

## Product Summary

$BV_{DSS}$	$R_{DS(ON)}$ max	$I_D$ max
40V	42m $\Omega$ @ $V_{GS} = 10V$	4.6A
	52m $\Omega$ @ $V_{GS} = 4.5V$	4.1A

## Description and Applications

This MOSFET is designed to meet the stringent requirements of Automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Battery Charging
- Power Management Functions
- DC-DC Converters
- Portable Power Adaptors

## Features and Benefits

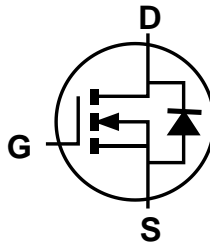
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Mechanical Data

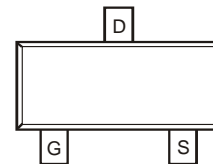
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Terminals Connections: See Diagram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



Top View



Internal Schematic



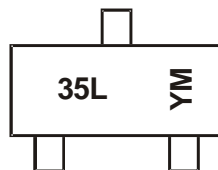
Top View

## Ordering Information (Note 5)

Part Number	Case	Packaging
DMN4035LQ-7	SOT23	3000/Tape & Reel
DMN4035LQ-13	SOT23	10000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



35L = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: G = 2019)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027			
Code	G	H	I	J	K	L	M	N	O			
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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	40	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 7) V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	4.6	A
		T <sub>A</sub> = +70°C		3.7	
Maximum Body Diode Forward Current (Note 7)			I <sub>S</sub>	1.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I <sub>DM</sub>	25	A
Pulsed Source Current (10µs Pulse, Duty Cycle = 1%)			I <sub>SM</sub>	25	A

**Thermal Characteristics**

Characteristic		Symbol	Value	Unit
Power Dissipation (Note 6)		P <sub>D</sub>	0.72	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R <sub>θJA</sub>	171	°C/W
Power Dissipation (Note 7)		P <sub>D</sub>	1.4	W
Thermal Resistance, Junction to Ambient (Note 7)	Steady State	R <sub>θJA</sub>	93	°C/W
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	40	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250µA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	µA	V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1	—	3	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	30	42	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 4.3A
		—	40	52		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 3.9A
Diode Forward Voltage	V <sub>SD</sub>	—	0.7	1.1	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1.25A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>iss</sub>	—	574	—	pF	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, f = 1MHz
Output Capacitance	C <sub>oss</sub>	—	87.8	—		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	38.7	—		
Gate Resistance	R <sub>g</sub>	—	1.6	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	—	5.9	—	nC	V <sub>DS</sub> = 20V, I <sub>D</sub> = 3.9A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	—	12.5	—		
Gate-Source Charge	Q <sub>gs</sub>	—	1.7	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	2.2	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	3.1	—	ns	V <sub>DD</sub> = 20V, V <sub>GS</sub> = 10V, R <sub>L</sub> = 20Ω, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	2.6	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	15	—		
Turn-Off Fall Time	t <sub>f</sub>	—	5.5	—		
Reverse Recovery Time	t <sub>RR</sub>	—	6.5	—	ns	I <sub>F</sub> = 3.9A, di/dt = 500A/µs
Reverse Recovery Charge	Q <sub>RR</sub>	—	1.2	—	nC	

