

N-CHANNEL ENHANCEMENT MODE FIELD MOSFET
Product Summary

BV _{DSS}	R _{DS(ON)}	Package	I _D T _A = +25°C
600V	100Ω @ V _{GS} = 10V	SOT23	80mA

Description

This new generation uses advanced planar technology MOSFET, provide excellent high voltage and fast switching, making it ideal for small-signal and level shift applications.

Applications

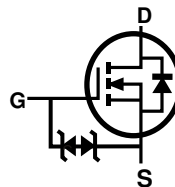
- Motor Control
- Backlighting
- DC-DC Converters
- Power Management Functions


Features

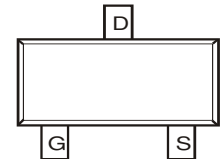
- Low Input Capacitance
- High BV_{DSS} Rating for Power Application
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe Solderable per MIL-STD-202, Method 208 e3
- Terminal Connections: See Diagram
- Weight: 0.008 grams (Approximate)



ESD PROTECTED

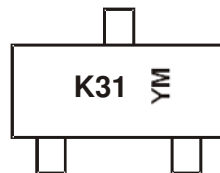


Top View

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN60H080DS-7	SOT23	3000/Tape & Reel
DMN60H080DS-13	SOT23	10000/Tape & Reel

- 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


K31 = Product Type Marking Code
 YM or YM= Date Code Marking
 Y or Ȳ = Year (ex: E = 2017)
 M = Month (ex: 9 = September)

Date Code Key

Year	2017	2018	2019	2020	2021	2022	2023	2024
Code	E	F	G	H	I	J	K	L

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}	600	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 5) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	70	mA
		T _A = +70°C		56	
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	80	mA
		T _A = +70°C		70	
Continuous Drain Current (Note 5) V _{GS} = 4.5V	Steady State	T _A = +25°C	I _D	40	mA
		T _A = +70°C		32	
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	T _A = +25°C	I _D	50	mA
		T _A = +70°C		40	
Pulsed Drain Current @ T _{SP} = +25°C (Note 7)			I _{DM}	0.2	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation, @T _A = +25°C (Note 5)	P _D	0.70	W
Thermal Resistance, Junction to Ambient @ T _A = +25°C (Note 5)	R _{θJA}	174	°C/W
Power Dissipation, @T _A = +25°C (Note 6)	P _D	1.10	W
Thermal Resistance, Junction to Ambient @ T _A = +25°C (Note 6)	R _{θJA}	99	°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 8)						
Drain-Source Breakdown Voltage	BV _{DSS}	600	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	1	μA	V _{DS} = 600V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(TH)}	1.5	—	3.0	V	V _{DS} = V _{GS} , I _D = 250μA
		1.5	—	2.6	V	V _{DS} = V _{GS} , I _D = 8μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	67	100	Ω	V _{GS} = 10V, I _D = 60mA
		—	95	290		V _{GS} = 4.5V, I _D = 60mA
Forward Transfer Admittance	Y _{fs}	—	76	—	ms	V _{DS} = 10V, I _D = 60mA
Diode Forward Voltage	V _{SD}	—	—	1.5	V	V _{GS} = 0V, I _S = 50mA
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iSS}	—	25	—	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	5.2	—		
Reverse Transfer Capacitance	C _{rSS}	—	1.4	—		
Total Gate Charge	Q _g	—	1.7	—	nC	V _{GS} = 10V, V _{DD} = 300V, I _D = 0.01A
Gate-Source Charge	Q _{gs}	—	0.3	—		
Gate-Drain Charge	Q _{gd}	—	0.9	—		
Turn-On Delay Time	t _{D(ON)}	—	7	—	ns	V _{DD} = 300V, V _{GS} = 10V, R _{GEN} = 3.3Ω, I _D = 60mA
Turn-On Rise Time	t _R	—	10	—		
Turn-Off Delay Time	t _{D(OFF)}	—	21	—		
Turn-Off Fall Time	t _F	—	158	—		
Reverse Recovery Time	t _{RR}	—	189.1	—		
Reverse Recovery Charge	Q _{RR}	—	32	—	nC	V _R = 300V, I _F = 0.06A, di/dt = 100A/μs

- Notes:
- Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
 - Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 - Repetitive rating, pulse width limited by junction temperature, 10μs pulse, duty cycle = 1%.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.

