

Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max $T_A = +25^\circ C$
300V	4.0Ω @ $V_{GS} = 10V$	0.43A
	5.0Ω @ $V_{GS} = 4.5V$	0.39A

Description

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

Applications

- DC-DC Converters
- Power-Management Functions
- Battery-Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, and so on

Features and Benefits

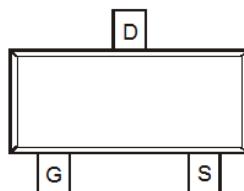
- Low Gate-Threshold Voltage
- Low-Input Capacitance
- Fast-Switching Speed
- Small Surface-Mount Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

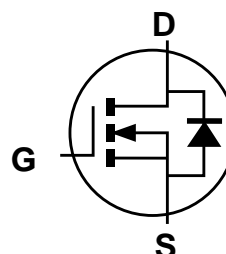
- Case: SOT23
- Case Material: Molded Plastic; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
Lead-Free Plating—Matte Tin Finish Annealed over Alloy 42 Leadframe Ⓔ3
- Terminal Connections—See Diagram
- Weight: 0.008 grams (Approximate)



Top View



Top View
Pin Configuration



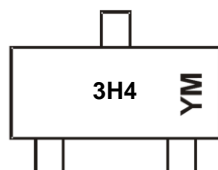
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN30H4D1S-7	SOT23	3,000/Tape & Reel
DMN30H4D1S-13	SOT23	10,000/Tape & Reel

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

Marking Information



3H4 = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: F = 2018)
 M = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025
Code	F	G	H	I	J	K	L	M

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

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	300	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C T _A = +70°C	I _D	0.43 0.34	A
Pulsed Drain Current (10µs Pulse, Duty Cycle ≤ 1%)			I _{DM}	2	A
Maximum Body Diode Continuous Current (Note 6)			I _S	1.3	A
Pulsed Source Current (10µs Pulse, Duty Cycle ≤ 1%)			I _{SM}	2	A

