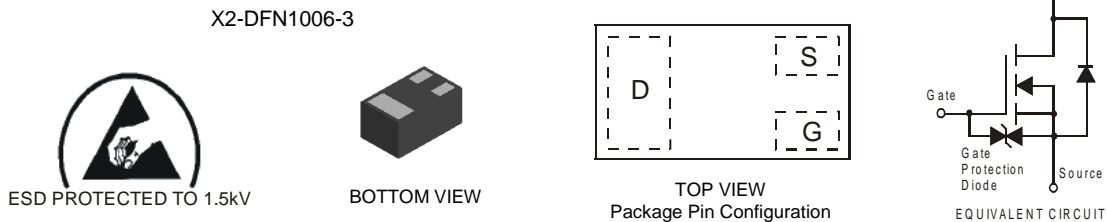


Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- Ultra-Low Package Profile, 0.4mm Maximum Package Height
- **ESD Protected up to 1.5kV**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 standards for High Reliability**

Mechanical Data

- Case: X2-DFN1006-3
- 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(4)
- Weight: 0.001 grams (Approximate)



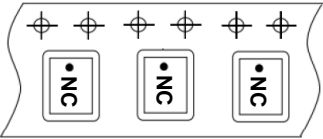
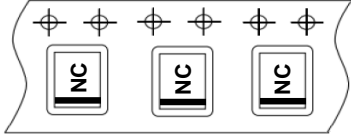

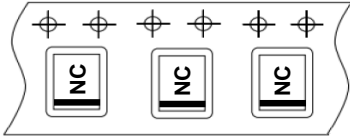


Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN2400UFB4-7	NC	7	8	3,000
DMN2400UFB4-7B	NC	7	8	10,000

- 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 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

<p>DMN2400UFB4-7</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Top View Dot Denotes Drain Side</p> </div> <div style="text-align: center;"> <p>From date code 1527 (YYWW), this changes to:</p>  <p>Top View Bar Denotes Gate and Source Side</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;">   </div>
<p>DMN2400UFB4-7B</p>	<div style="text-align: center;">  <p>Top View Bar Denotes Gate and Source Side</p> </div> <p style="text-align: right; margin-top: 10px;">NC = Part Marking Code</p> <div style="text-align: center; margin-top: 20px;">  </div>

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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	± 12	V
Continuous Drain Current (Note 5) $V_{GS} = 4.5\text{V}$	Steady State	$T_A = +25^\circ\text{C}$	I_D	0.75	A
		$T_A = +85^\circ\text{C}$		0.55	
Pulsed Drain Current (Notes 5 & 6)			I_{DM}	3	A

