

## Product Summary

$BV_{DSS}$	$R_{DS(ON)} \text{ MAX}$	$I_D \text{ MAX}$ $T_A = +25^\circ\text{C}$
-30V	25m $\Omega$ @ $V_{GS} = -10\text{V}$	-6.8A
	38m $\Omega$ @ $V_{GS} = -4.5\text{V}$	-5.0A

## Description

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.

## Applications

- DC-DC converters
- Power-management functions
- Load switches

## Features

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.  
<https://www.diodes.com/quality/product-definitions/>
- An automotive-compliant part is available under a separate datasheet ([DMP3028LFDEQ](#))

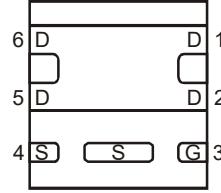
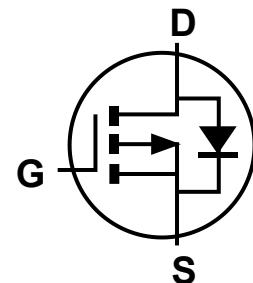
## Mechanical Data

- Package: U-DFN2020-6
- Package 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 **e4**
- Weight: 0.0065 grams (Approximate)

U-DFN2020-6 (Type E)



Bottom View


 Pinout  
Bottom View


Equivalent Circuit

## Ordering Information (Note 4)

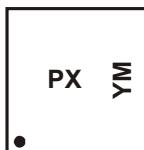
Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMP3028LFDE-7	U-DFN2020-6 (Type E)	3,000	Tape & Reel
DMP3028LFDE-13	U-DFN2020-6 (Type E)	10,000	Tape & Reel

## 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

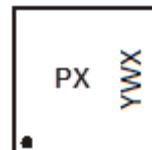


PX = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: M = 2025)  
 M = Month (ex: 9 = September)

Date Code Key

Year	2012	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	Z	-	M	N	P	R	S	T	U	V	W	X
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



PX = Product Type Marking Code  
 YWX = Date Code Marking  
 Y = Year (ex: 5 = 2025)  
 W = Week (ex: a = Week 27; z Represents Week 52 and 53)  
 X = Internal Code (ex: U = Monday)

Date Code Key

Year	2012	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	2	-	5	6	7	8	9	0	1	2	3	4
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			$V_{DSS}$	-30	V
Gate-Source Voltage			$V_{GSS}$	$\pm 20$	V
Continuous Drain Current (Note 5) $V_{GS} = -10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	-6.8 -5.3	A
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	$I_D$	-8.2 -6.6	A
Maximum Body Diode Forward Current (Note 5)			$I_S$	-2.5	A
Pulsed Drain Current (10 $\mu\text{s}$ Pulse, Duty Cycle = 1%)			$I_{DM}$	-40	A

