

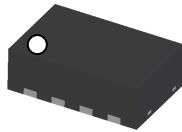
Features

- Low On-Resistance
 - 95mΩ @V_{GS} = -4.5V
 - 120mΩ @V_{GS} = -2.5V
 - 86mΩ (typ) @V_{GS} = -1.8V
- Low Gate Threshold Voltage, -1.3V Max
- Fast Switching Speed
- Low Input/Output Leakage
- Incorporates Low V_F Super Barrier Rectifier (SBR)
- Low Profile, 0.5mm Max Height
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

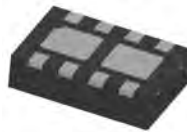
Mechanical Data

- Case: DFN3020-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 5
- Ordering Information: See Page 5
- Weight: 0.011 grams (approximate)

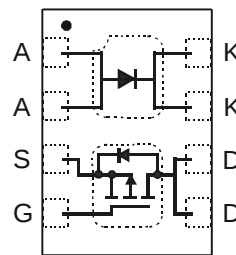
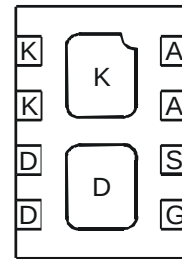
DFN3020-8



Top View



Bottom View


 Top View
Internal Schematic

 Bottom View
Pin Configuration

Maximum Ratings – TOTAL DEVICE @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P _D	1.5	W
Thermal Resistance, Junction to Ambient	R _{θJA}	85	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Maximum Ratings – P-CHANNEL MOSFET – Q1 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	-20	V
Gate-Source Voltage	V _{GSS}	±12	V
Drain Current (Note 1)	I _D	-2.9	A
Pulsed Drain Current (Note 4)	I _{DM}	-10	A

Maximum Ratings – SBR – D1 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _{RRM}	35	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage	V _R		
RMS Reverse Voltage	V _{R(RMS)}	25	V
Average Rectified Output Current	I _O	1	A
Non-Repetitive Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load	I _{FSM}	3	A

- Notes:
- Device mounted on FR-4 PCB, on minimum recommended, 2oz Copper pad layout.
 - No purposefully added lead.
 - Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 - Repetitive rating, pulse width limited by junction temperature.

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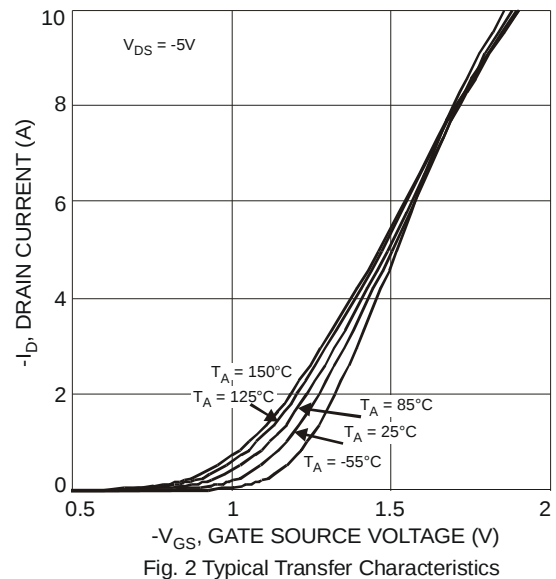
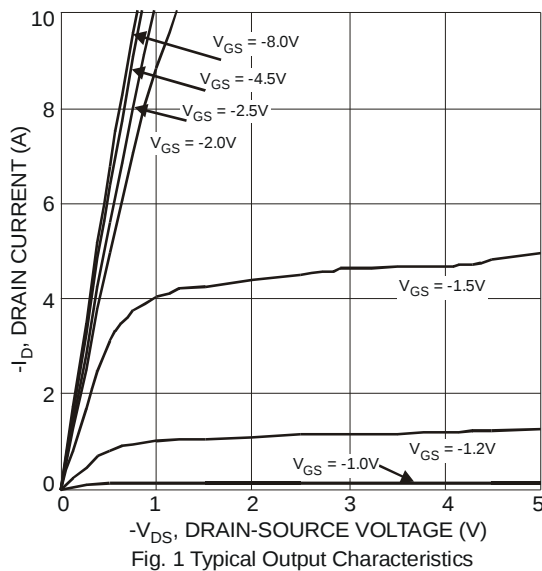
Electrical Characteristics – P-CHANNEL MOSFET – Q1 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV _{DSS}	-20	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	μA	V _{DS} = -20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100 ±800	nA	V _{GS} = ±8V, V _{DS} = 0V V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	V _{GS(th)}	-0.45	—	-1.3	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	60	95	mΩ	V _{GS} = -4.5V, I _D = -2.8A
		—	74	120		V _{GS} = -2.5V, I _D = -2.0A
		—	86	—		V _{GS} = -1.8V, I _D = -1.0A
Forward Transfer Admittance	Y _{fs}	—	8	—	S	V _{DS} = -5V, I _D = -2.8A
Diode Forward Voltage (Note 5)	V _{SD}	—	0.7	-1.2	V	V _{GS} = 0V, I _S = -1.6A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	632	—	pF	V _{DS} = -10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	65	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	54	—	pF	