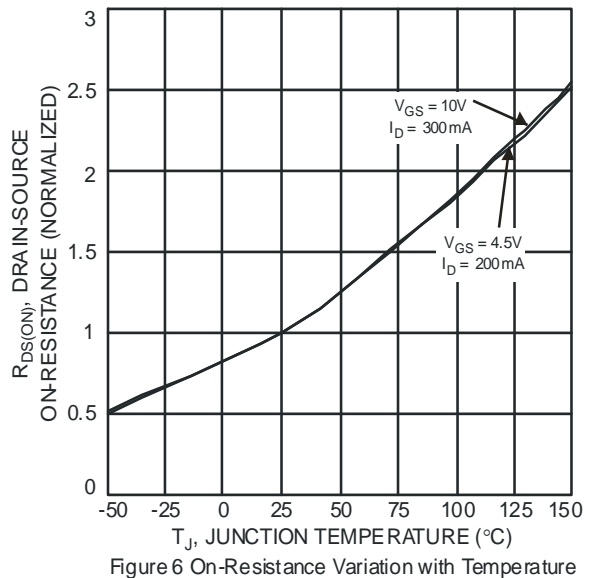
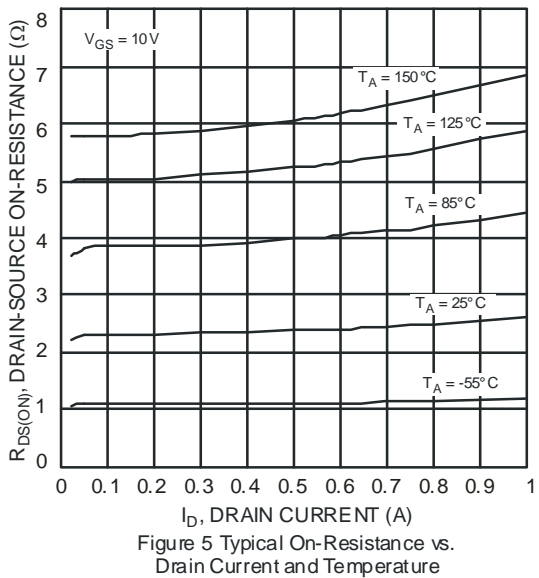
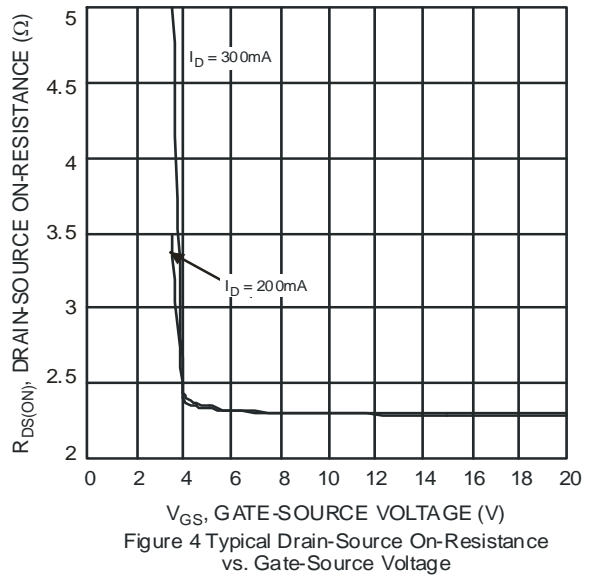
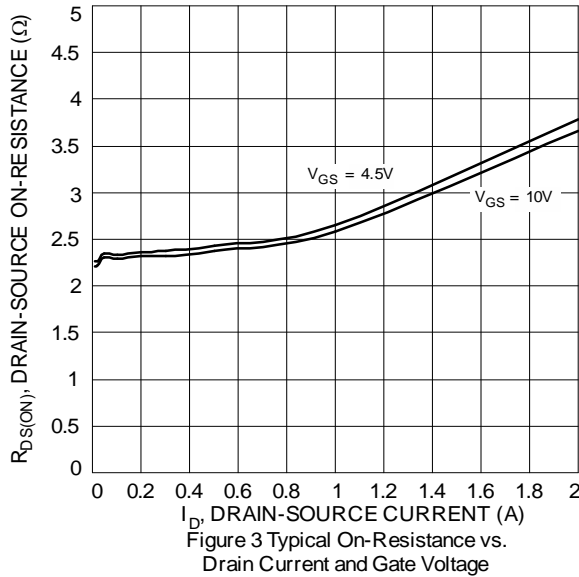
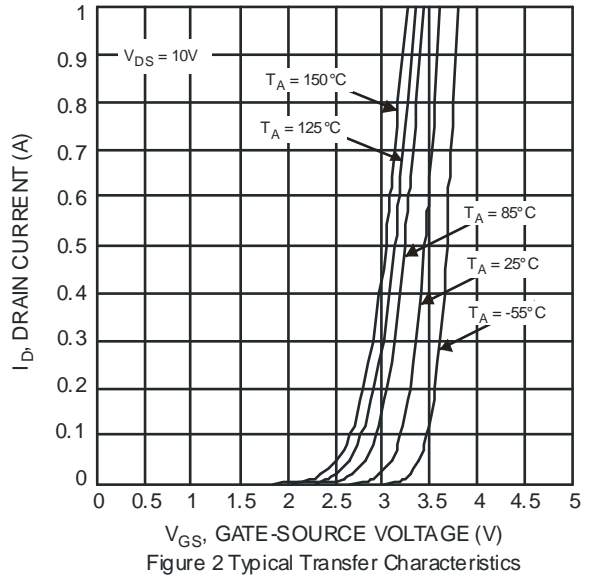
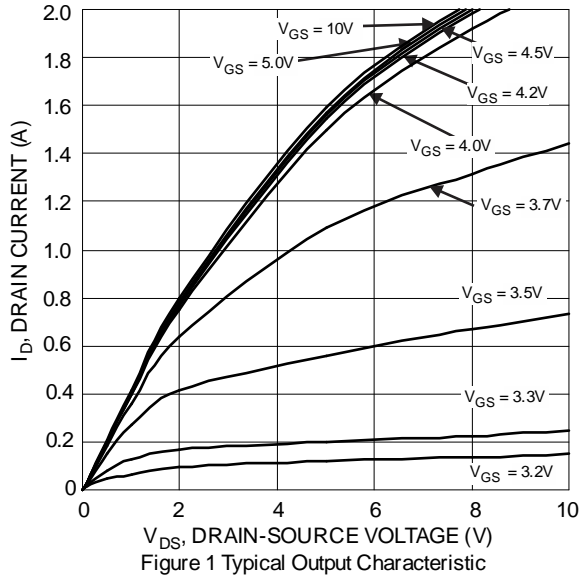
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Total Power Dissipation (Note 5)			P _D	0.36	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State		R _{θJA}	162	°C/W
Total Power Dissipation (Note 6)			P _D	0.43	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State		R _{θJA}	111	°C/W
Thermal Resistance, Junction to Case (Note 6)			R _{θJC}	31	°C/W
Operating and Storage Temperature Range			T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	300	—	—	V	V _{GS} = 0V, I _D = 250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1.0	µA	V _{DS} = 240V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	1	—	3	V	V _{DS} = V _{GS} , I _D = 250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	2.29	4.0	Ω	V _{GS} = 10V, I _D = 0.3A
		—	2.34	5.0		V _{GS} = 4.5V, I _D = 0.2A
Diode Forward Voltage	V _{SD}	—	0.7	1.2	V	V _{GS} = 0V, I _S = 0.3A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	174	—	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	12	—		
Reverse Transfer Capacitance	C _{rss}	—	7	—		
Gate Resistance	R _g	—	2.96	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge	Q _g	—	4.8	—	nC	V _{DS} = 192V, V _{GS} = 10V, I _D = 0.5A
Gate-Source Charge	Q _{gs}	—	0.6	—		
Gate-Drain Charge	Q _{gd}	—	2.1	—		
Turn-On Delay Time	t _{D(ON)}	—	6.1	—	ns	V _{DS} = 60V, R _L = 200Ω V _{GS} = 10V, R _G = 25Ω
Turn-On Rise Time	t _R	—	3.5	—		
Turn-Off Delay Time	t _{D(OFF)}	—	20.6	—		
Turn-Off Fall Time	t _F	—	13.8	—		
Reverse Recovery Time	t _{RR}	—	43	—	ns	I _F = 0.5A, di/dt = 100A/µs
Reverse Recovery Charge	Q _{RR}	—	51	—	nC	

