

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
-60V	115mΩ @ V _{GS} = -10V	-2.7A
	145mΩ @ V _{GS} = -4.5V	-2.5A

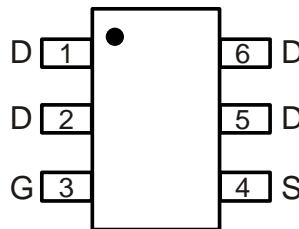
Description and Applications

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:

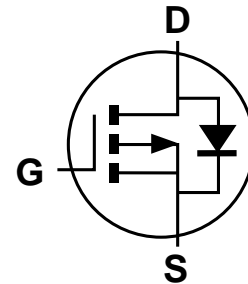
- Backlighting
- Power-management functions
- DC-DC converters



Top View



Device Schematic



Equivalent Circuit

Features and Benefits

- 100% Unclamped Inductive Switch (UIS) Test in Production
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DMP6111SVTQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

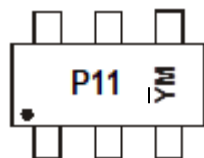
- Package: TSOT26
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.008 grams (Approximate)

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMP6111SVTQ-7	TSOT26	3000	Tape & Reel
DMP6111SVTQ-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



P11 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: K = 2023)
 M = Month (ex: D = December)

Date Code Key

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	K	L	M	N	P	R	S	T	U	V	W	X

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}	-60	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = -10V	I _D	T _A = +25°C	-2.7
		T _A = +70°C	-2.1
Maximum Body Diode Forward Current (Note 6)	I _S	-2.7	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	-19	A
Pulsed Source Current (10µs Pulse, Duty Cycle = 1%)	I _{SM}	-19	A
Avalanche Current, L = 0.1mH	I _{AS}	-18.4	A
Repetitive Avalanche Energy, L = 0.1mH	E _{AS}	16.9	mJ

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	1.1	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	110	°C/W
Total Power Dissipation (Note 6)	P _D	Steady State	1.6
		Steady State	78
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	78	°C/W
Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	8.2	°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}	-60	—	—	V	V _{GS} = 0, I _D = -250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	µA	V _{DS} = -60V, V _{GS} = 0
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0
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)}	—	87	115	mΩ	V _{GS} = -10V, I _D = -3A
			112	145		V _{GS} = -4.5V, I _D = -3A
Diode Forward Voltage	V _{SD}	—	-0.8	-1.2	V	V _{GS} = 0, I _S = -1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{ISS}	—	1283	—	pF	V _{DS} = -30V, V _{GS} = 0, f = 1.0MHz
Output Capacitance	C _{OSS}	—	58	—		
Reverse Transfer Capacitance	C _{RSS}	—	43	—		
Gate Resistance	R _g	—	5.6	—	Ω	V _{DS} = 0, V _{GS} = 0, f = 1.0MHz
Total Gate Charge (V _{GS} = -4.5V)	Q _g	—	11.2	—	nC	V _{DS} = -30V, I _D = -3A
Total Gate Charge (V _{GS} = -10V)	Q _g	—	23.2	—		
Gate-Source Charge	Q _{gs}	—	3.7	—		
Gate-Drain Charge	Q _{gd}	—	4.2	—		
Turn-On Delay Time	t _{D(ON)}	—	5.1	—	ns	V _{GS} = -10V, V _{DS} = -30V, R _{GEN} = 6Ω, I _D = -3A
Turn-On Rise Time	t _r	—	18.4	—		
Turn-Off Delay Time	t _{D(OFF)}	—	41.6	—		
Turn-Off Fall Time	t _f	—	22.7	—		
Reverse-Recovery Time	t _{RR}	—	23	—	ns	I _S = -3A, di/dt = -100A/µs
Reverse-Recovery Charge	Q _{RR}	—	20	—	nC	I _S = -3A, 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.

