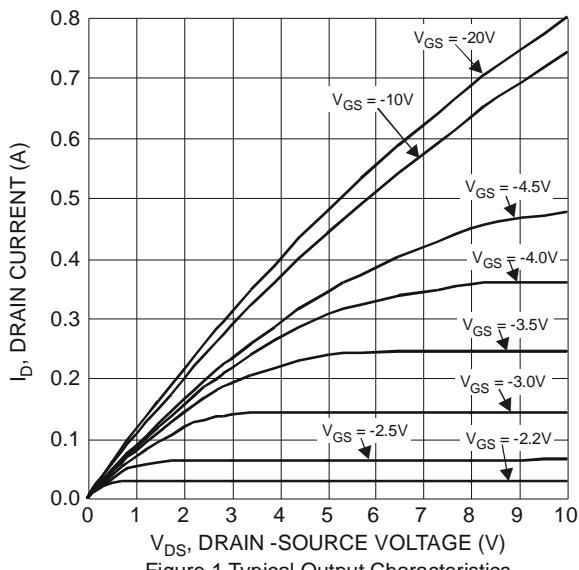


Figure 1 Typical Output Characteristics

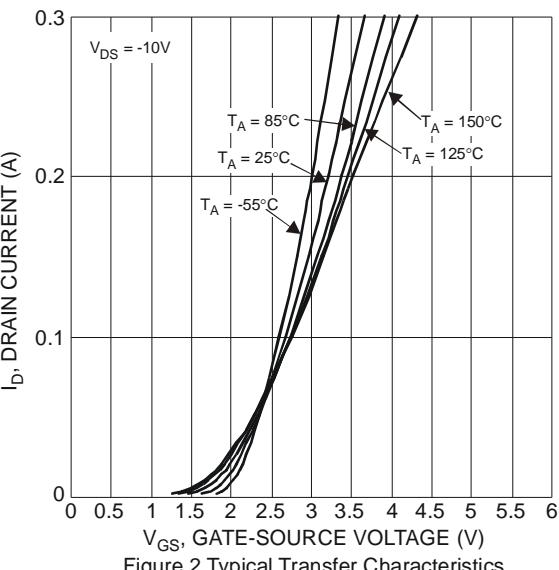


Figure 2 Typical Transfer Characteristics

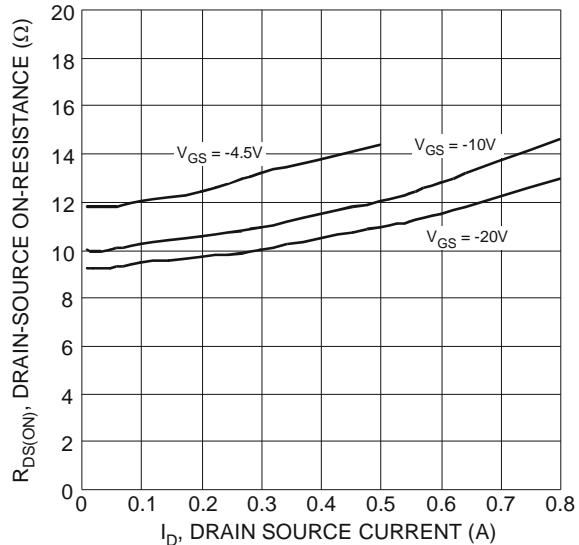


Figure 3 Typical On-Resistance vs.  
Drain Current and Gate Voltage

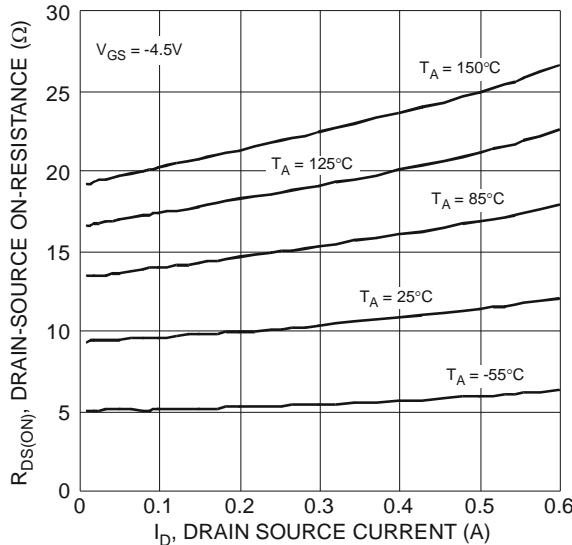


Figure 4 Typical On-Resistance vs.  
Drain Current and Temperature

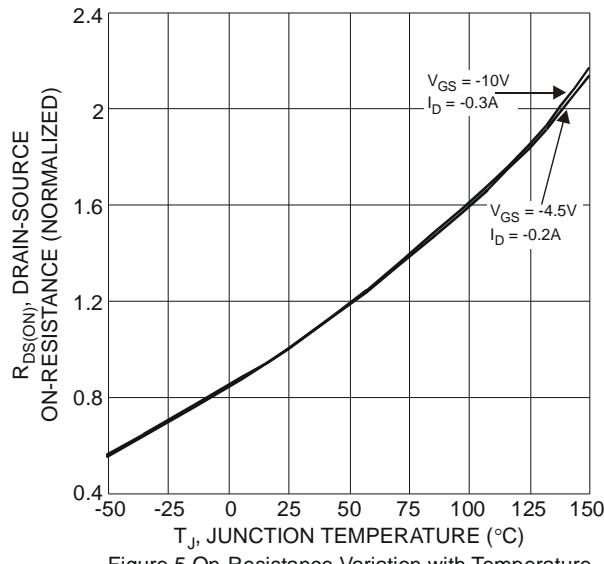