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

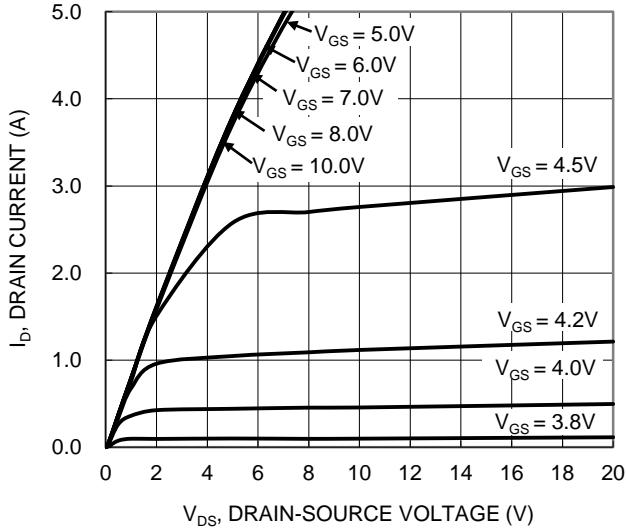


Figure 1. Typical Output Characteristic

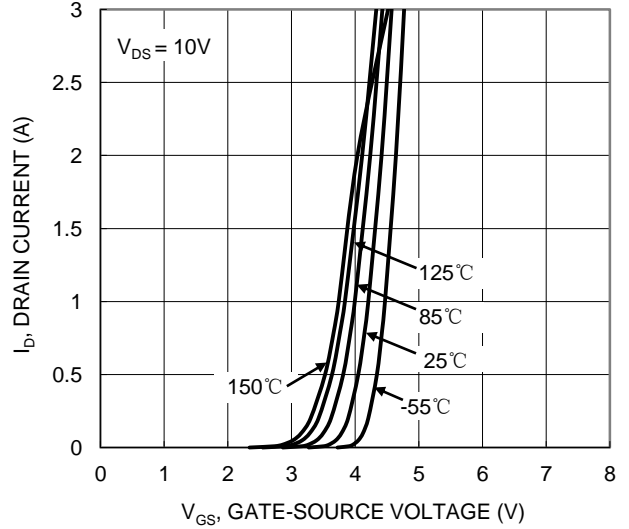


Figure 2. Typical Transfer Characteristic

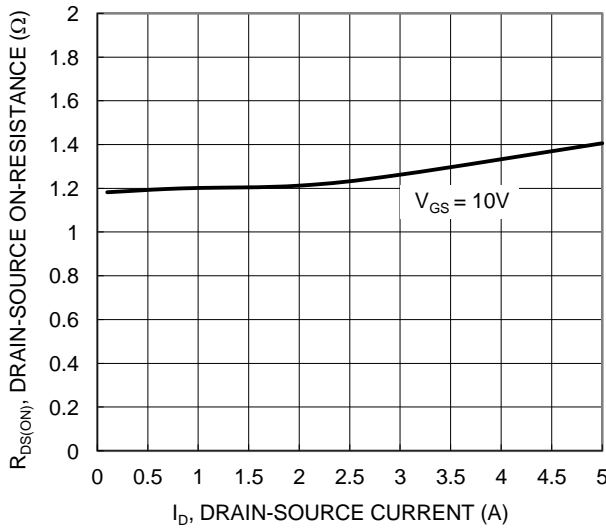


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

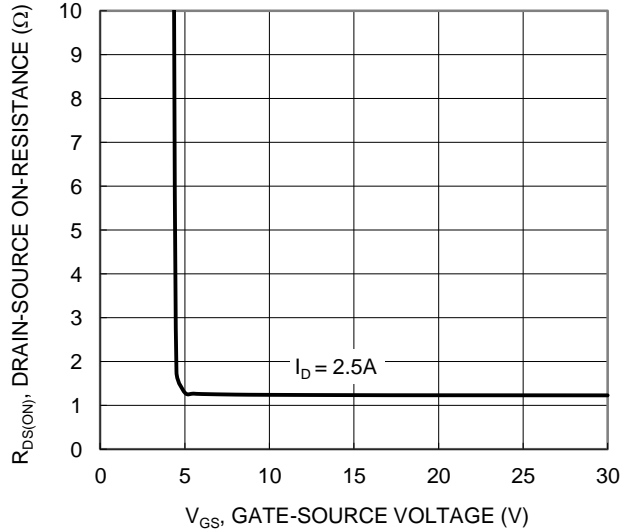