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

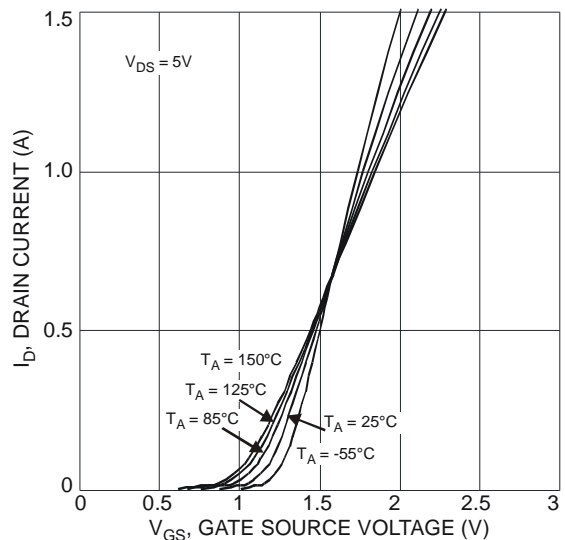
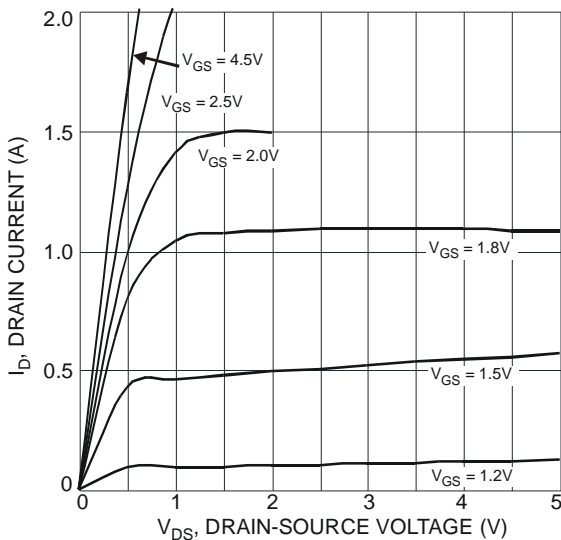
Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	0.47	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	258	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
- 5. Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
 - 6. Device mounted on minimum recommended pad layout test board, 10 μs pulse duty cycle = 1%.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	—	—	100 50	nA	$V_{DS} = 20V, V_{GS} = 0V$ $V_{DS} = 5V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 3V, V_{DS} = 0V$
Gate-Source Leakage	I_{GSS}	—	—	± 1.0	μA	$V_{GS} = \pm 4.5V, V_{DS} = 0V$
Gate-Source Leakage	I_{GSS}	—	—	± 50	μA	$V_{GS} = \pm 10V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	0.9	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	—	0.55	Ω	$V_{GS} = 4.5V, I_D = 600mA$
		—	—	0.75		$V_{GS} = 2.5V, I_D = 500mA$
		—	—	0.9		$V_{GS} = 1.8V, I_D = 350mA$
Forward Transfer Admittance	$ Y_{fs} $	—	1.0	—	S	$V_{DS} = 10V, I_D = 400mA$
Diode Forward Voltage (Note 7)	V_{SD}	—	0.7	1.2	V	$V_{GS} = 0V, I_S = 150mA$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	36.0	—	pF	$V_{DS} = 16V, V_{GS} = 0V,$ $f = 1.0MHz$
Output Capacitance	C_{oss}	—	5.7	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	4.2	—	pF	
Total Gate Charge	Q_g	—	0.5	—	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 250mA$
Gate-Source Charge	Q_{gs}	—	0.07	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.1	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	4.11	—	ns	$V_{DD} = 10V, V_{GS} = 4.5V,$ $R_L = 47\Omega, R_G = 10\Omega,$ $I_D = 200mA$
Turn-On Rise Time	t_r	—	3.82	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	14.8	—	ns	
Turn-Off Fall Time	t_f	—	9.6	—	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.



