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Lead-free Green

DMP2067LVT

P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_A = +25°C
-20V	45mΩ @ V_{GS} = -4.5V	-4.2A
	65mΩ @ V_{GS} = -2.5V	-3.5A

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Description

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

Mechanical Data

- Case: TSOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.013 grams (Approximate)

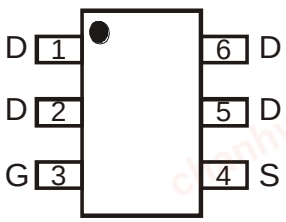
Applications

- General Purpose Interfacing Switch
- Power Management Functions

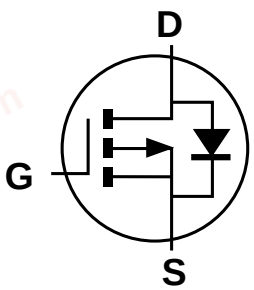
TSOT26



Top View



Top View
Pin Configuration



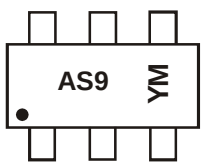
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMP2067LVT-7	TSOT26	3,000/Tape & Reel
DMP2067LVT-13	TSOT26	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



AS9 = Product Type Marking Code
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: F = 2018)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026
Code	F	G	H	I	J	K	L	M	N

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current (Note 5) Continuous	T_A = +25°C T_A = +70°C	I_D	-4.2 -3.4	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I_{DM}	-30	A
Body-Diode Continuous Current (Note 5)		I_S	-1.4	A

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	1.2	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	105	°C/W
Total Power Dissipation (Note 6)		P_D	1.6	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	78	°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
STATIC PARAMETERS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	—	—	V	I_D = -250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	-1	µA	V_{DS} = -16V, V_{GS} = 0V
Gate-Body Leakage Current	I_{GSS}	—	—	±100	nA	V_{DS} = 0V, V_{GS} = ±8V
Gate Threshold Voltage	$V_{GS(TH)}$	-0.4	—	-1.5	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	22 27	45 65	mΩ	V_{GS} = -4.5V, I_D = -4.5A V_{GS} = -2.5V, I_D = -3.8A
Diode Forward Voltage	V_{SD}	—	-0.7	-1.4	V	I_S = -2.1A, V_{GS} = 0V
DYNAMIC PARAMETERS (Note 8)						
Input Capacitance	C_{iss}	—	1575	—	pF	V_{DS} = -10V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	124	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	89	—	pF	
Gate Resistance	R_g	—	10	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	—	15	—	nC	V_{DS} = -10V, I_D = -4.5A
Total Gate Charge (V_{GS} = -8V)	Q_g	—	28	—		
Gate-Source Charge	Q_{gs}	—	1.6	—		
Gate-Drain Charge	Q_{gd}	—	3.4	—		
Turn-On Delay Time	$t_{D(ON)}$	—	5.2	—	ns	V_{DS} = -5V, V_{GS} = -4.5V, I_D = -1A, R_g = 6.0Ω
Rise Time	t_R	—	12	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	103	—		
Fall Time	t_F	—	31	—		
Body Diode Reverse Recovery Time	t_{RR}	—	13	—	ns	I_F = -8.9A, di/dt = -100A/µs
Body Diode Reverse Recovery Charge	Q_{RR}	—	6.7	—	nC	I_F = -8.9A, di/dt = -100A/µs

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

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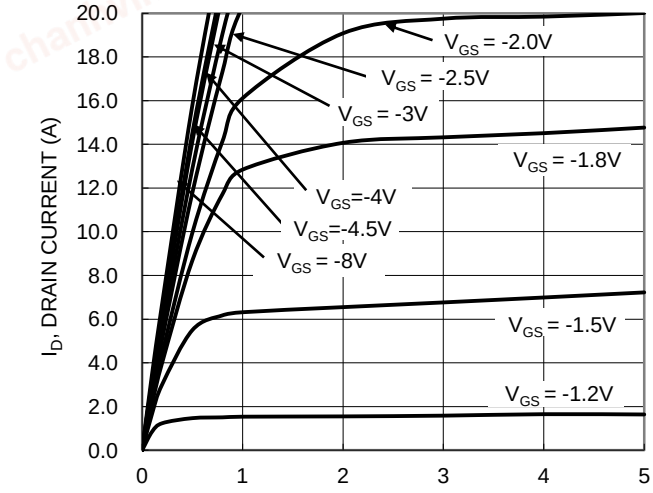