Figure 4. Typical Transfer Characteristic

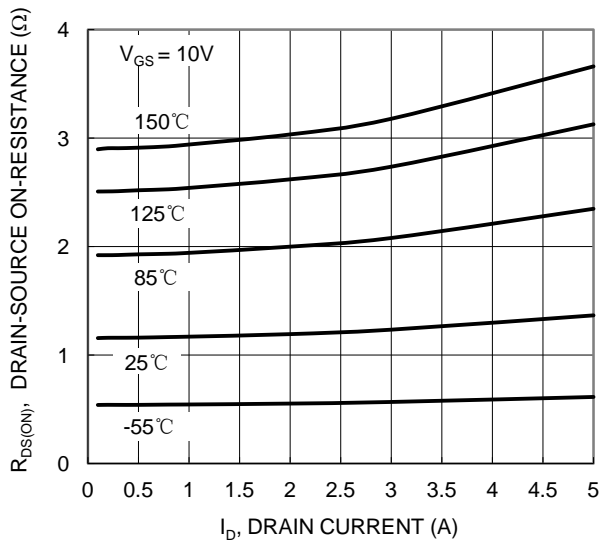


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

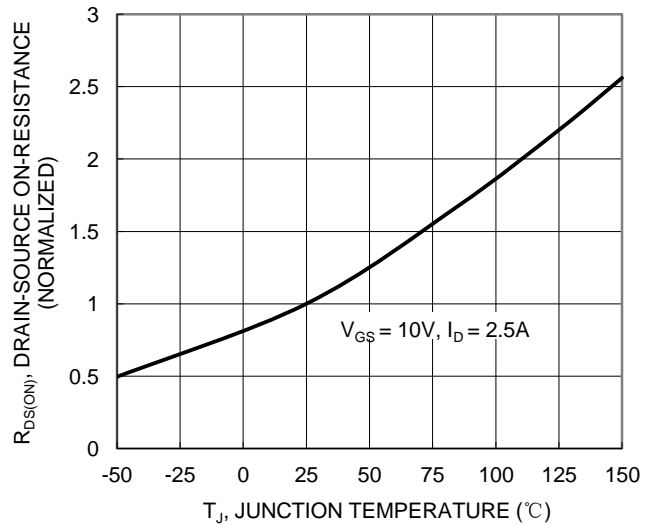


Figure 6. On-Resistance Variation with Temperature

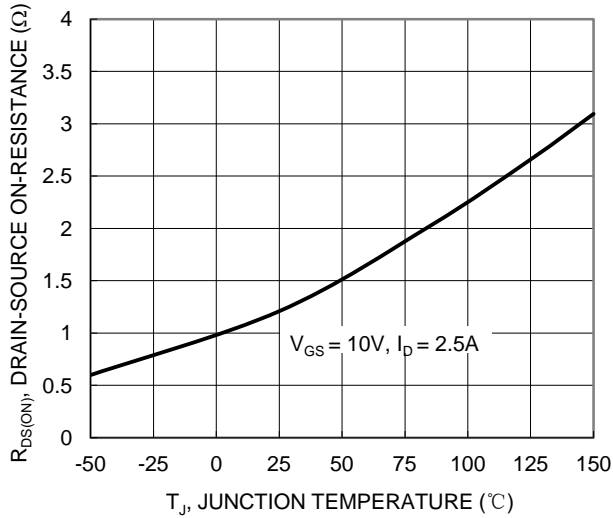


Figure 7. On-Resistance Variation with Temperature

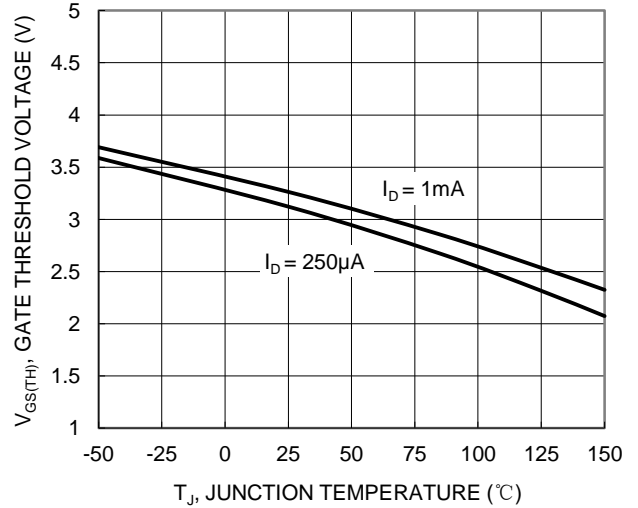


Figure 8. Gate Threshold Variation vs. Junction Temperature