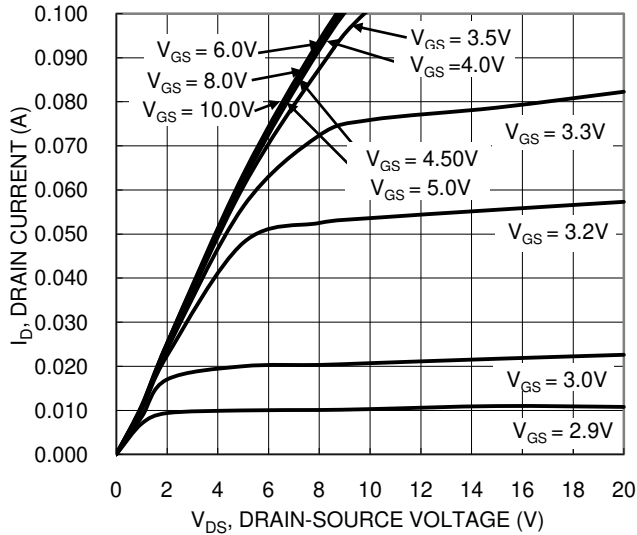


Figure 1. Typical Output Characteristic

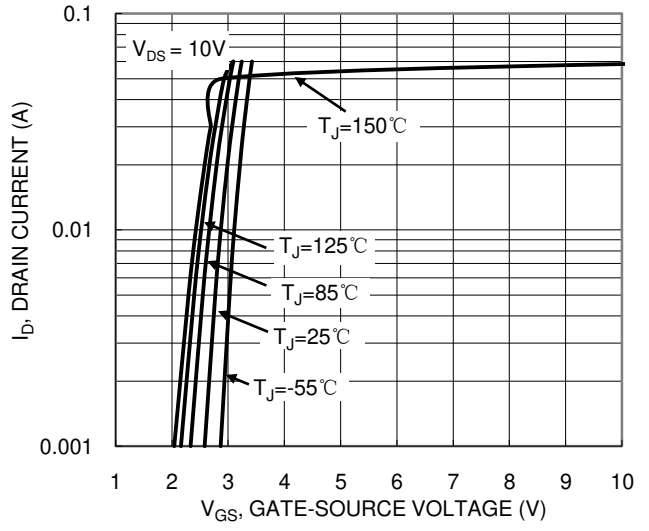


Figure 2. Typical Transfer Characteristic

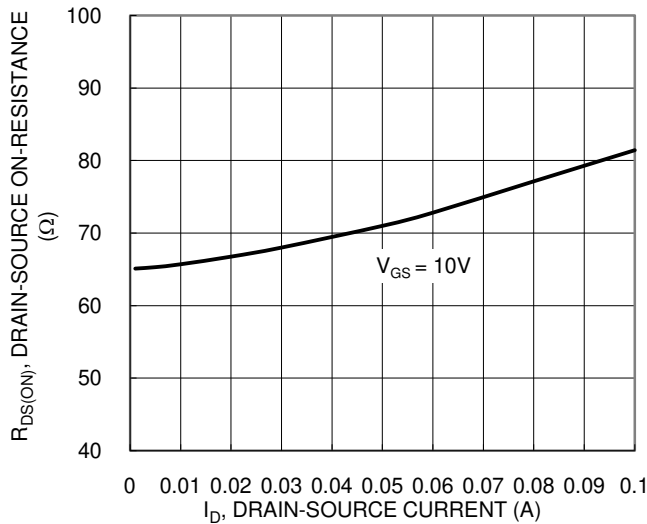


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