Figure 5 On-Resistance Variation with Temperature

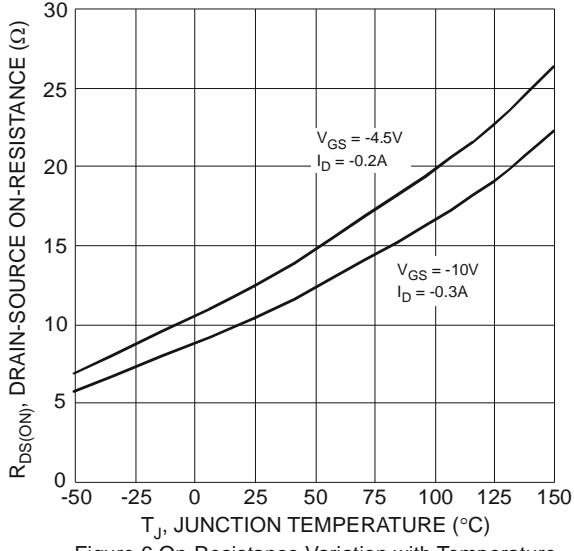


Figure 6 On-Resistance Variation with Temperature

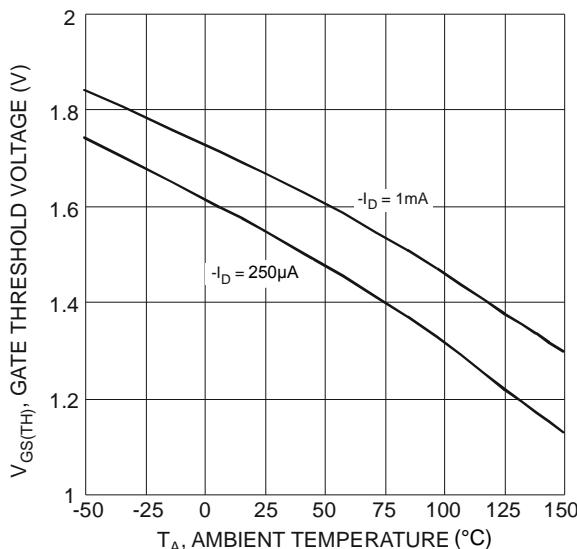


Figure 7 Gate Threshold Variation vs. Ambient Temperature

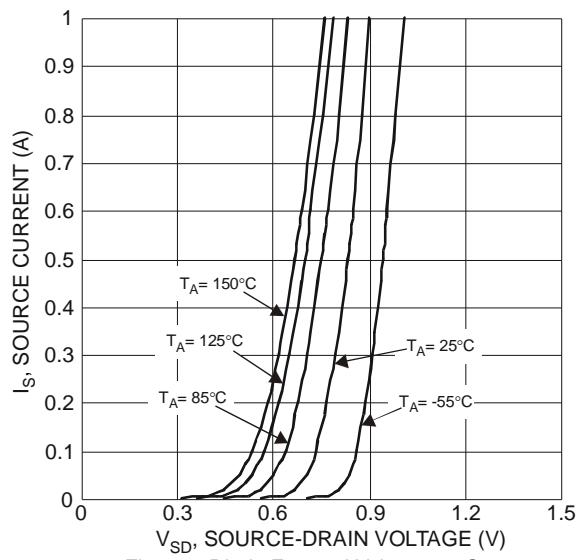


Figure 8 Diode Forward Voltage vs. Current

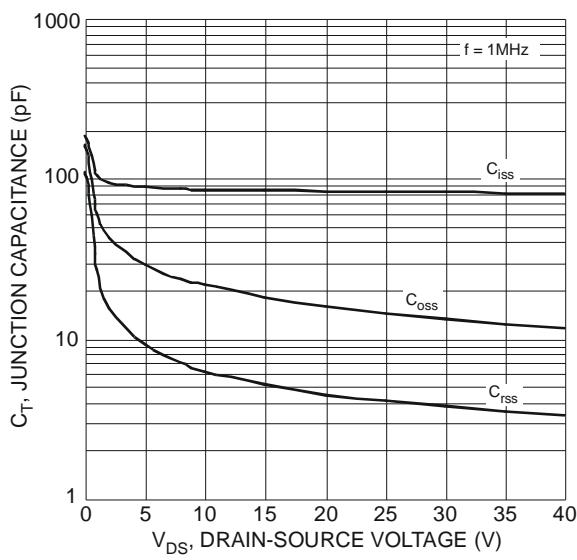


Figure 9 Typical Junction Capacitance

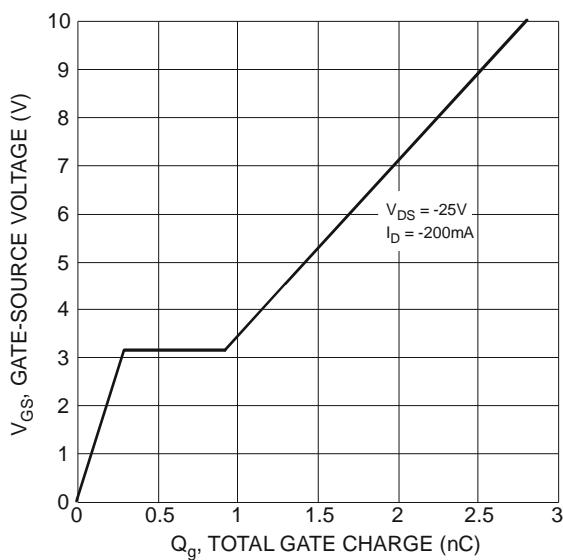