Electrical Characteristics – SBR – D1 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	V _{(BR)R}	35	40	—	V	I _R = 1mA
Forward Voltage	V _F	—	—	0.42 0.49	V	I _F = 0.5A I _F = 1.0A
Reverse Current (Note 5)	I _R	—	—	100	μA	V _R = 20V

Notes: 5. Short duration pulse test used to minimize self-heating effect.

Q1, P-CHANNEL MOSFET


Q1, P-CHANNEL MOSFET - Continued

NEW PRODUCT

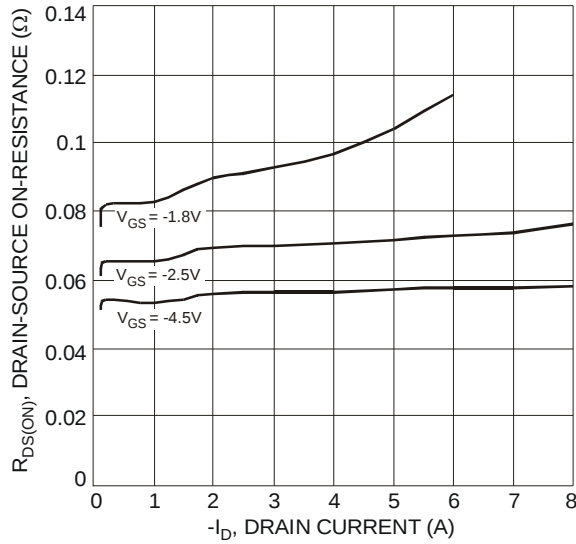


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

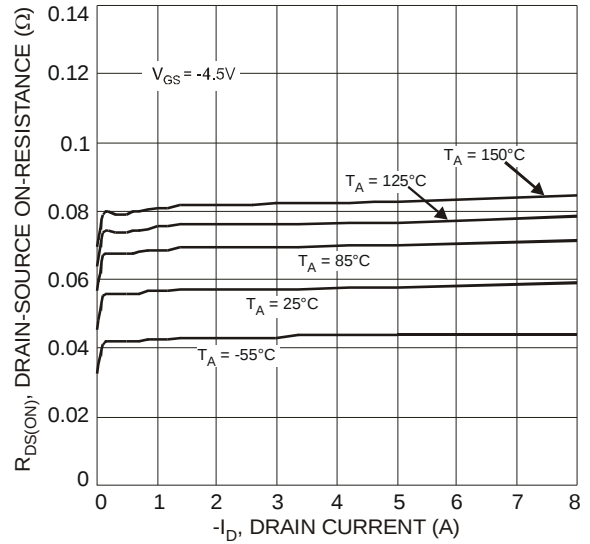