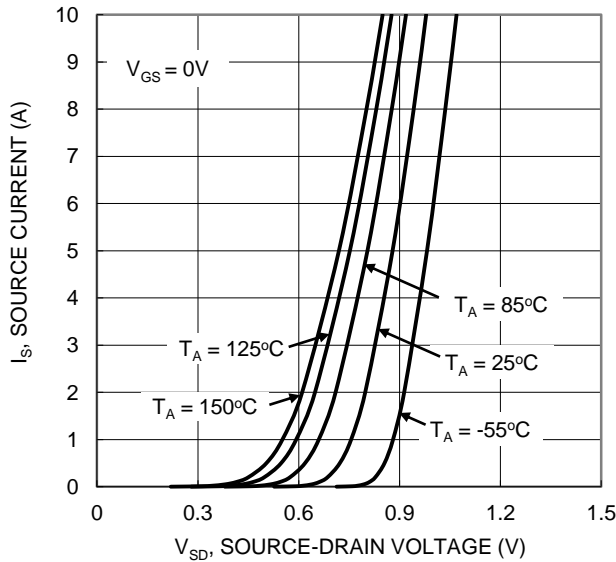


Figure 9. Diode Forward Voltage vs. Current

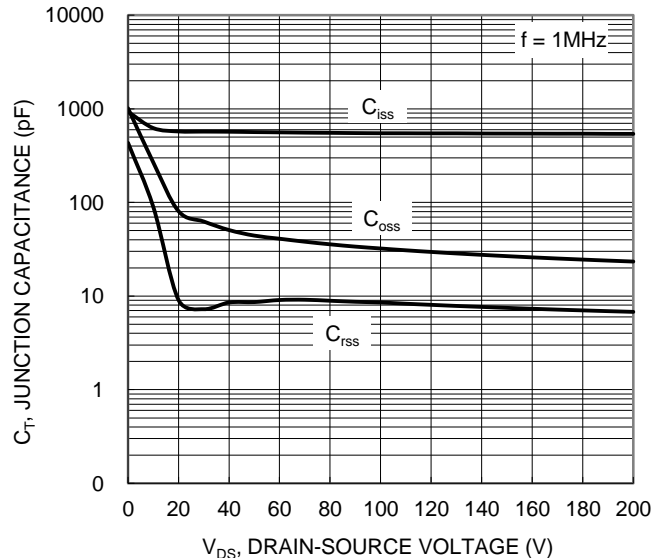


Figure 10. Typical Junction Capacitance

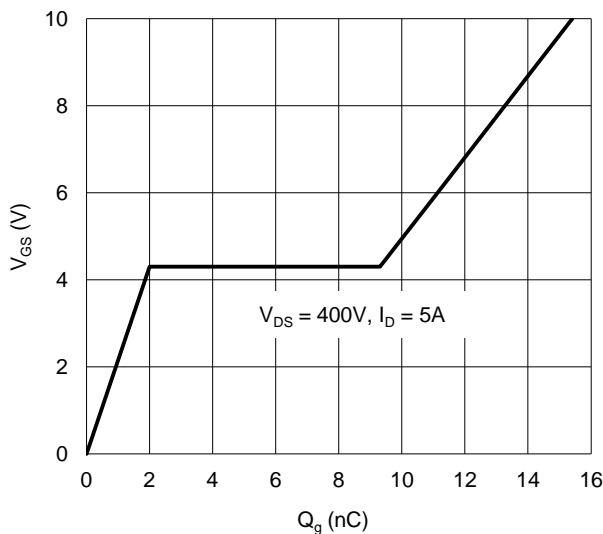


Figure 11. Gate Charge

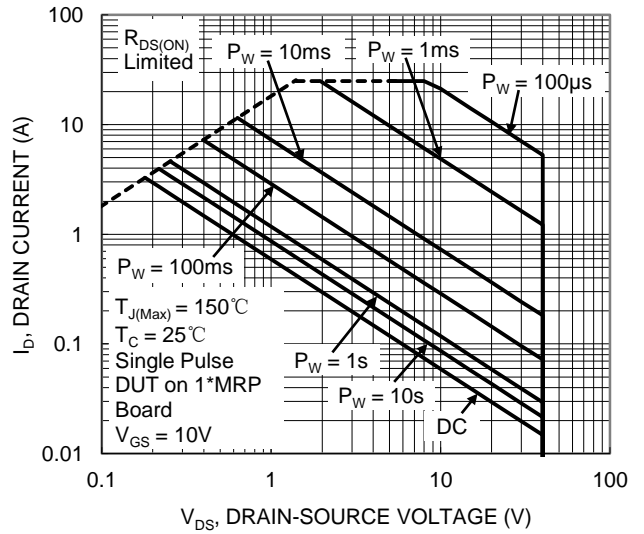


Figure 12. SOA, Safe Operation Area

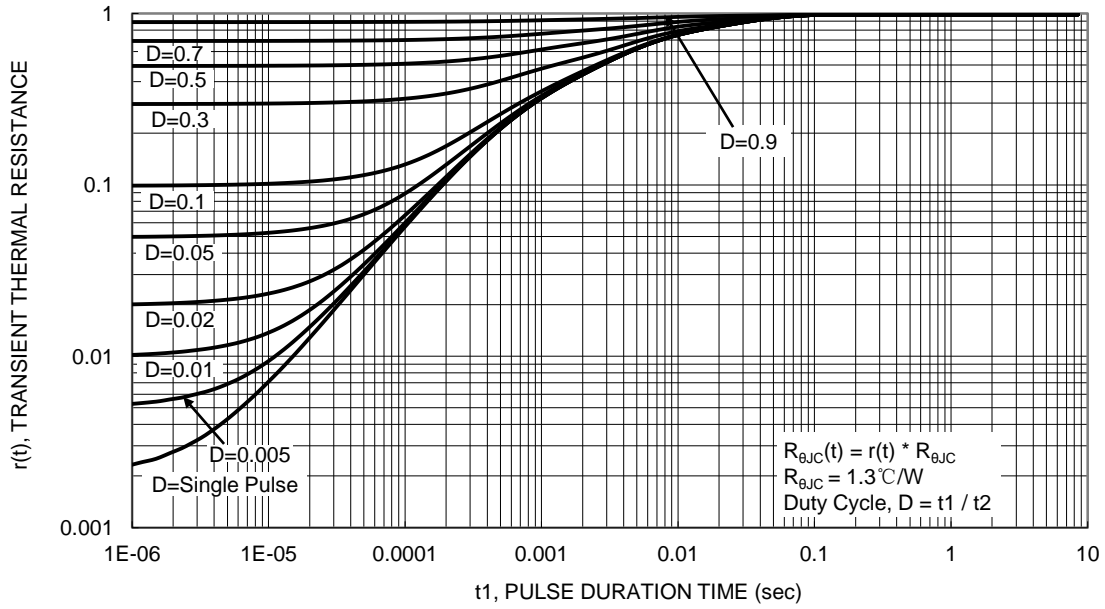
