

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _C = +25°C
-60V	105mΩ @ V _{GS} = -10V	-7.3A
	130mΩ @ V _{GS} = -4.5V	-6.5A

Features and Benefits

- 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Description and Applications

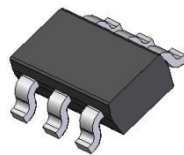
This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Backlighting
- Power Management Functions
- DC-DC Converters

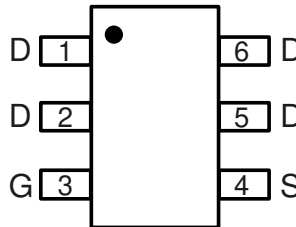
Mechanical Data

- 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 Indicator: See Diagram
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ
- Weight: 0.008 grams (Approximate)

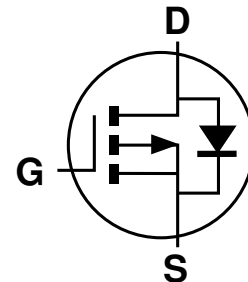
TSOT26



Top View



Device Schematic



Equivalent Circuit

Ordering Information (Note 5)

Part Number	Case	Packaging
DMP6110SVTQ-7	TSOT26	3,000/Tape & Reel
DMP6110SVTQ-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. 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



P61 = Product Type Marking Code
 YM or YM = Date Code Marking
 Y = Year (ex: F = 2018)
 M = Month (ex: 9 = September)

Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Code	D	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 (@ $T_A = +25^\circ\text{C}$, 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 7) $V_{GS} = -10\text{V}$	I_D	$T_C = +25^\circ\text{C}$	-7.3
		$T_C = +70^\circ\text{C}$	-5.8
Maximum Body Diode Forward Current (Note 7)	I_S	-1.8	A
Pulsed Drain Current (380 μs Pulse, 1% Duty Cycle)	I_{DM}	-24	A
Pulsed Source Current (380 μs Pulse, 1% Duty Cycle)	I_{SM}	-24	A
Avalanche Current (Note 7) $L = 0.1\text{mH}$	I_{AS}	-19	A
Repetitive Avalanche Energy (Note 7) $L = 0.1\text{mH}$	E_{AS}	18	mJ

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P_D	$T_A = +25^\circ\text{C}$	1.2
		$T_A = +70^\circ\text{C}$	0.75
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	Steady State	105
		$t < 10\text{s}$	60
Total Power Dissipation (Note 7)	P_D	$T_A = +25^\circ\text{C}$	1.8
		$T_A = +70^\circ\text{C}$	1.1
Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	Steady State	69
		$t < 10\text{s}$	39
Thermal Resistance, Junction to Case (Note 7)	$R_{\theta JC}$	15	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	-60	—	—	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -48\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	-100	nA	$V_{GS} = \pm 16\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1	—	-3	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	—	105	m Ω	$V_{GS} = -10\text{V}, I_D = -4.5\text{A}$
		—	—	130		$V_{GS} = -4.5\text{V}, I_D = -3.5\text{A}$
Diode Forward Voltage	V_{SD}	—	-0.7	-1.2	V	$V_{GS} = 0\text{V}, I_S = -1\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{ISS}	—	969	—	pF	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{OSS}	—	57	—		
Reverse Transfer Capacitance	C_{RSS}	—	44	—		
Gate Resistance	R_G	—	13.7	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Total Gate Charge ($V_{GS} = -4.5\text{V}$)	Q_G	—	8.2	—	nC	$V_{DS} = -30\text{V}, I_D = -12\text{A}$
Total Gate Charge ($V_{GS} = -10\text{V}$)	Q_G	—	17.2	—		
Gate-Source Charge	Q_{GS}	—	3.0	—		
Gate-Drain Charge	Q_{GD}	—	3.1	—		
Turn-On Delay Time	$t_{D(ON)}$	—	4.4	—	ns	$V_{GS} = -10\text{V}, V_{DS} = -30\text{V}, R_{GEN} = 3\Omega, I_D = -12\text{A}$
Turn-On Rise Time	t_R	—	23	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	34	—		
Turn-Off Fall Time	t_F	—	42	—		
Body Diode Reverse Recovery Time	t_{RR}	—	13.2	—	ns	$I_S = -12\text{A}, dI/dt = 100\text{A}/\mu\text{s}$
Body Diode Reverse Recovery Charge	Q_{RR}	—	6.18	—	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 1-inch square copper plate.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