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

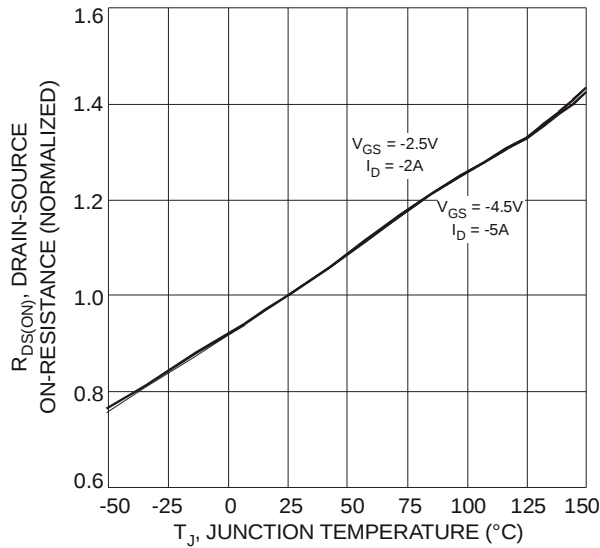


Fig. 5 On-Resistance Variation with Temperature

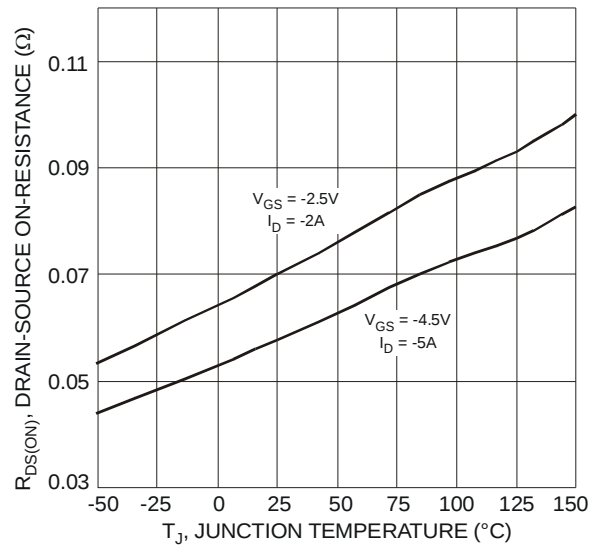


Fig. 6 On-Resistance Variation with Temperature

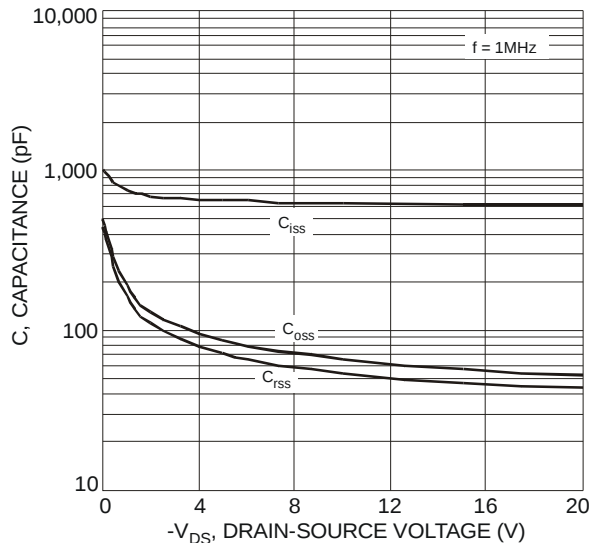


Fig. 7 Typical Capacitance

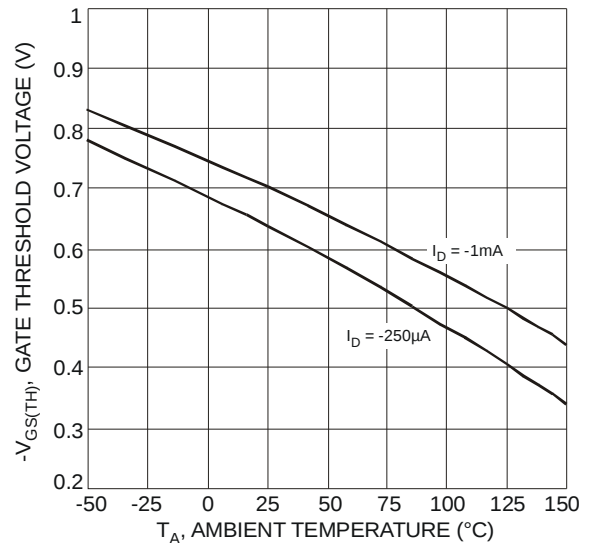


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

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Q1, P-CHANNEL MOSFET - Continued