Figure 1. Typical Output Characteristic

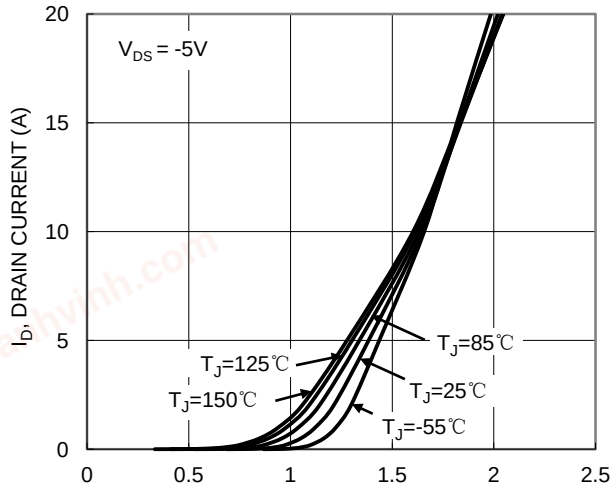


Figure 2. Typical Transfer Characteristic

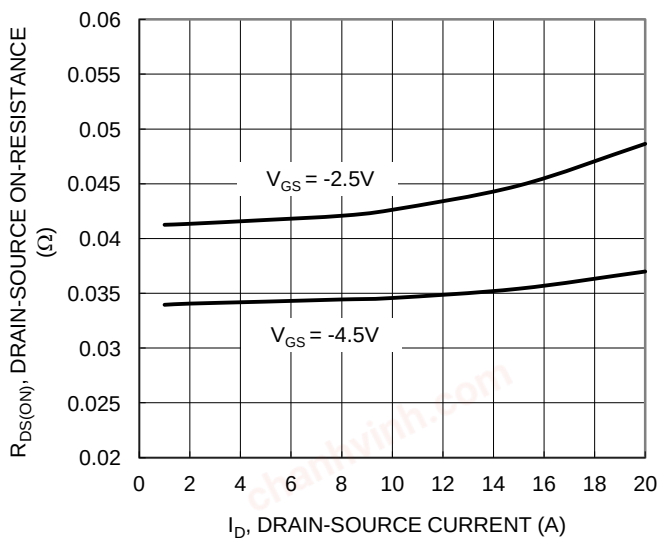


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

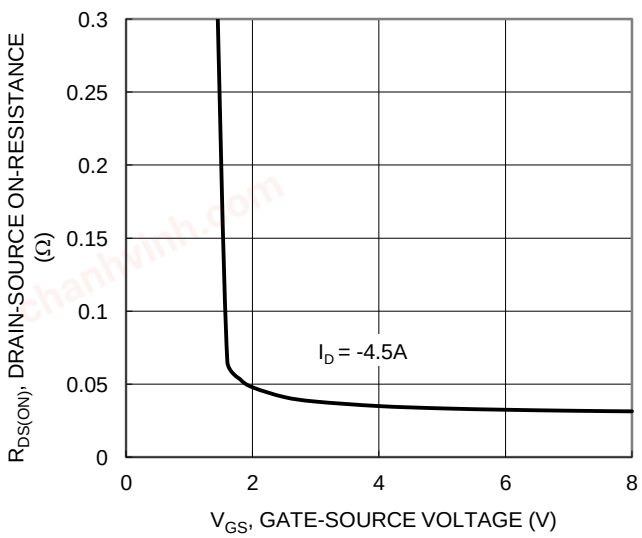


Figure 4. Typical Transfer Characteristic