- Notes:
5. Device mounted on FR-4 PC board with minimum recommended pad layout, single sided.
 6. Device mounted on FR-4 substrate PC board, 2oz copper with 1-inch square copper pad layout.
 7. Short-duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to production testing.



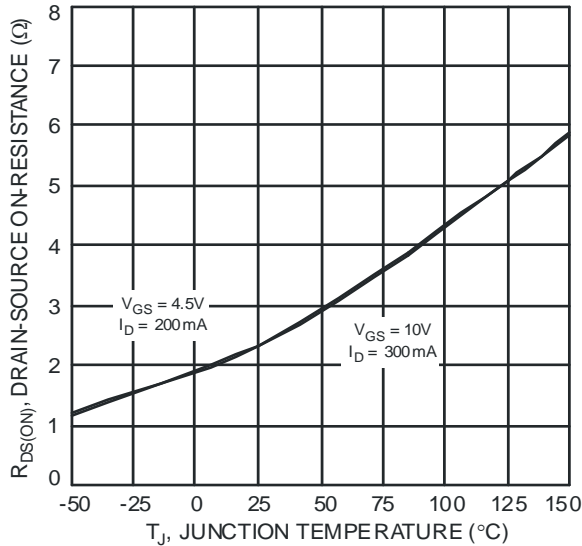


Figure 7 On-Resistance Variation with Temperature

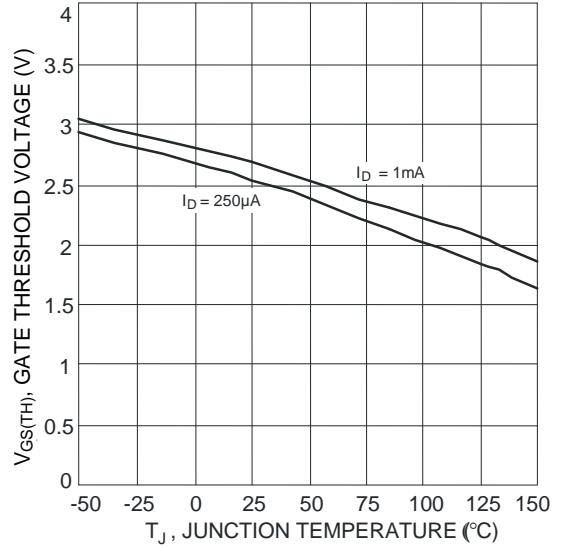


Figure 8 Gate Threshold Variation vs. Junction Temperature

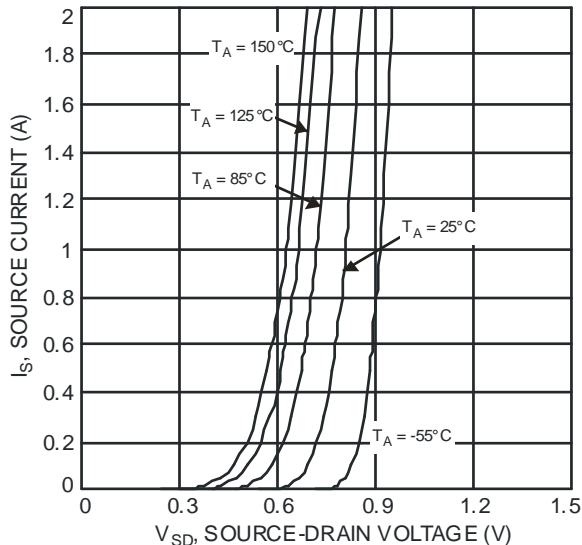


Figure 9 Diode Forward Voltage vs. Current