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	$P_D$	0.66	W
	$T_A = +70^\circ\text{C}$		0.42	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	189	$^\circ\text{C/W}$
	$t < 10\text{s}$		125	
Total Power Dissipation (Note 5)	$T_A = +25^\circ\text{C}$	$P_D$	2.03	W
	$T_A = +70^\circ\text{C}$		1.3	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	61	$^\circ\text{C/W}$
	$t < 10\text{s}$		41	
Thermal Resistance, Junction to Case (Note 5)	$R_{\theta JC}$		9.3	
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
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	—	—	V	$V_{GS} = 0, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-1	$\mu\text{A}$	$V_{DS} = -30\text{V}, V_{GS} = 0$
Gate-Source Leakage	$I_{GS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(\text{TH})}$	-1.2	—	-2.4	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	20	25	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -7\text{A}$
		—	29	38		$V_{GS} = -4.5\text{V}, I_D = -6.2\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	—	4.5	—	s	$V_{DS} = -5\text{V}, I_D = -7\text{A}$
Diode Forward Voltage	$V_{SD}$	—	-0.7	-1.2	V	$V_{GS} = 0, I_S = -2.1\text{A}$
On-State Drain Current (Note 8)	$I_{D(\text{ON})}$	-20	—	—	A	$V_{DS} \leq -5\text{V}, V_{GS} = -4.5\text{V}$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	1241	1860	$\text{pF}$	$V_{DS} = -15\text{V}, V_{GS} = 0$ $f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	147	220		
Reverse Transfer Capacitance	$C_{rss}$	—	110	165	$\Omega$	$V_{DS} = 0, V_{GS} = 0, f = 1.0\text{MHz}$
Gate Resistance	$R_G$	—	15	30		
Total Gate Charge ( $V_{GS} = -10\text{V}$ )	$Q_g$	—	22	33	$\text{nC}$	$V_{DS} = -15\text{V}, I_D = -7\text{A}$
Total Gate Charge ( $V_{GS} = -4.5\text{V}$ )	$Q_g$	—	10.9	17		
Gate-Source Charge	$Q_{gs}$	—	3.5	6	$\text{ns}$	$V_{GS} = -10\text{V}, V_{DD} = -15\text{V}$ $R_{GEN} = 6\Omega, I_D = -7\text{A}$
Gate-Drain Charge	$Q_{gd}$	—	4.7	8		
Turn-On Delay Time	$t_{D(\text{on})}$	—	9.7	15	$\text{ns}$	$V_{GS} = -10\text{V}, V_{DD} = -15\text{V}$ $R_{GEN} = 6\Omega, I_D = -7\text{A}$
Turn-On Rise Time	$t_r$	—	17.1	26		
Turn-Off Delay Time	$t_{D(\text{off})}$	—	60.5	91	$\text{ns}$	$V_{GS} = -10\text{V}, V_{DD} = -15\text{V}$ $R_{GEN} = 6\Omega, I_D = -7\text{A}$
Turn-Off Fall Time	$t_f$	—	40.4	61		

Notes:

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

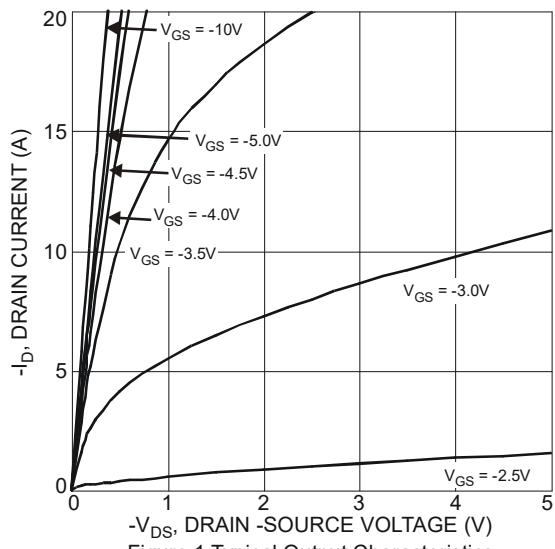


Figure 1 Typical Output Characteristics

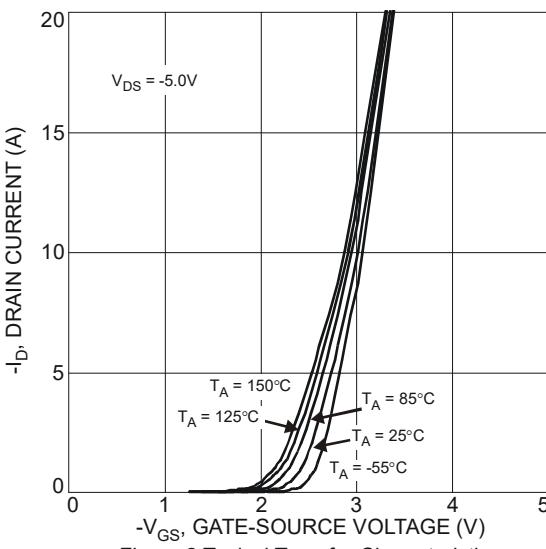


Figure 2 Typical Transfer Characteristics

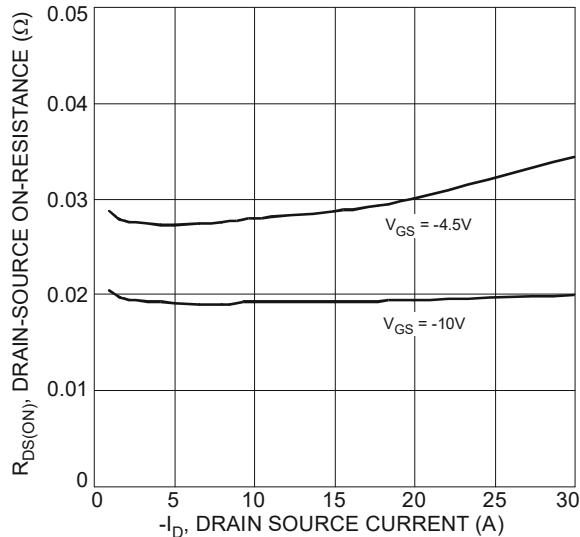


Figure 3 Typical On-Resistance vs.  
Drain Current and Gate Voltage

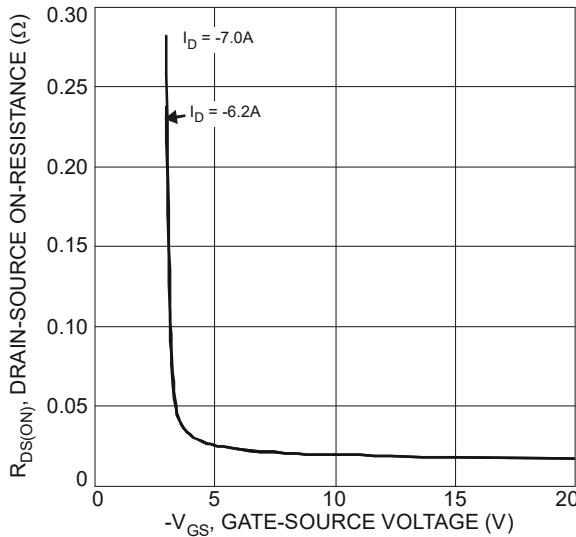