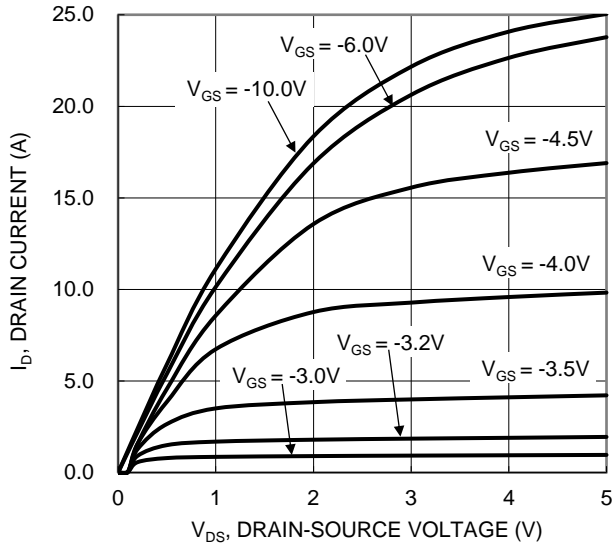


Figure 1. Typical Output Characteristic

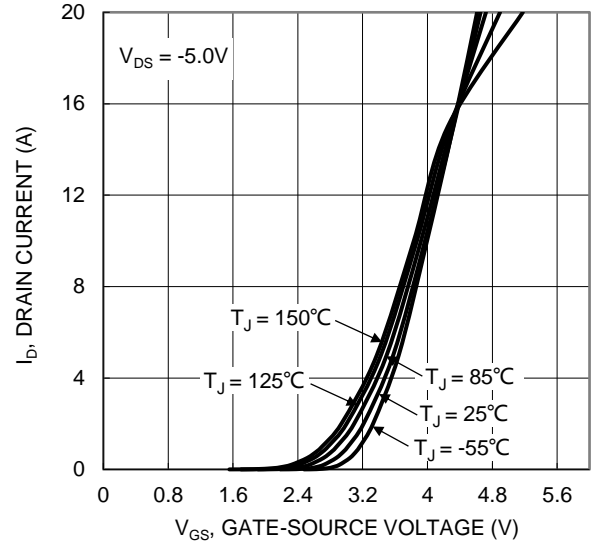


Figure 2. Typical Transfer Characteristic

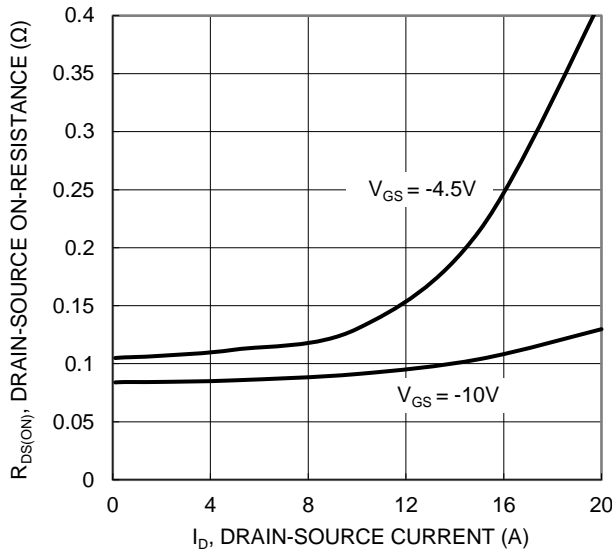


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

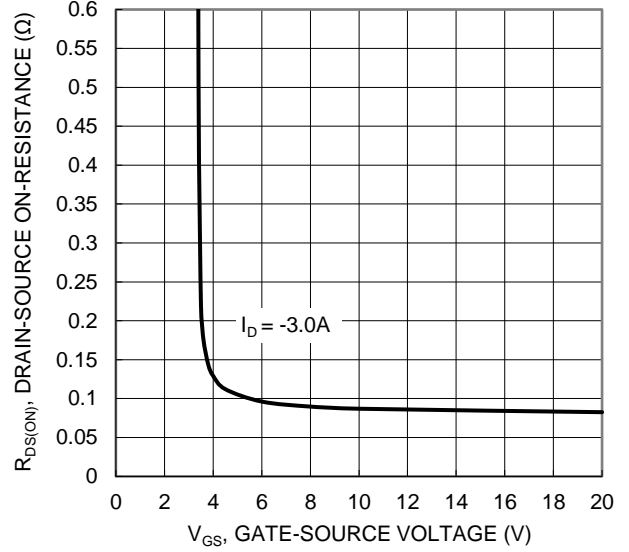


Figure 4. Typical Transfer Characteristic

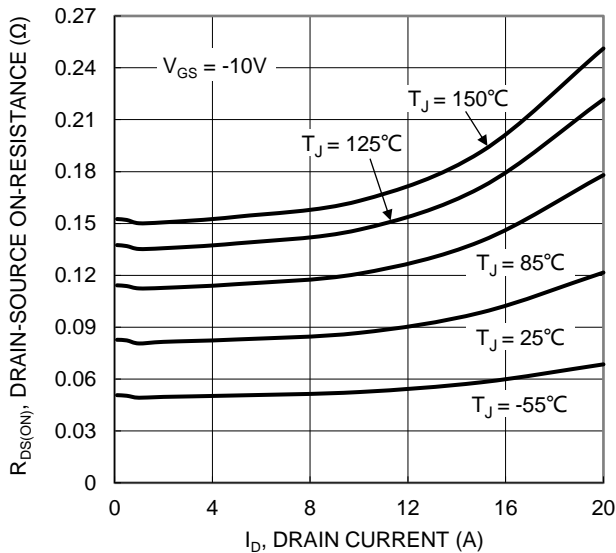