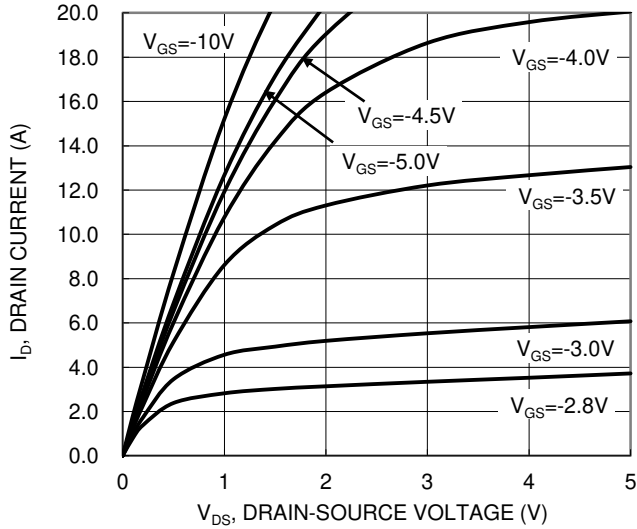


Figure 1. Typical Output Characteristic

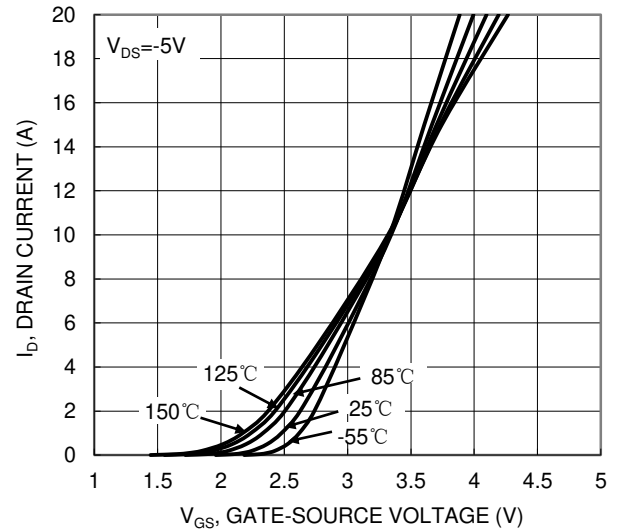


Figure 2. Typical Transfer Characteristic

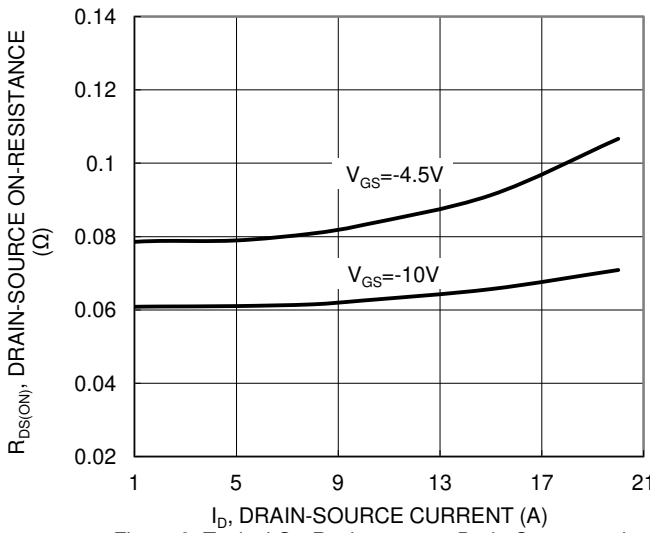


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

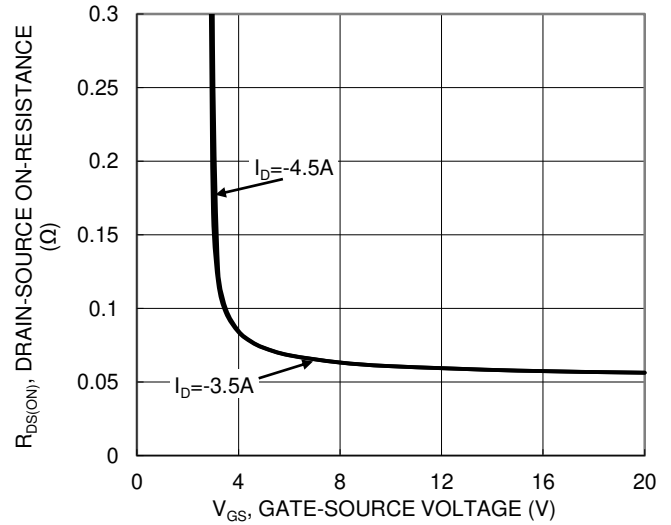