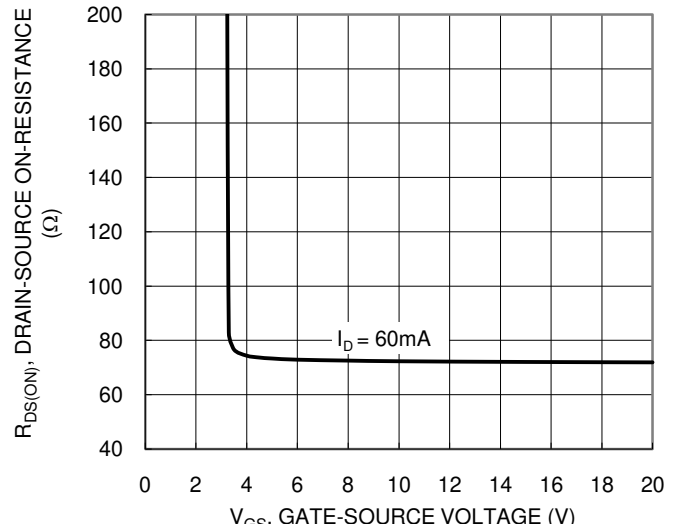


Figure 4. Typical Transfer Characteristic

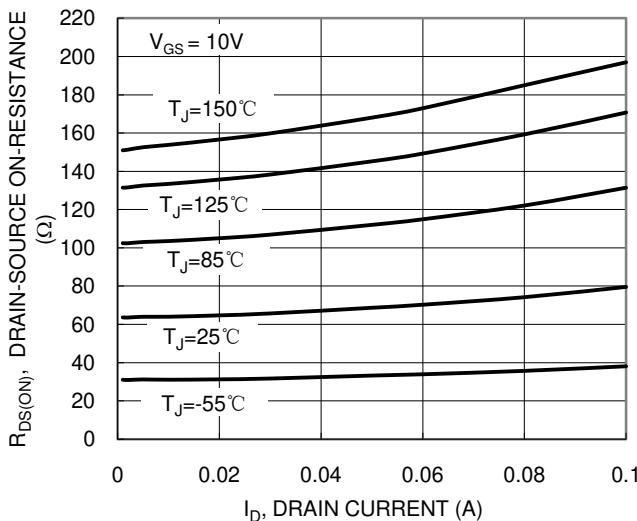


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

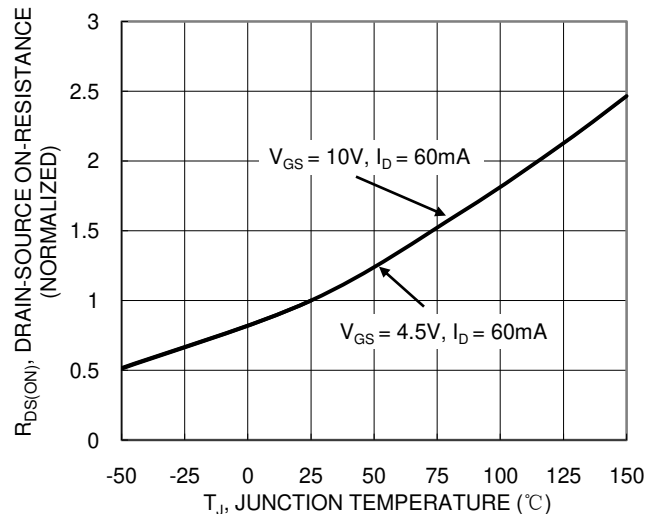