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

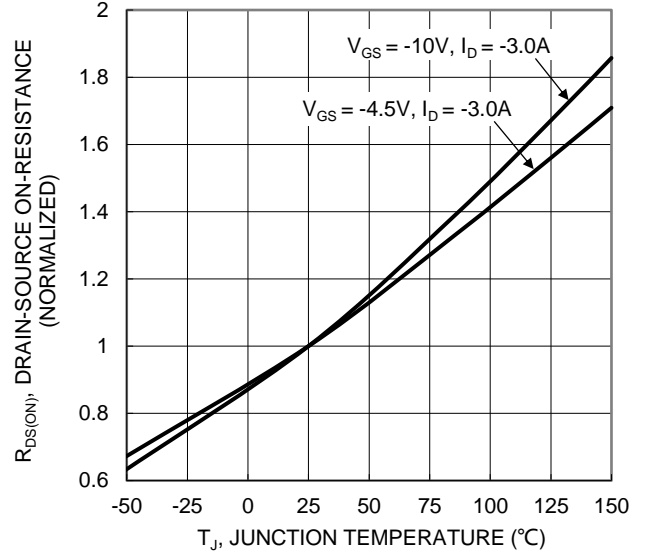


Figure 6. On-Resistance Variation with Junction Temperature

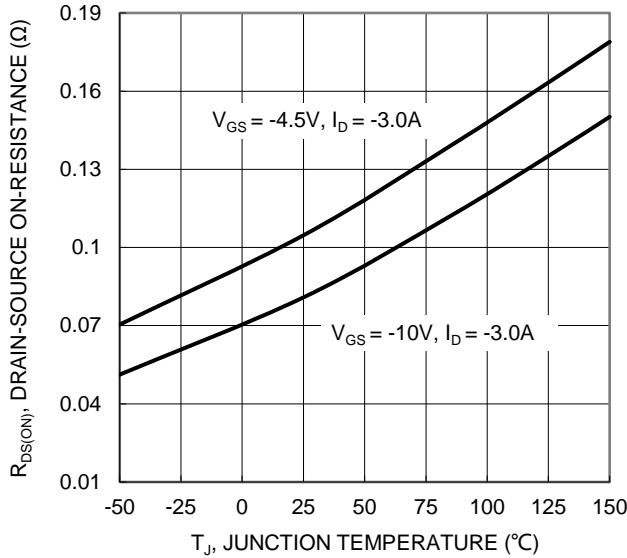


Figure 7. On-Resistance Variation with Junction Temperature

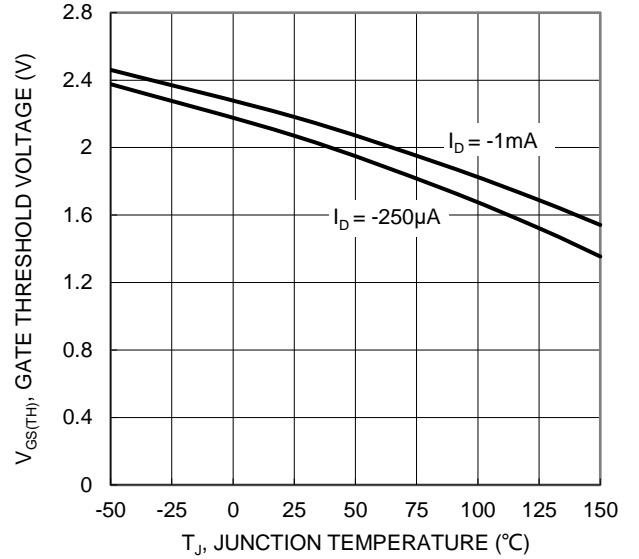


Figure 8. Gate Threshold Variation vs. Junction Temperature

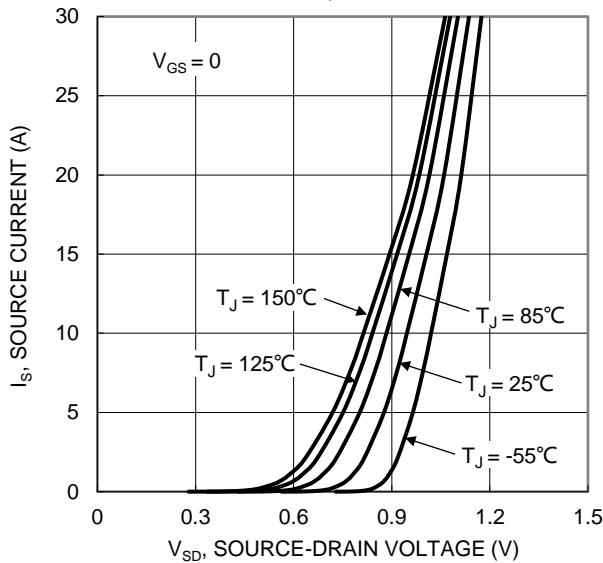


Figure 9. Diode Forward Voltage vs. Current