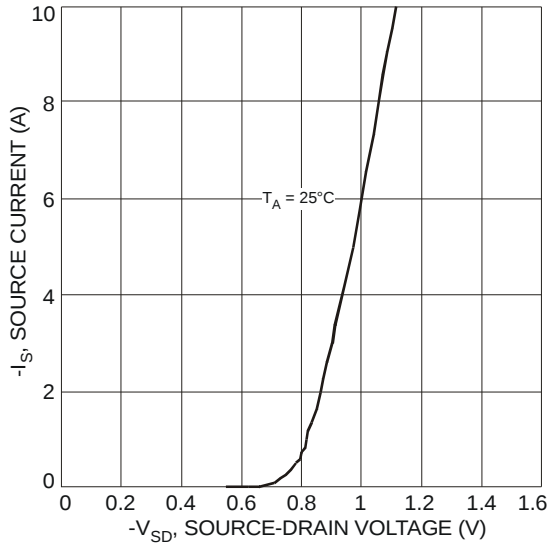


Fig. 9 Diode Forward Voltage vs. Current

D1, SBR

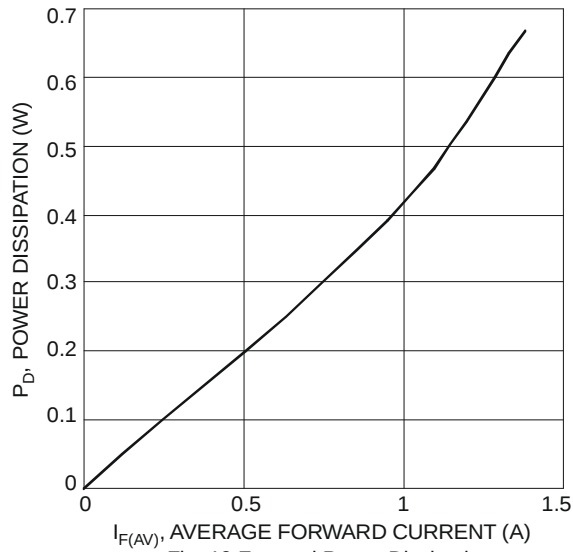


Fig. 10 Forward Power Dissipation

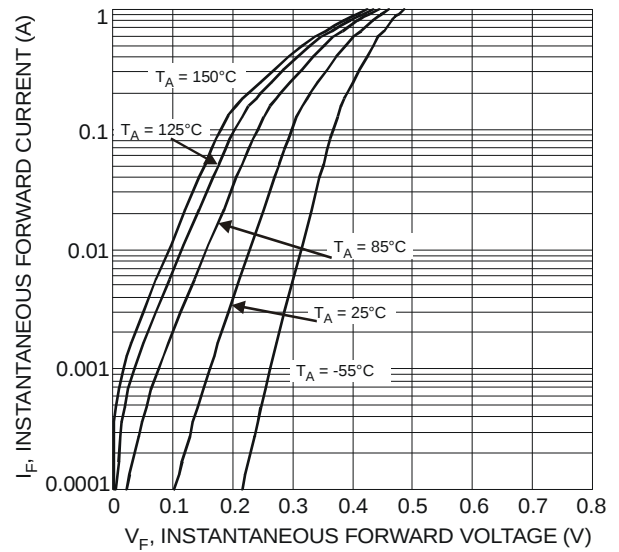


Fig. 11 Typical Forward Characteristics

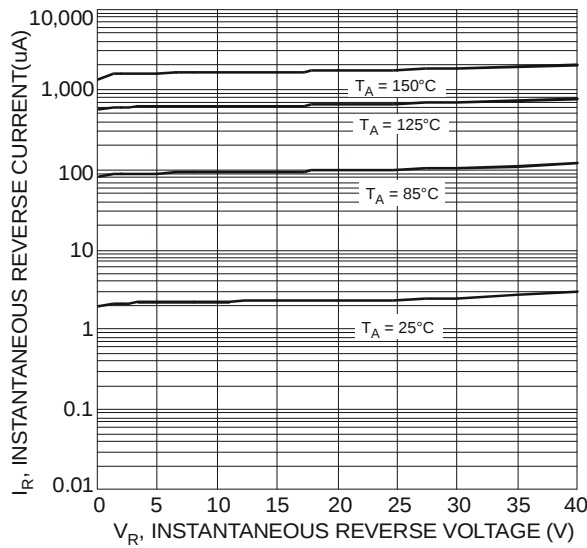
D1, SBR - Continued


Fig. 12 Typical Reverse Characteristics

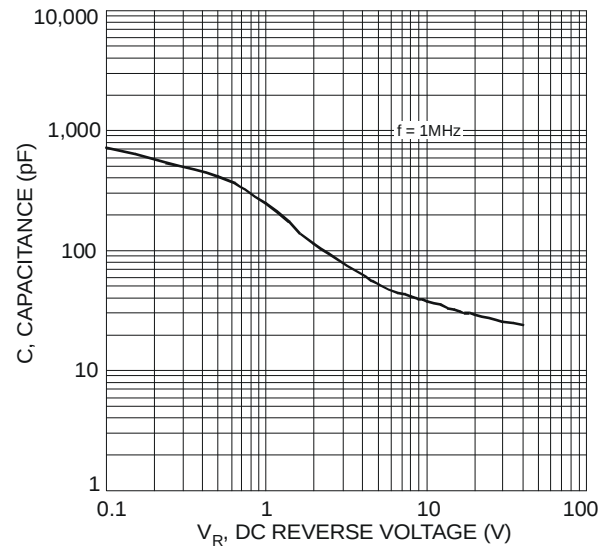


Fig. 13 Total Capacitance vs. Reverse Voltage

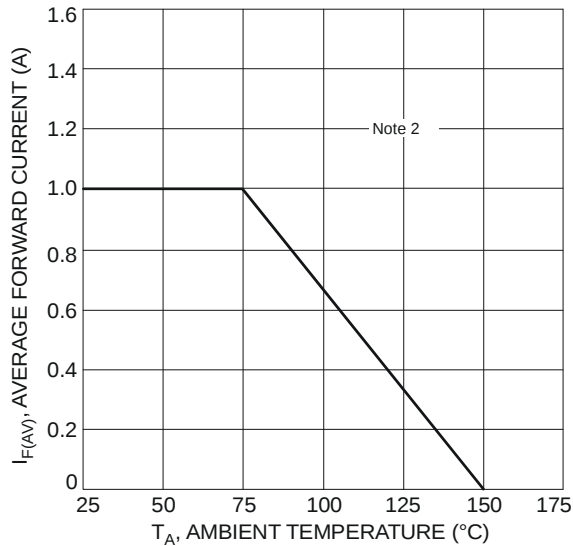


Fig. 14 Forward Current Derating Curve

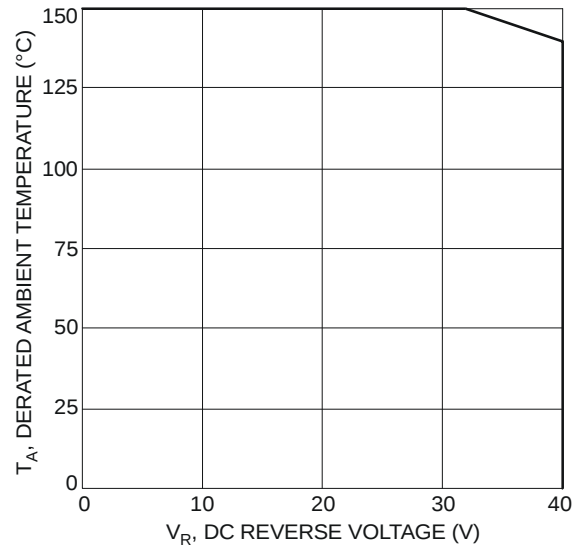


Fig. 15 Operating Temperature Derating

Ordering Information (Note 6)

Part Number	Case	Packaging
DMS2220LFW-7	DFN3020-8	3000/Tape & Reel

 Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

 ME = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: V = 2008)