Figure 4. Typical Transfer Characteristic

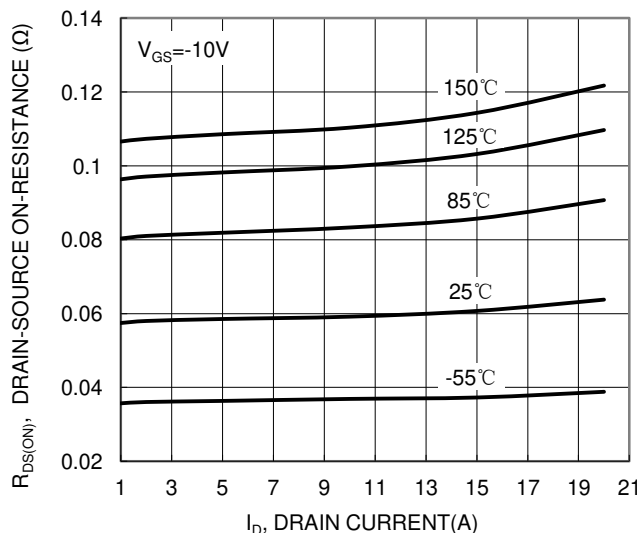


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

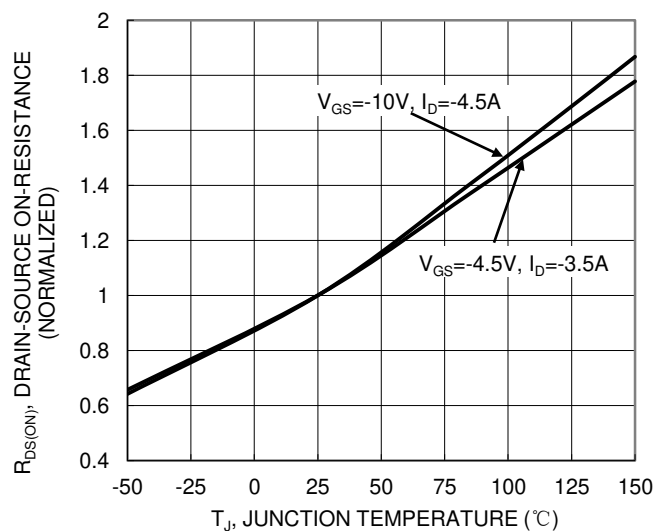


Figure 6. On-Resistance Variation with Temperature

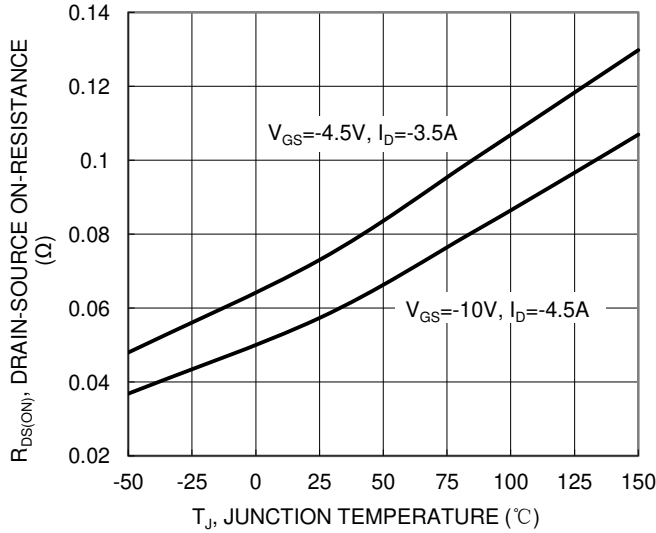


Figure 7. On-Resistance Variation with Temperature