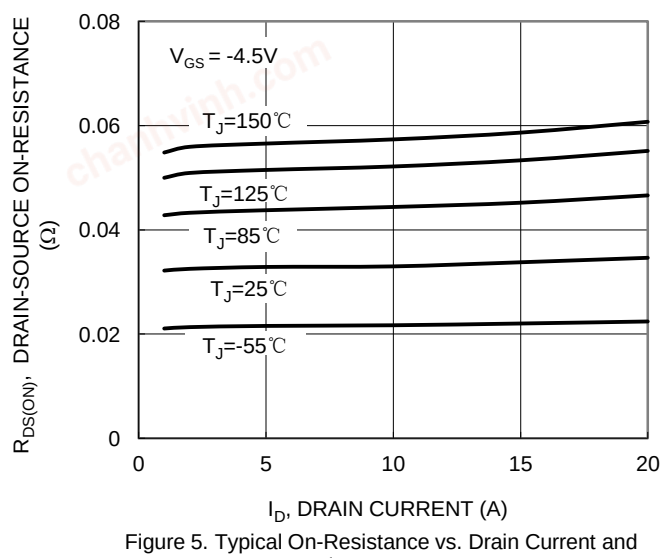


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

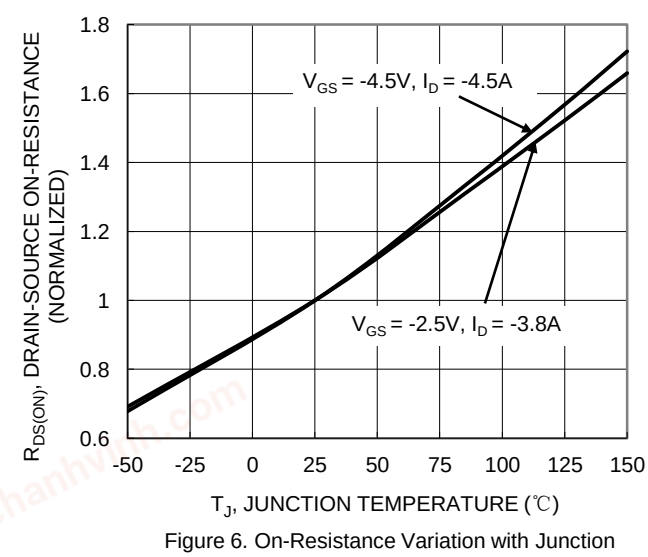


Figure 6. On-Resistance Variation with Junction Temperature

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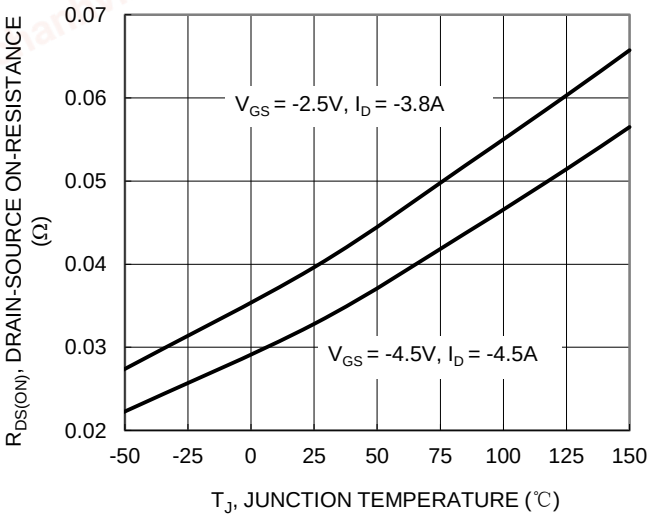