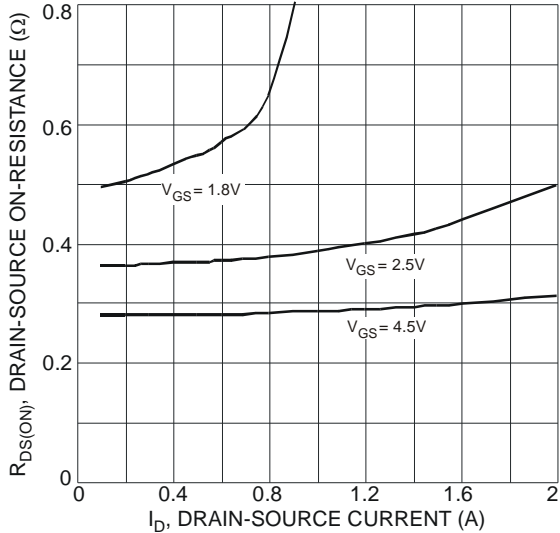


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

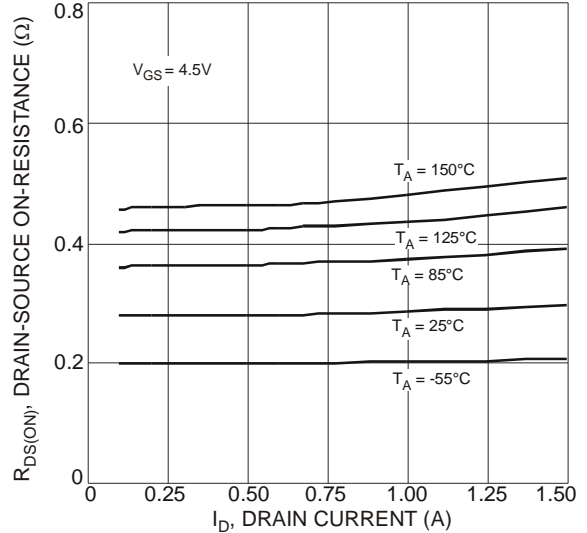


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

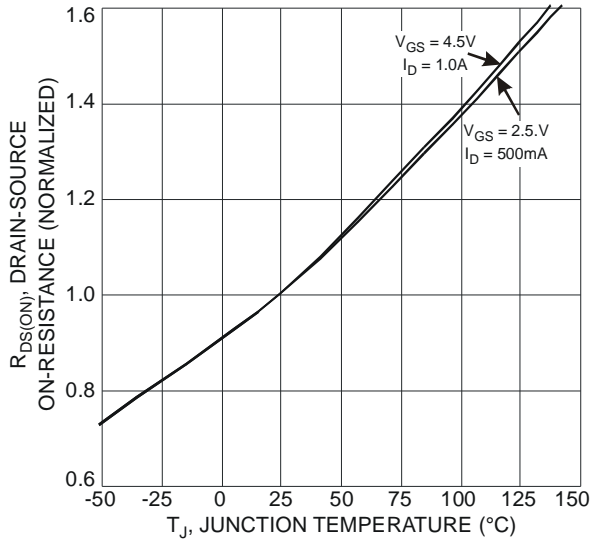


Fig. 5 On-Resistance Variation with Temperature

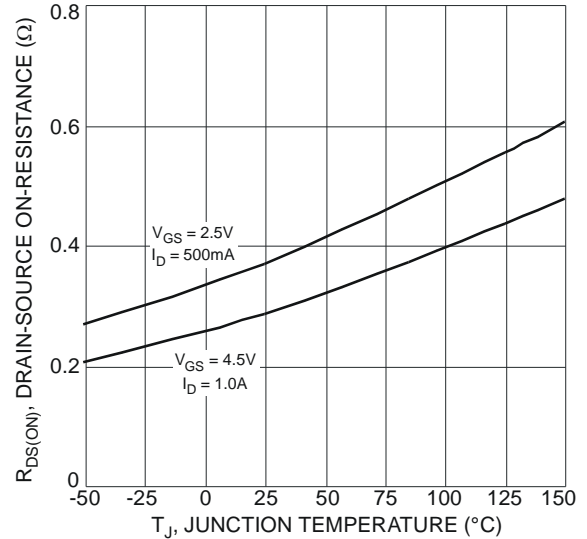


Fig. 6 On-Resistance Variation with Temperature

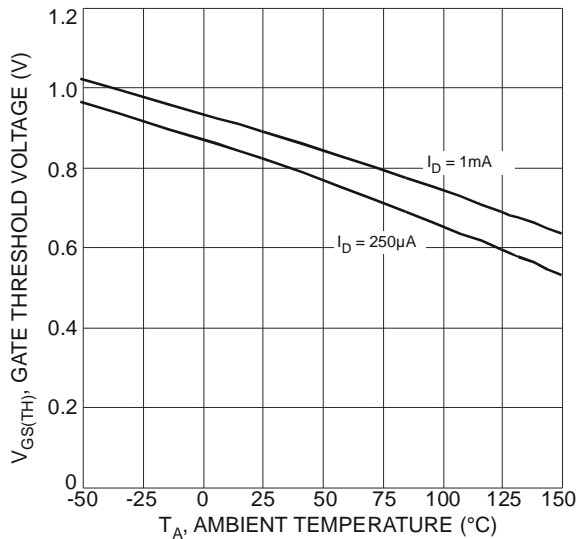


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