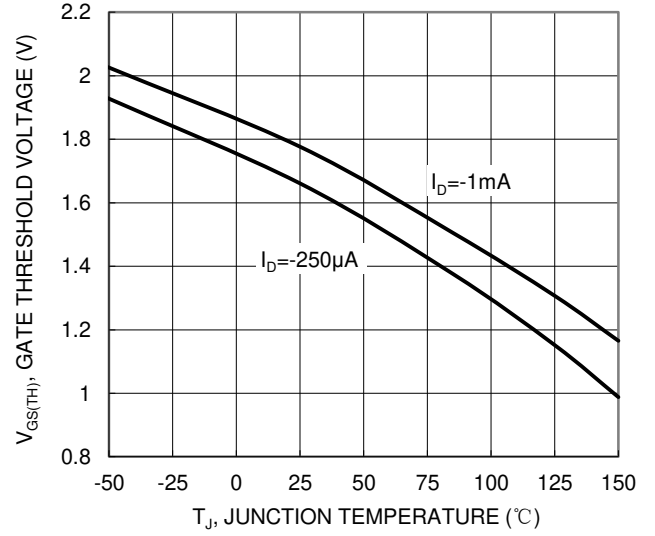


Figure 8. Gate Threshold Variation vs. Junction Temperature

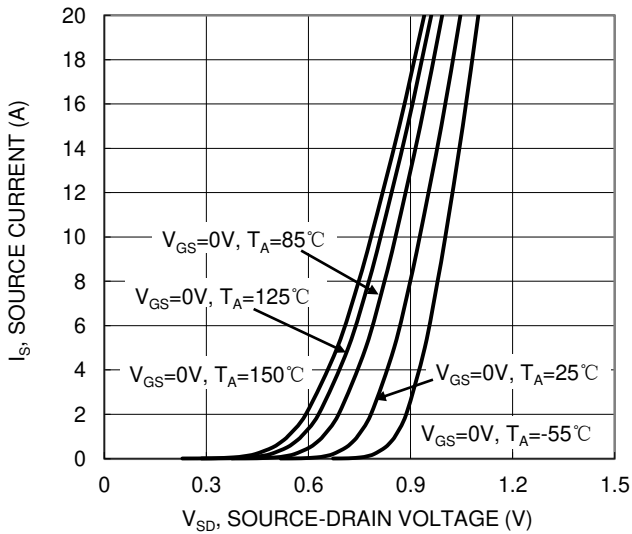


Figure 9. Diode Forward Voltage vs. Current

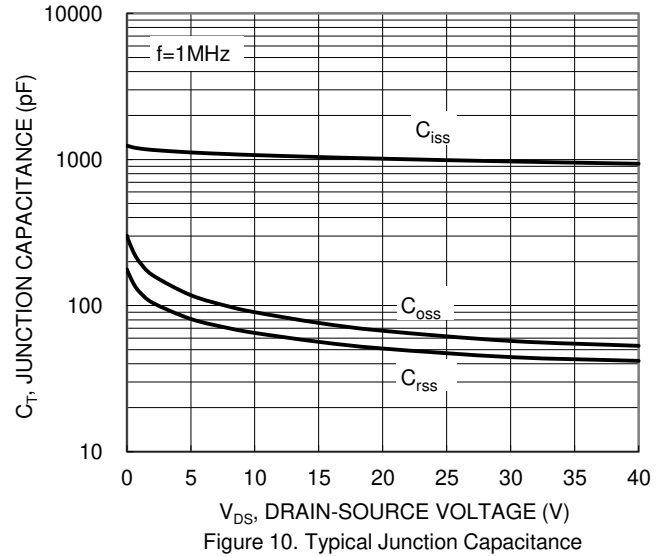


Figure 10. Typical Junction Capacitance

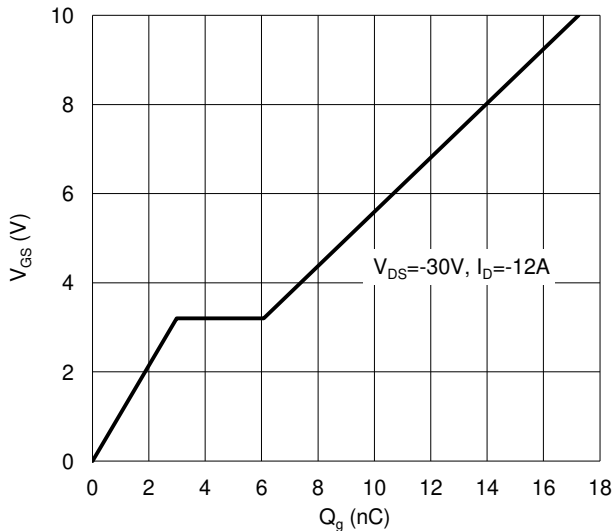


Figure 11. Gate Charge