Figure 7. On-Resistance Variation with Junction Temperature

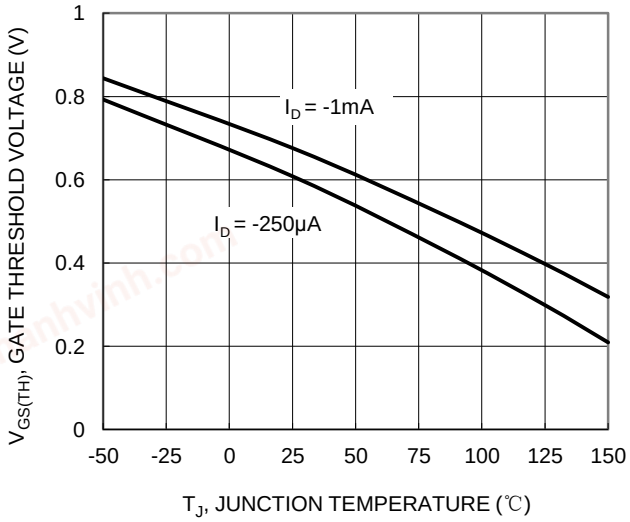


Figure 8. Gate Threshold Variation vs. Junction Temperature

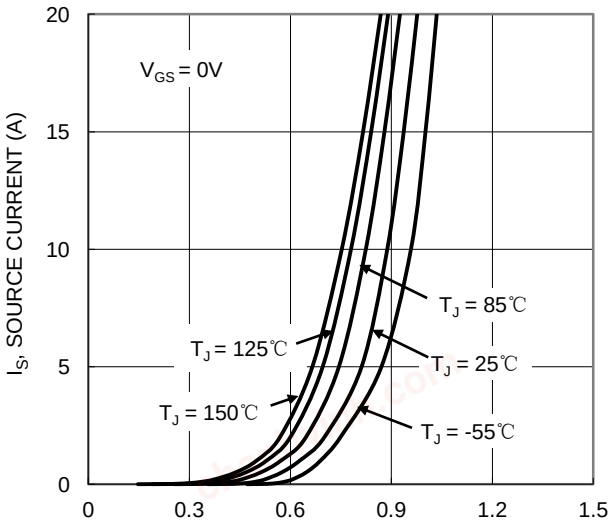


Figure 9. Diode Forward Voltage vs. Current

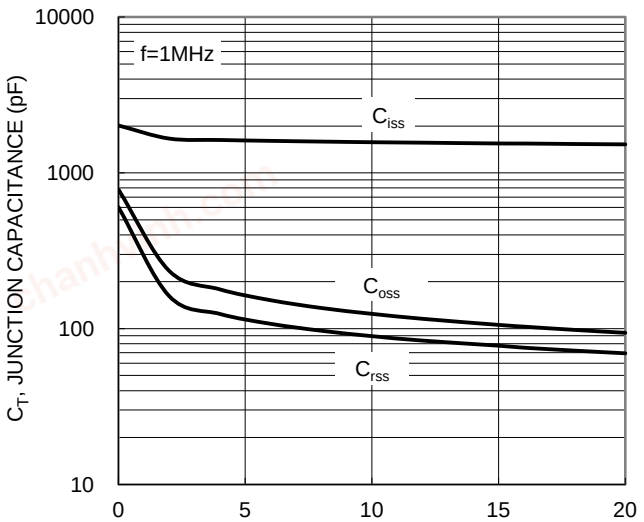


Figure 10. Typical Junction Capacitance

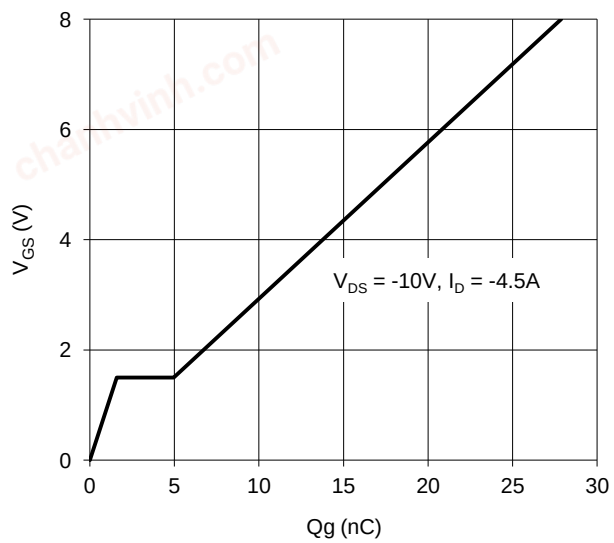


Figure 11. Gate Charge

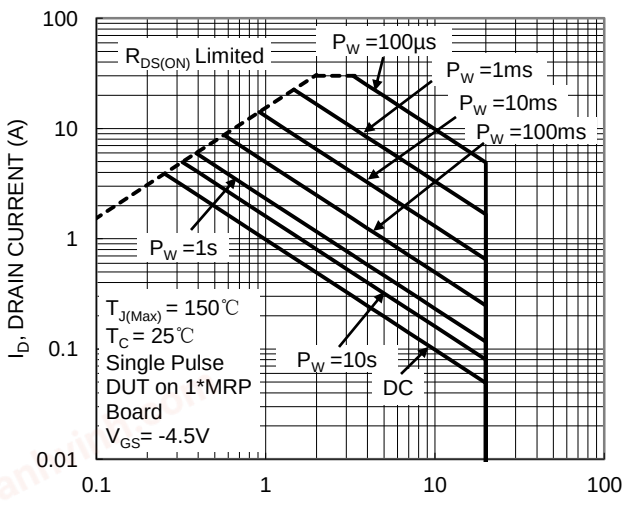


Figure 12. SOA, Safe Operation Area

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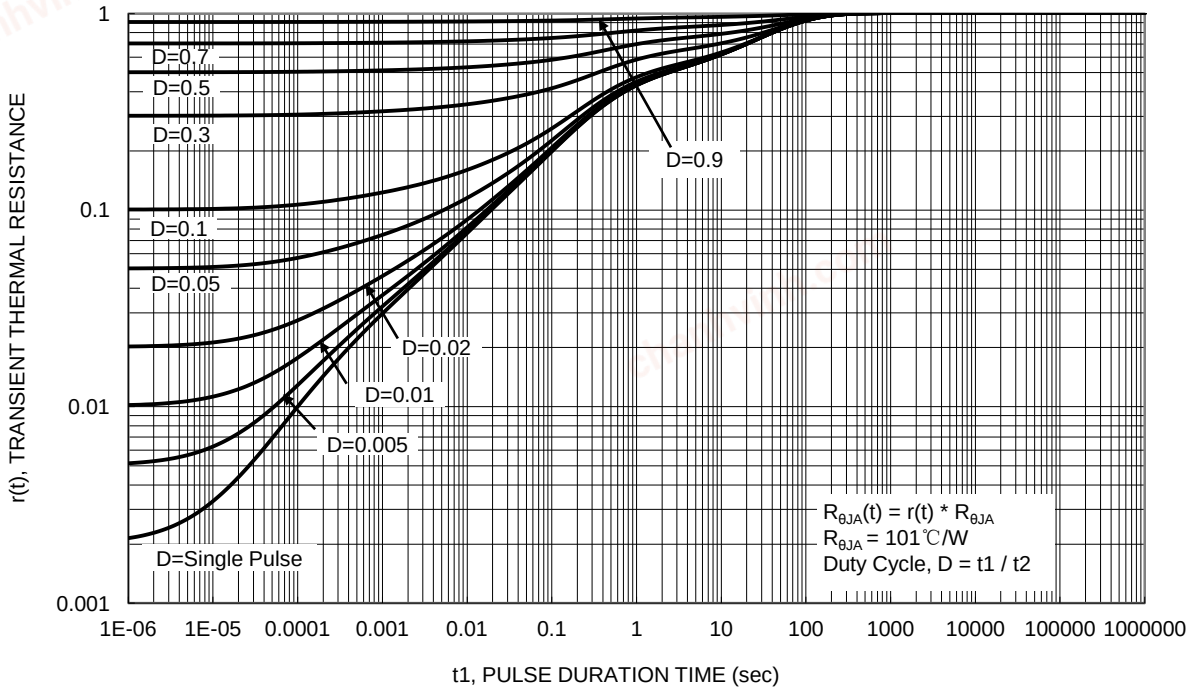


Figure 13. Transient Thermal Resistance

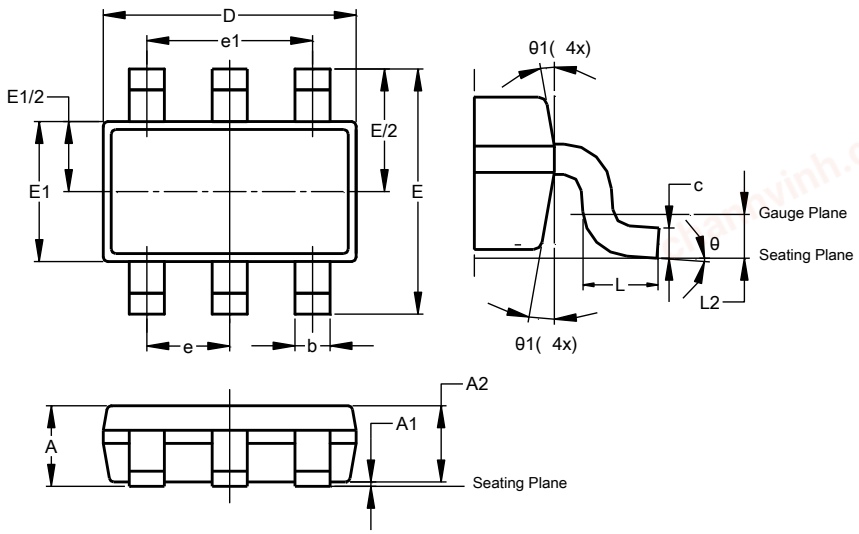
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Package Outline Dimensions

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

TSOT26

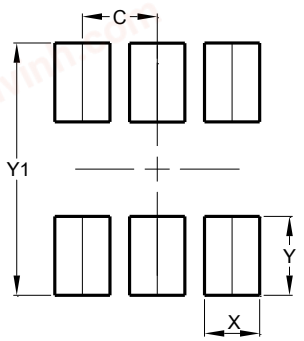


TSOT26			
Dim	**Min**	**Max**	**Typ**
A	–	1.00	–
A1	0.010	0.100	–
A2	0.840	0.900	–
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	–
c	0.120	0.200	–
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	–
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	–
All Dimensions in mm			

Suggested Pad Layout

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

TSOT26



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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