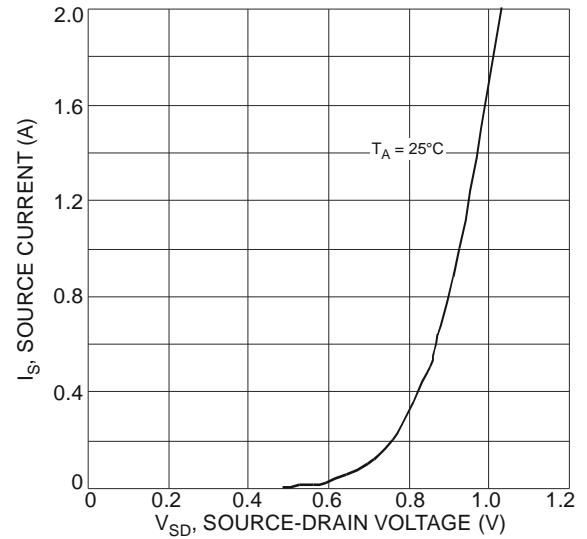


Fig. 8 Diode Forward Voltage vs. Current

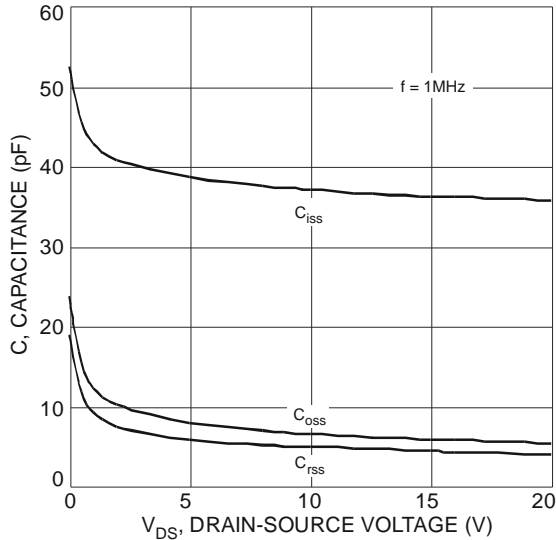


Fig. 9 Typical Capacitance

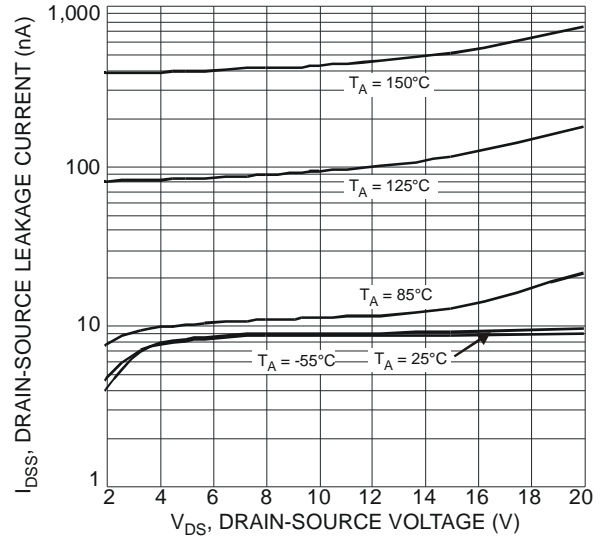


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

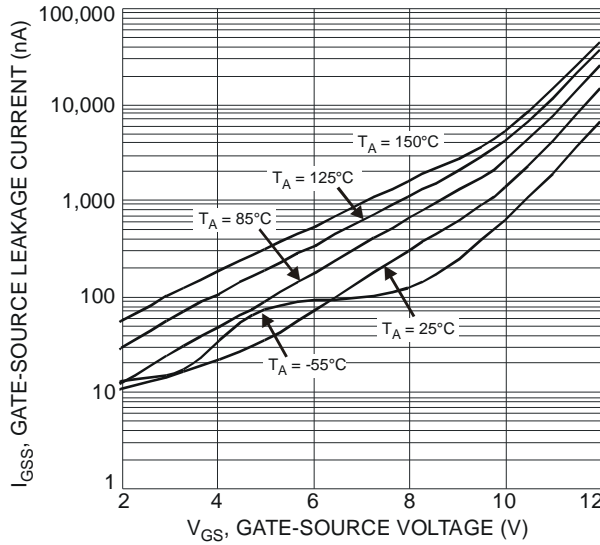


Fig. 11 Typical Gate-Source Leakage Current vs. Gate-Source Voltage

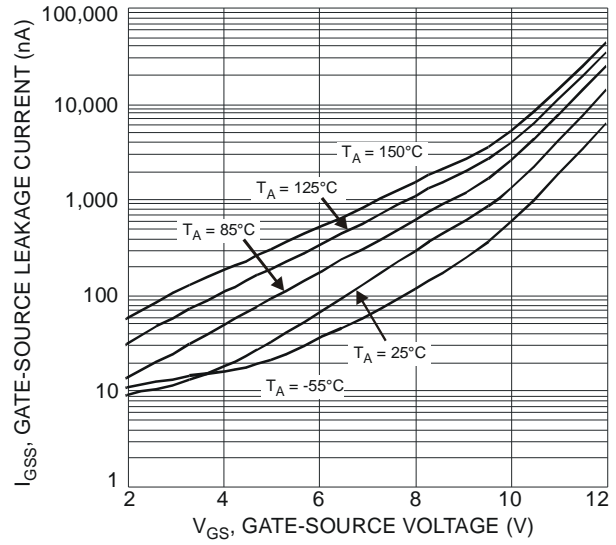


Fig. 12 Typical Gate-Source Leakage Current vs. Gate-Source Voltage