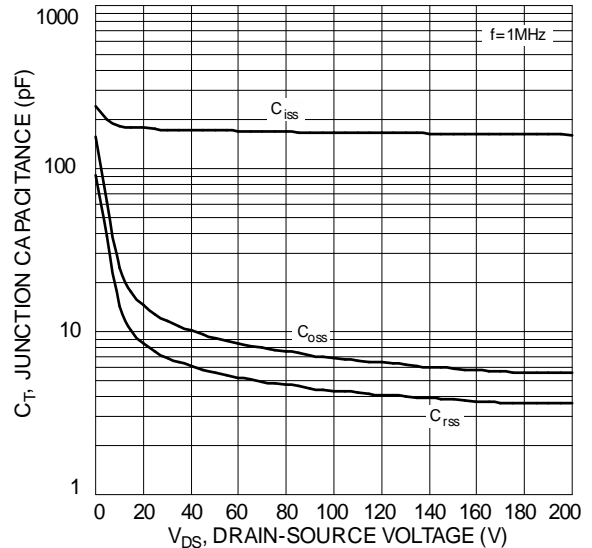


Figure 10 Typical Junction Capacitance

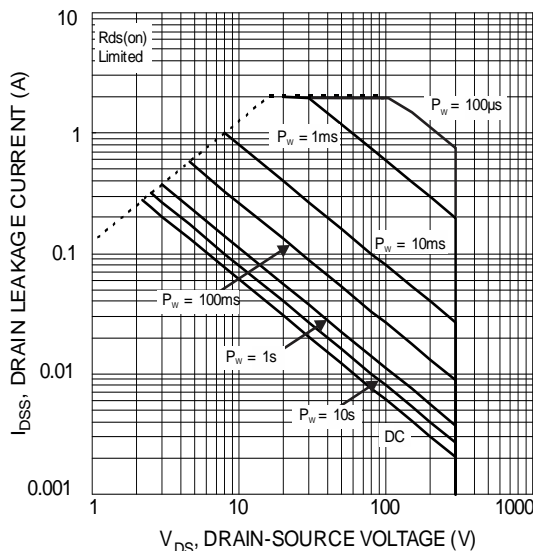


Figure 10 Typical Drain-Source Leakage Current vs. Voltage

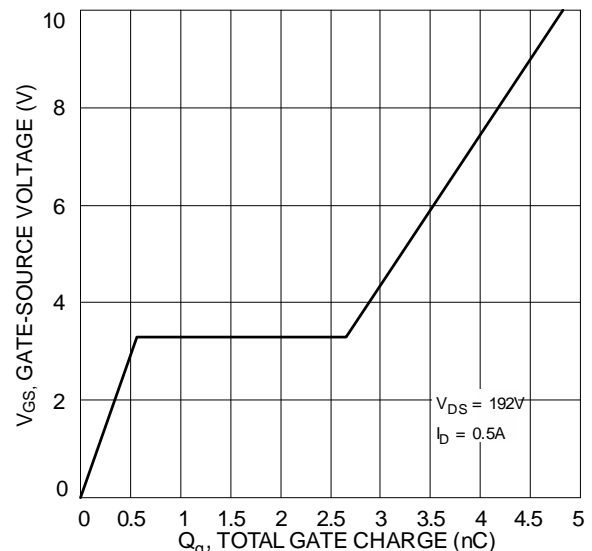
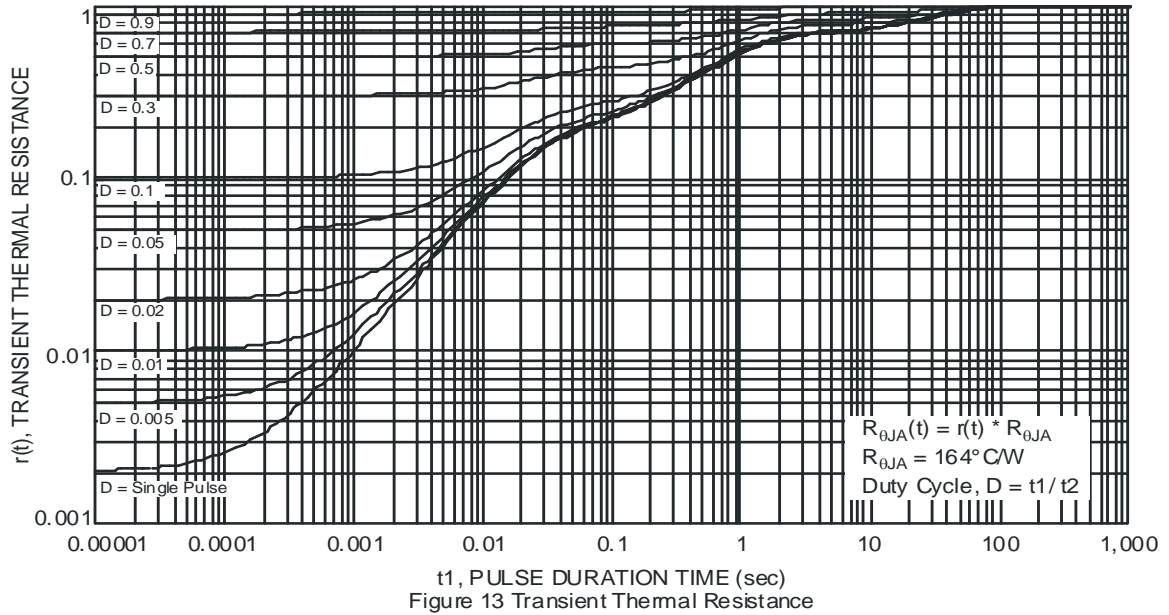


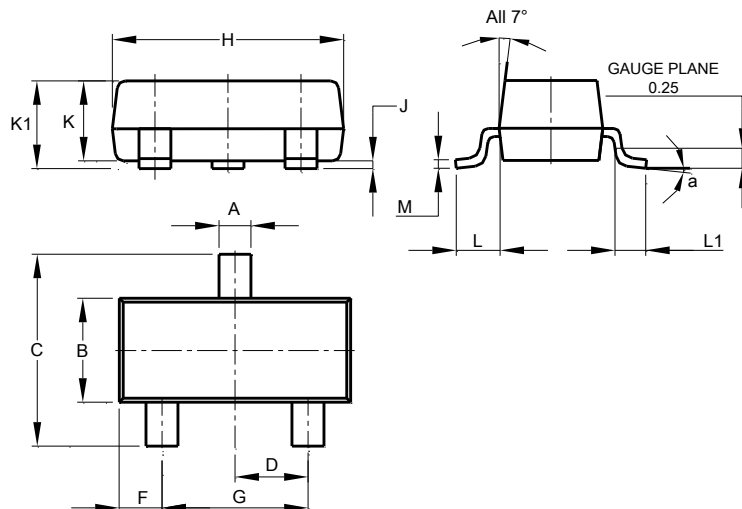
Figure 12 Gate Charge



Package Outline Dimensions

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

SOT23

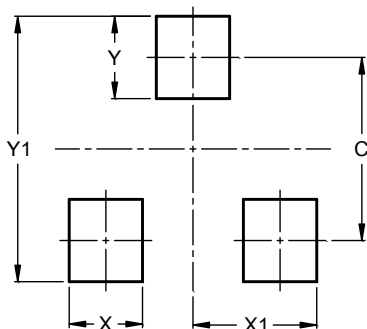


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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