Figure 4 Typical Drain-Source On-Resistance  
vs. Gate-Source Voltage

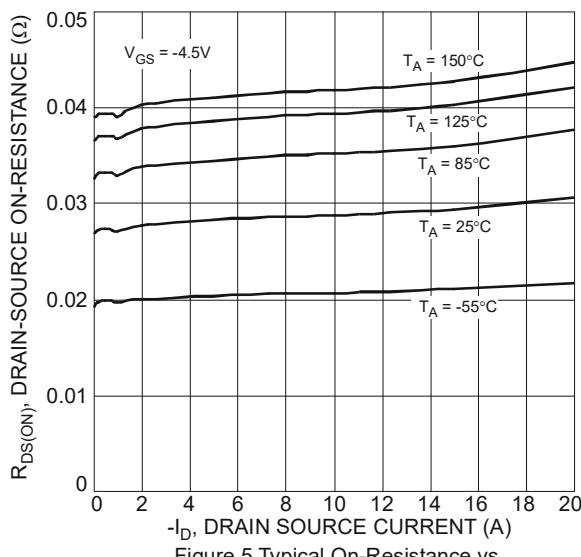


Figure 5 Typical On-Resistance vs.  
Drain Current and Temperature

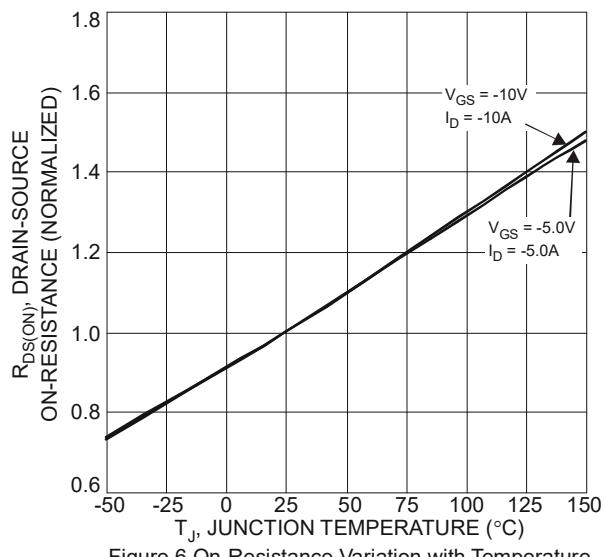
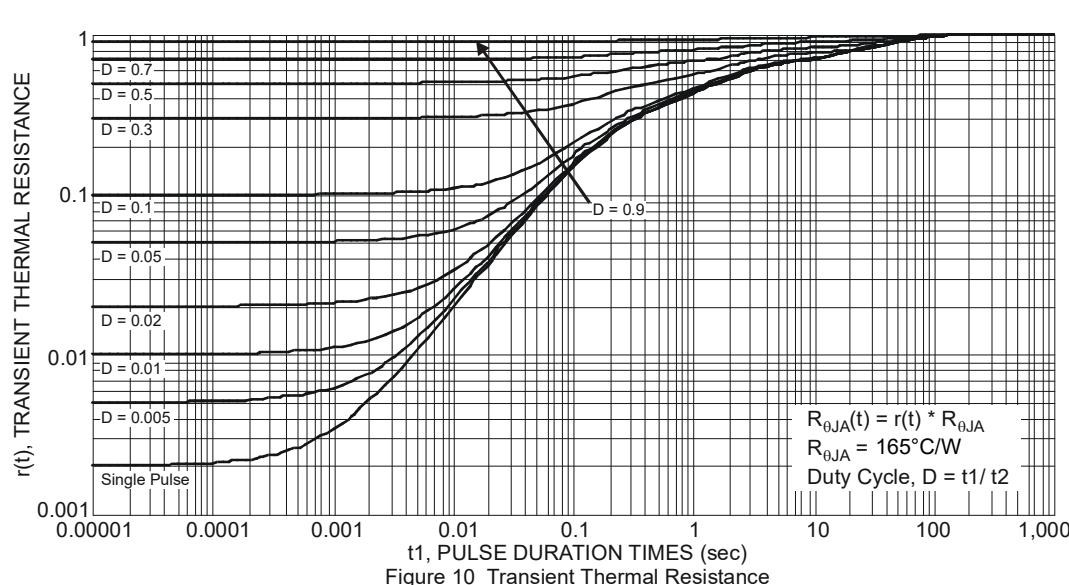
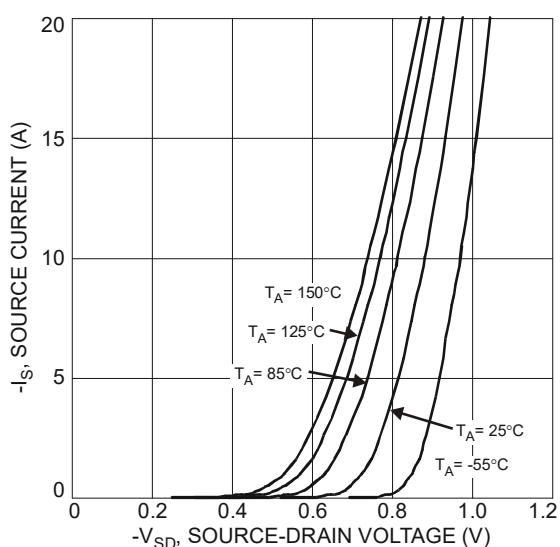
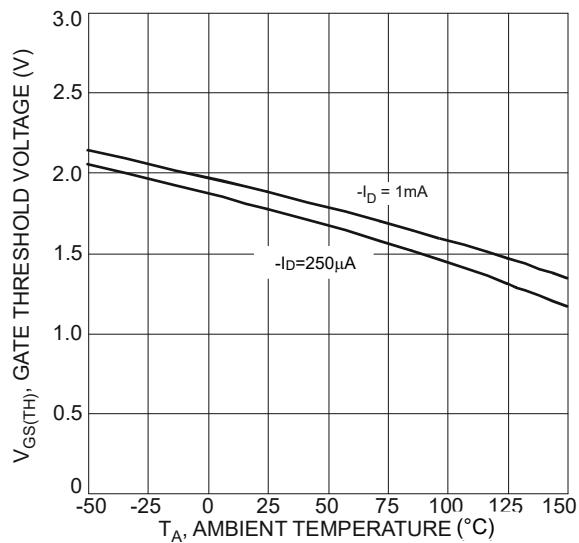
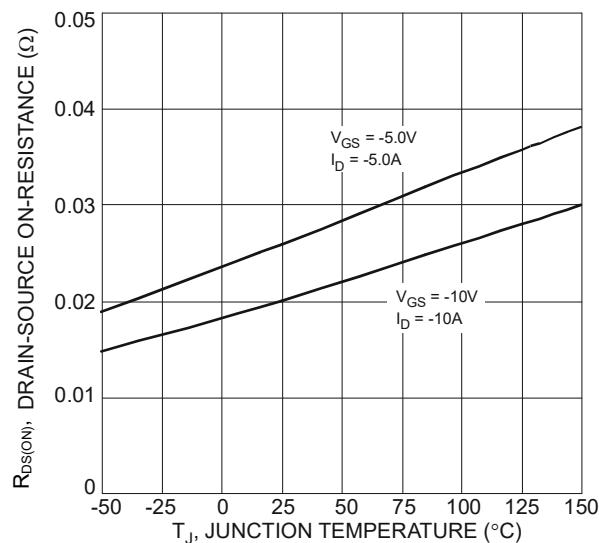