 M = Month (ex: 9 = September)

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

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

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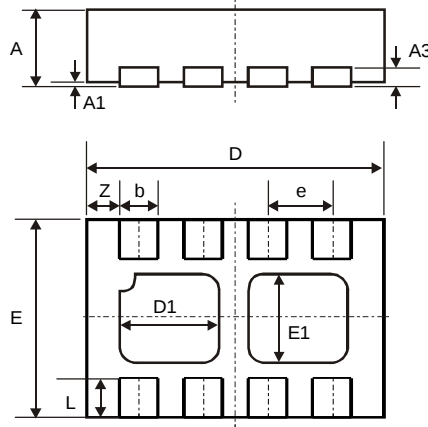
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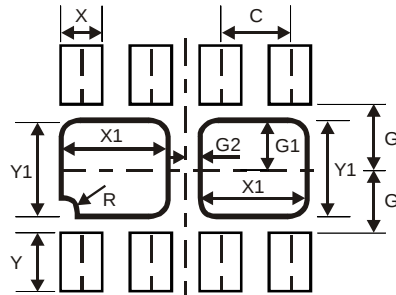
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Package Outline Dimensions



DFN3020-8			
Dim	Min	Max	Typ
A	0.77	0.83	0.80
A1	0	0.05	0.02
A3	-	-	0.15
b	0.25	0.35	0.30
D	2.95	3.075	3.00
D1	0.90	1.10	1.00
e	-	-	0.65
E	1.95	2.075	2.00
E1	0.80	1.00	0.90
L	0.30	0.40	0.35
Z	-	-	0.375
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.650
G	0.600
G1	0.450
G2	0.150
R	0.150
X	0.390
X1	1.000
Y	0.550
Y1	0.900

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