Figure 10 Gate-Charge Characteristics

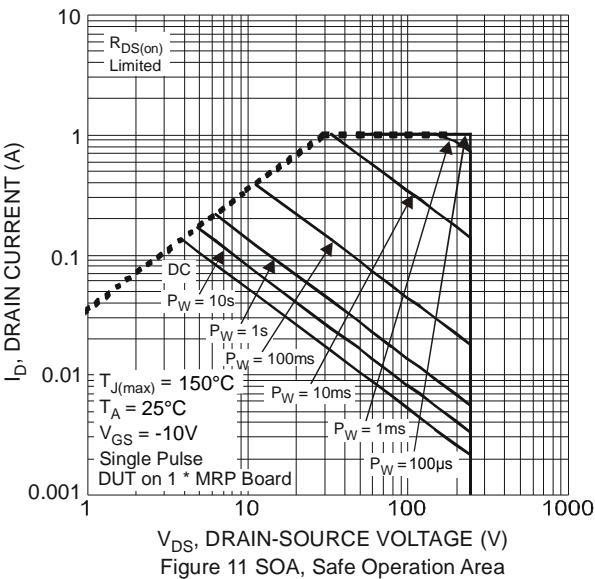
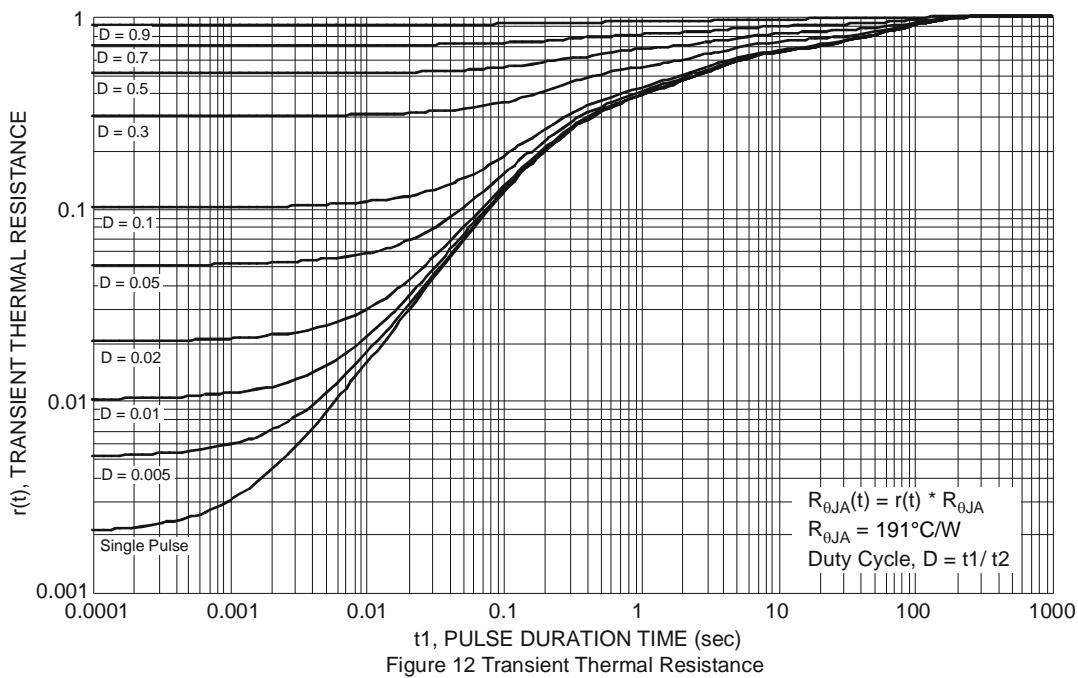


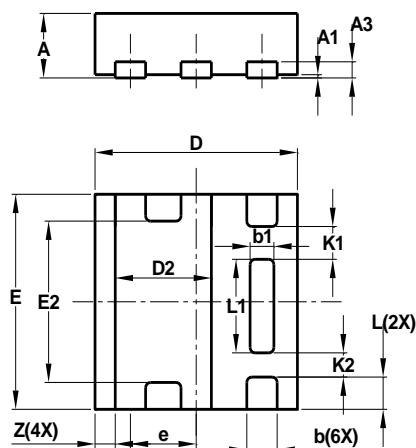
Figure 11 SOA, Safe Operation Area



## Package Outline Dimensions

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

U-DFN2020-6 (Type E)



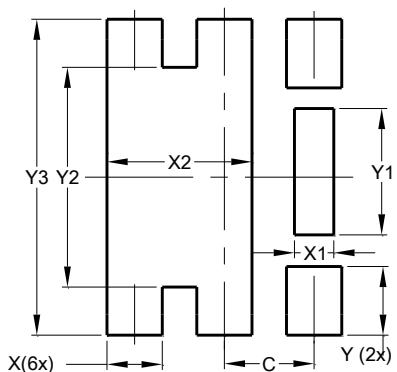
U-DFN2020-6 Type E			
Dim	Min	Max	Typ
A	0.57	0.63	0.60
A1	0	0.05	0.03
A3	—	—	0.15
b	0.25	0.35	0.30
b1	0.185	0.285	0.235
D	1.95	2.05	2.00
D2	0.85	1.05	0.95
E	1.95	2.05	2.00
E2	1.40	1.60	1.50
e	—	—	0.65
L	0.25	0.35	0.30
L1	0.82	0.92	0.87
K1	—	—	0.305
K2	—	—	0.225
Z	—	—	0.20

All Dimensions in mm

## Suggested Pad Layout

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

U-DFN2020-6 (Type E)



Dimensions	Value (in mm)
C	0.650
X	0.400
X1	0.285
X2	1.050
Y	0.500
Y1	0.920
Y2	1.600
Y3	2.300

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