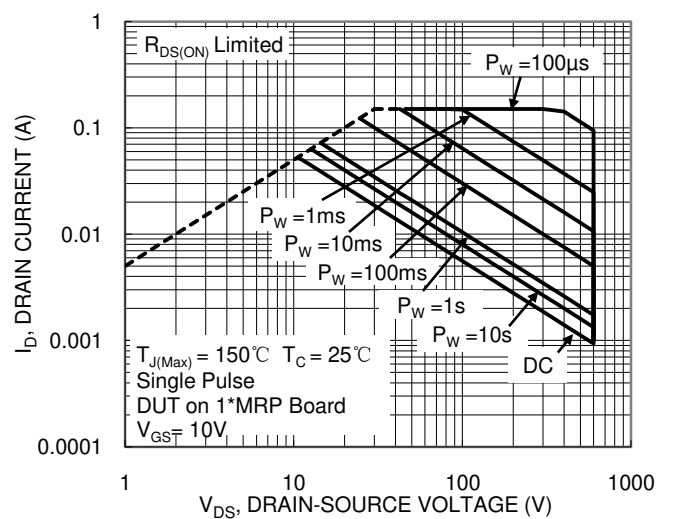
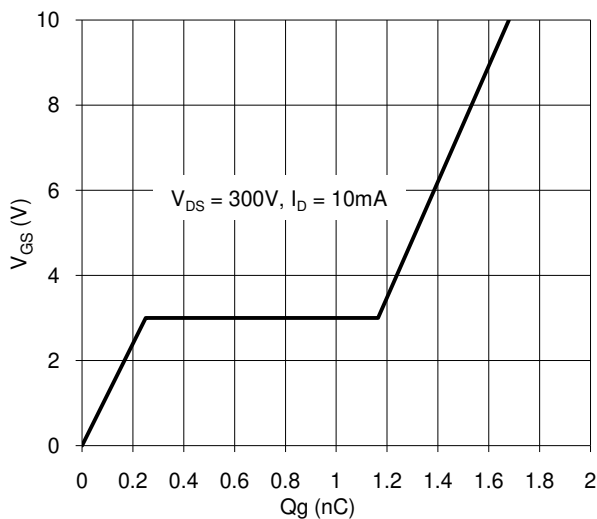
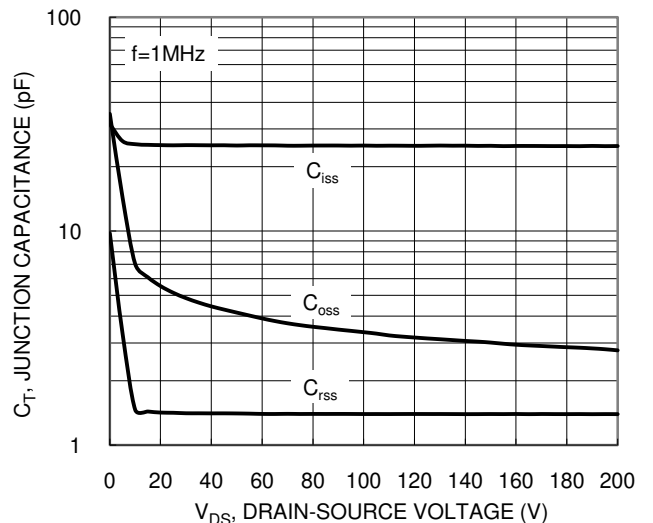
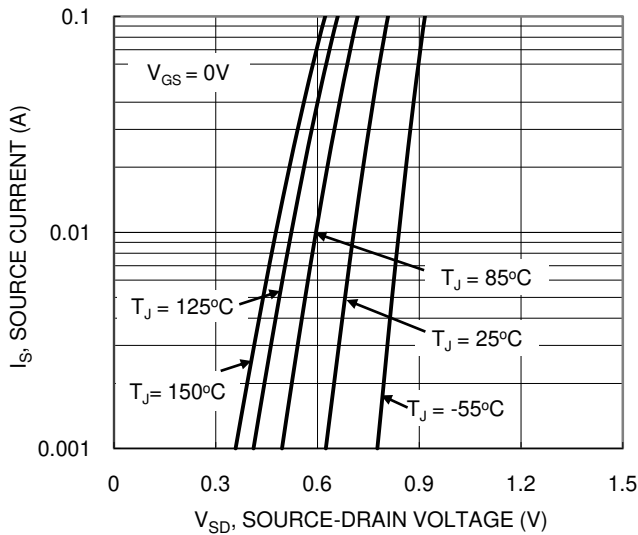
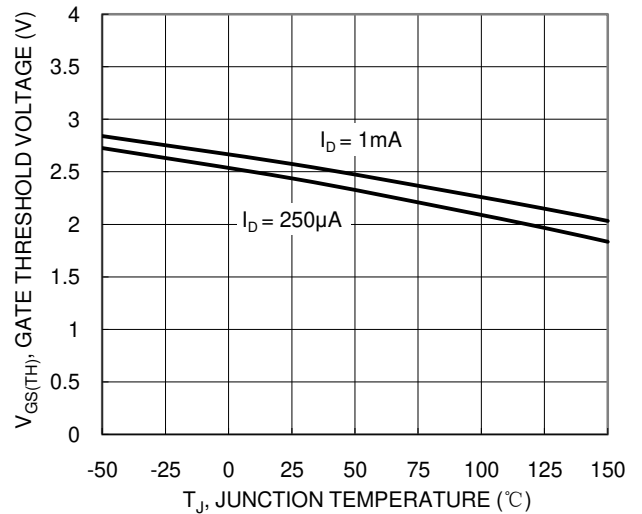
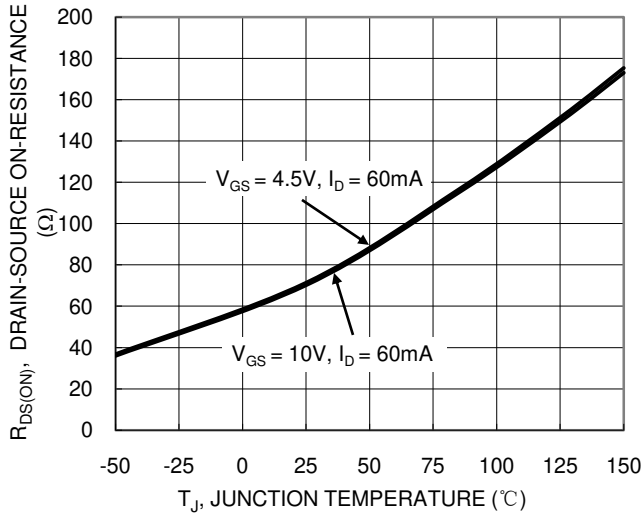