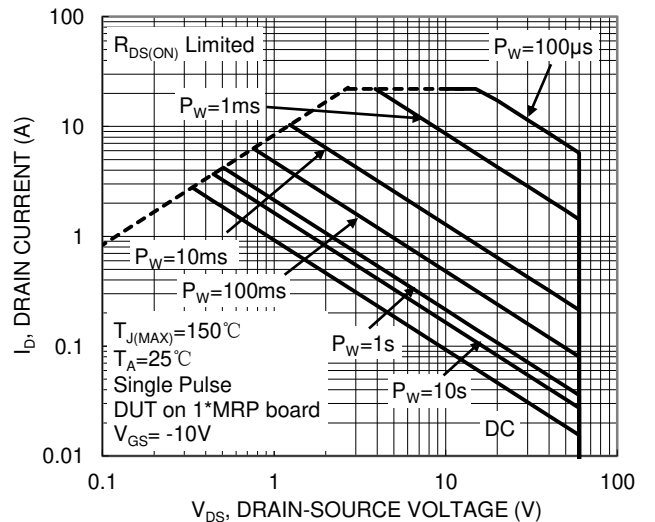


Figure 12. SOA, Safe Operation Area

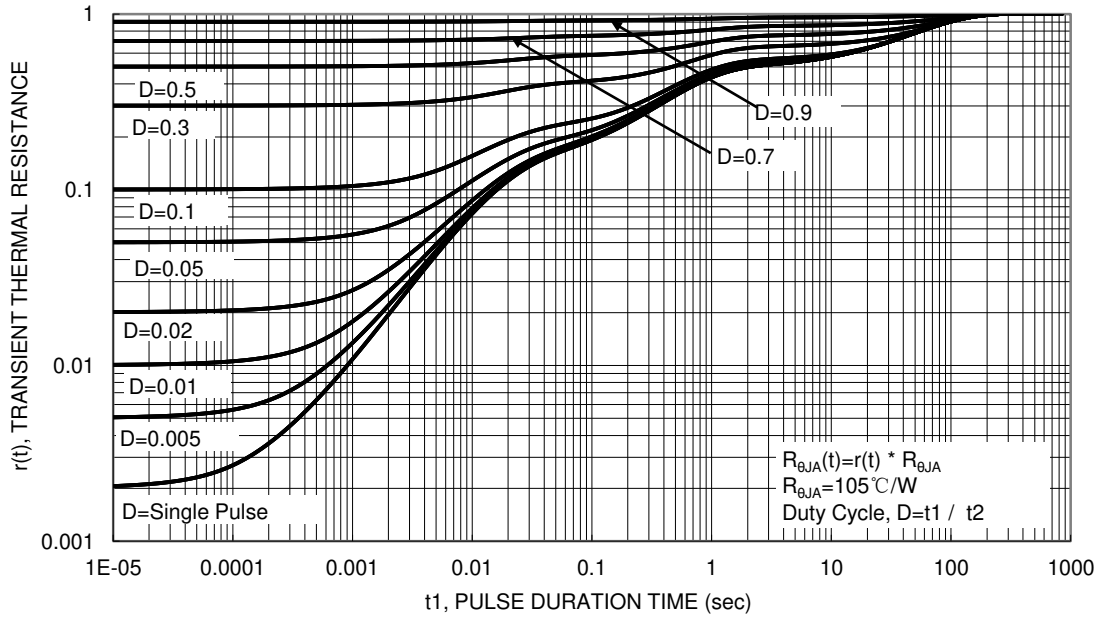
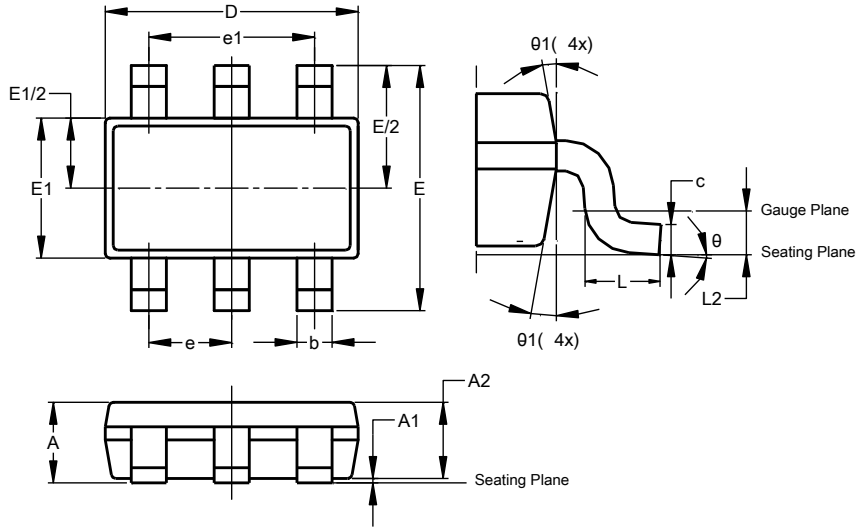


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TSOT26

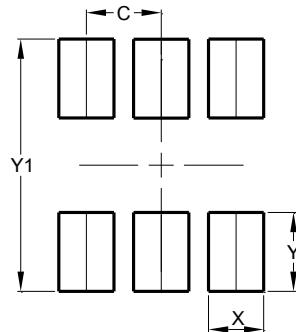


TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.010	0.100	—
A2	0.840	0.900	—
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	—
c	0.120	0.200	—
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	—
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	—
All Dimensions in mm			

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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