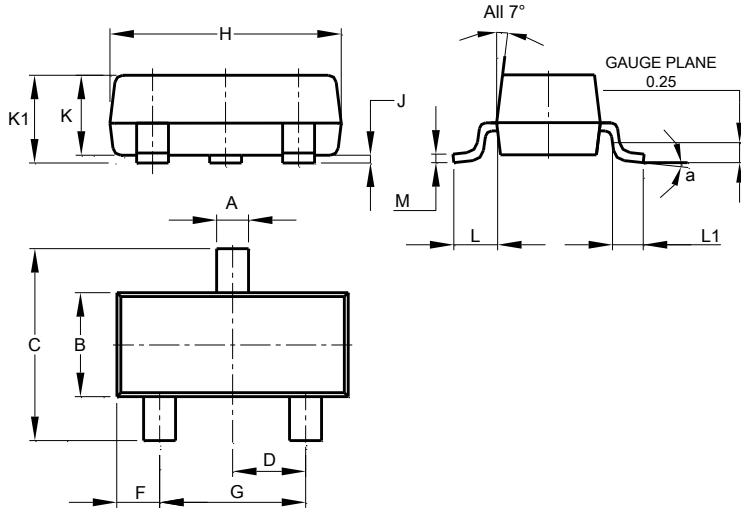


Figure 13. Transient Thermal Resistance

**Package Outline Dimensions**

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

**SOT23**

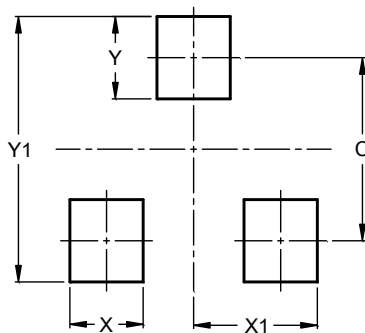


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

**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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