Figure 6. On-Resistance Variation with Temperature



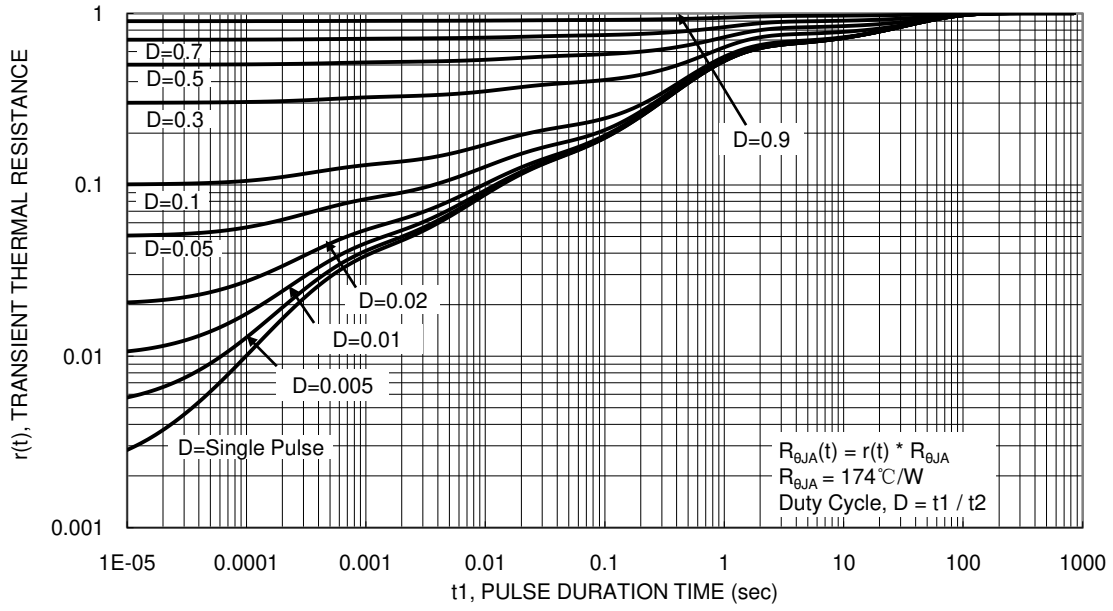
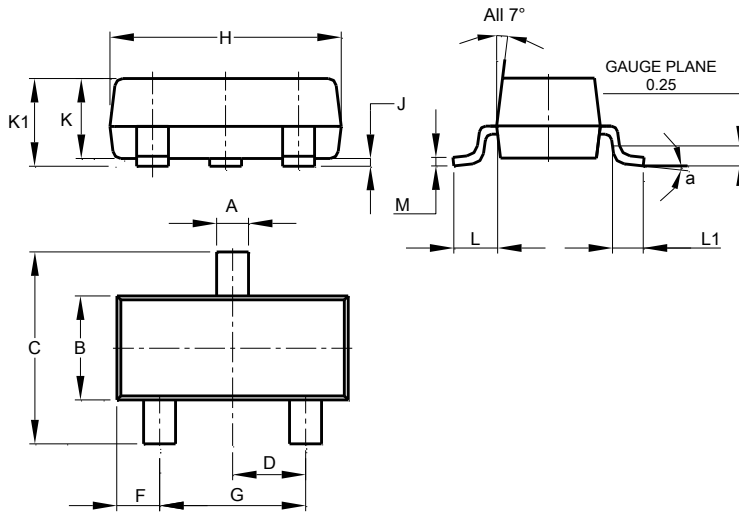


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

SOT23

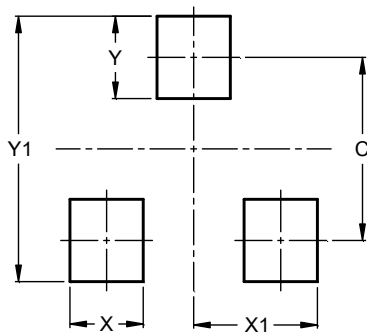


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

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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