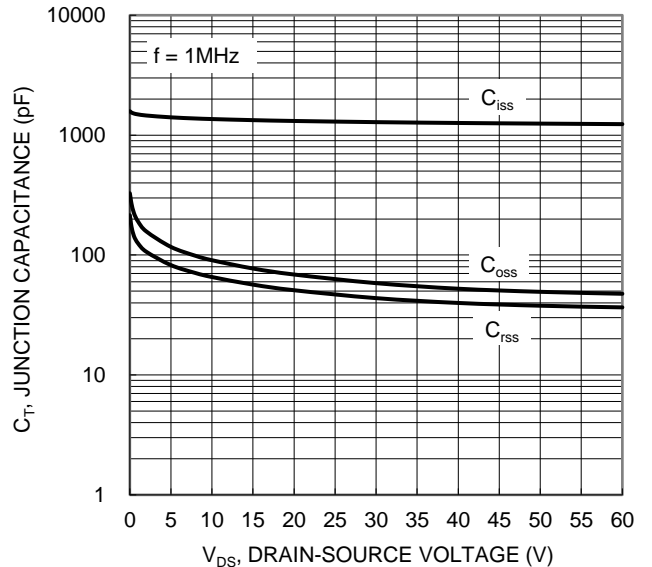


Figure 10. Typical Junction Capacitance

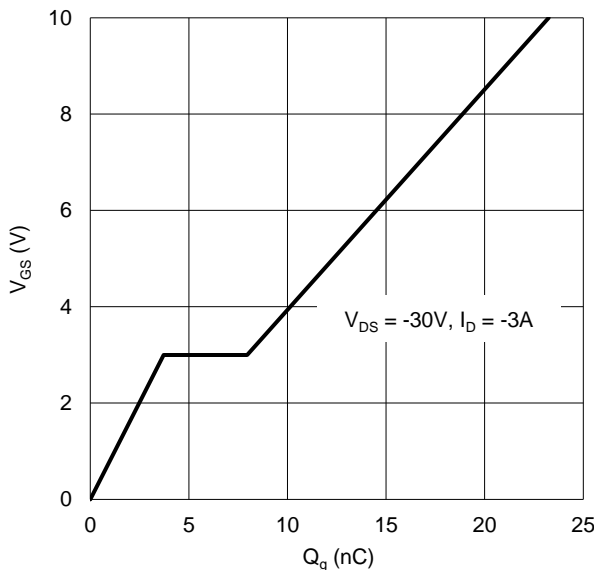


Figure 11. Gate Charge

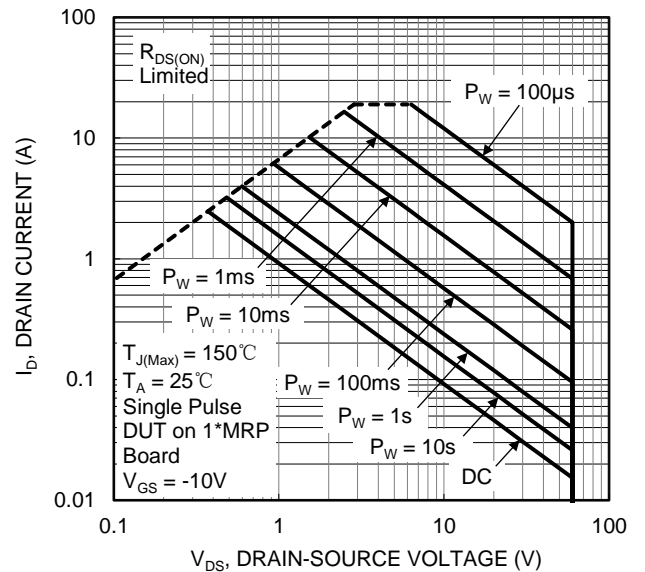


Figure 12. SOA, Safe Operation Area

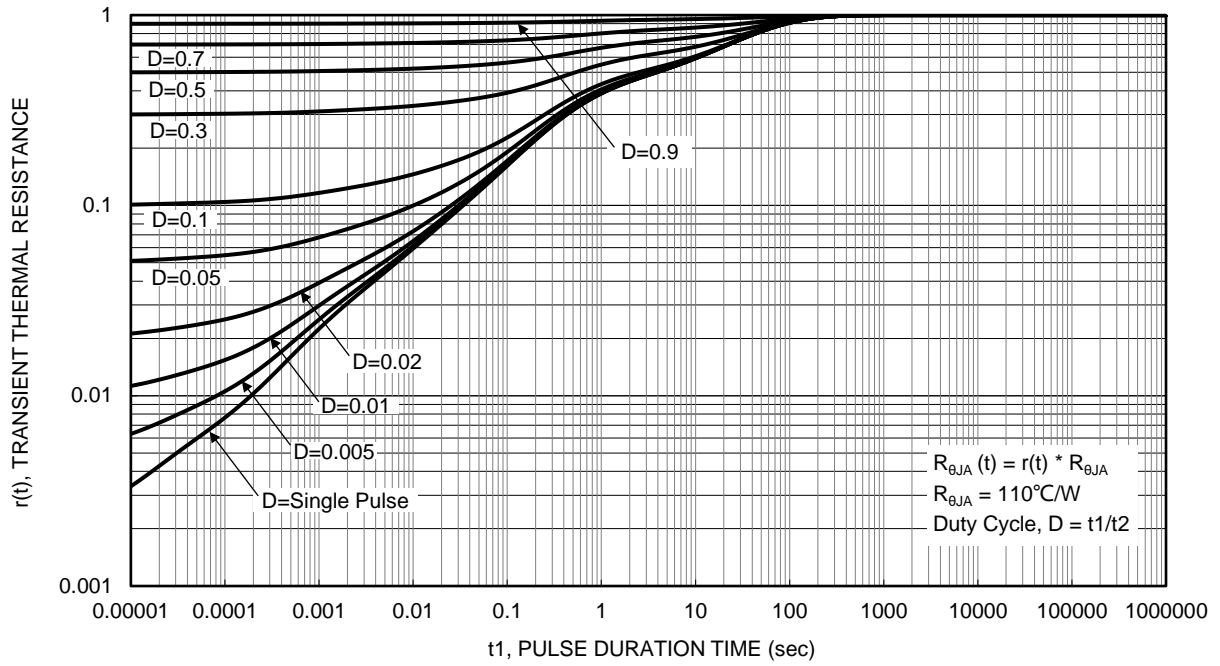
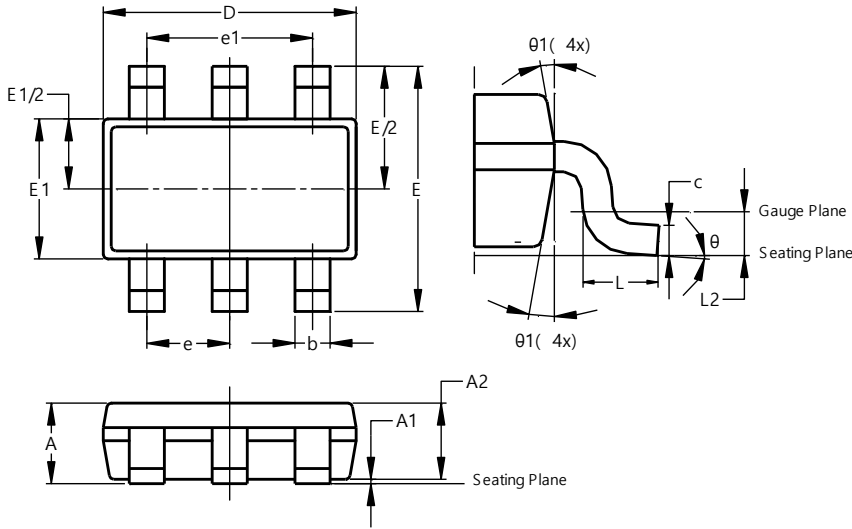


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TSOT26

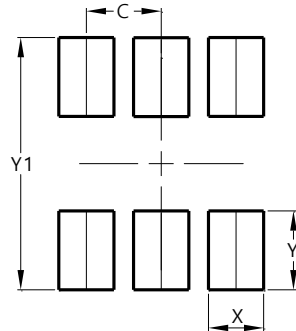


TSOT26			
Dim	Min	Max	Typ
A	-	1.00	-
A1	0.010	0.100	-
A2	0.840	0.900	-
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	-
c	0.120	0.200	-
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	-
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	-
All Dimensions in mm			

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	3.200

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