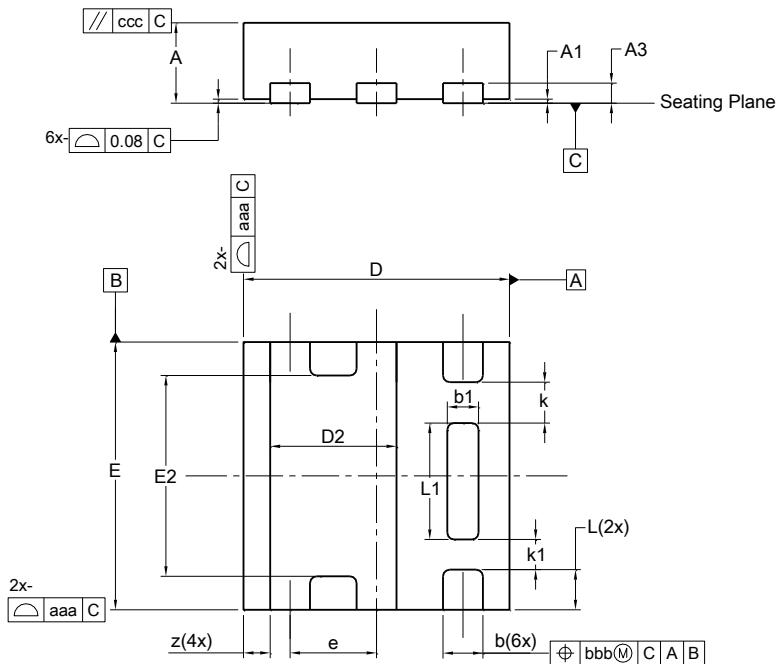
Figure 6 On-Resistance Variation with Temperature



## Package Outline Dimensions

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

**U-DFN2020-6 (Type E)**



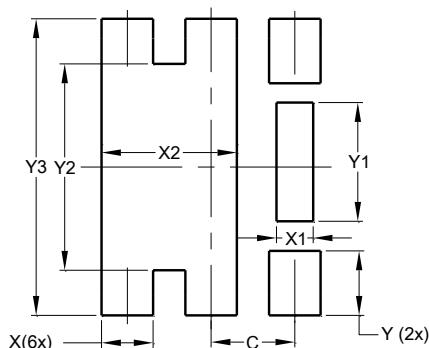
U-DFN2020-6 (Type E)			
Dim	Min	Max	Typ
<b>A</b>	0.57	0.63	0.60
<b>A1</b>	0.00	0.05	0.03
<b>A3</b>	—	—	0.15
<b>b</b>	0.25	0.35	0.30
<b>b1</b>	0.185	0.285	0.235
<b>D</b>	1.95	2.05	2.00
<b>D2</b>	0.85	1.05	0.95
<b>E</b>	1.95	2.05	2.00
<b>E2</b>	1.40	1.60	1.50
<b>e</b>	—	—	0.65
<b>L</b>	0.25	0.35	0.30
<b>L1</b>	0.82	0.92	0.87
<b>k</b>	—	—	0.305
<b>k1</b>	—	—	0.225
<b>Z</b>	—	—	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)
<b>C</b>	0.650
<b>X</b>	0.400
<b>X1</b>	0.285
<b>X2</b>	1.050
<b>Y</b>	0.500
<b>Y1</b>	0.920
<b>Y2</b>	1.600
<b>Y3</b>	2.300

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