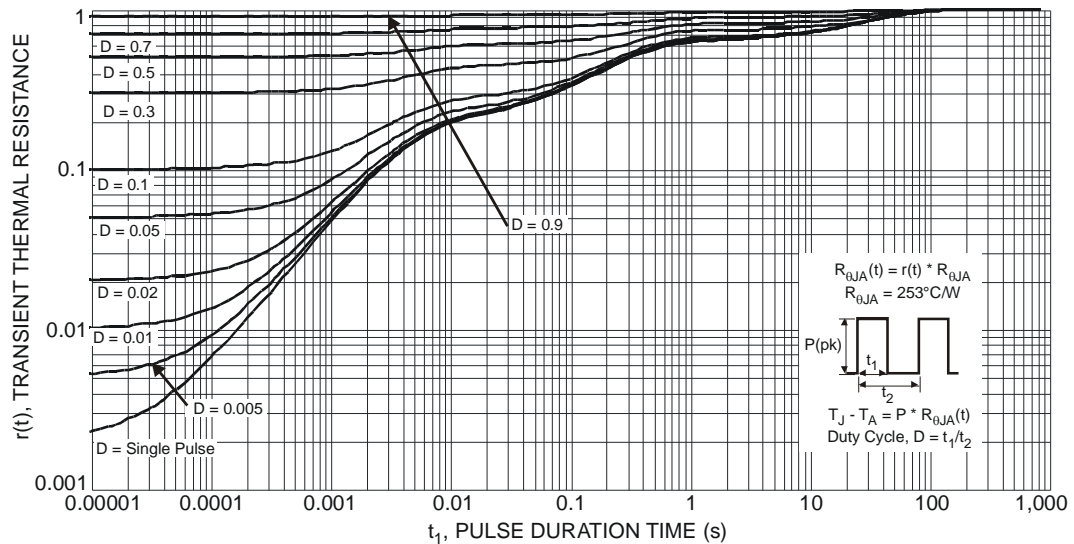
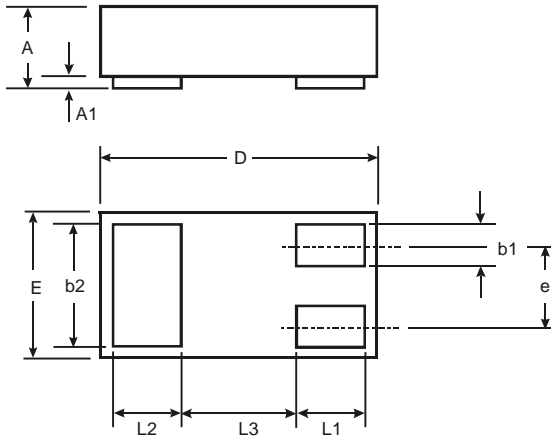


Fig. 13 Transient Thermal Response

Package Outline Dimensions

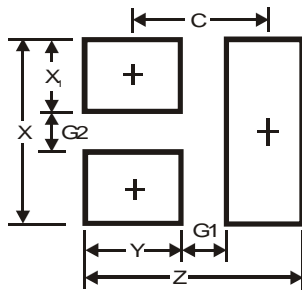
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



X2-DFN1006-3			
Dim	Min	Max	Typ
A	—	0.40	—
A1	0	0.05	0.03
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.05	1.00
E	0.55	0.65	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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