

**NEW PRODUCT**

## Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$ Max	$I_D$ Max $T_c = +25^\circ\text{C}$
-60V	105m $\Omega$ @ $V_{GS} = -10V$	-7.3A
	130m $\Omega$ @ $V_{GS} = -4.5V$	-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**

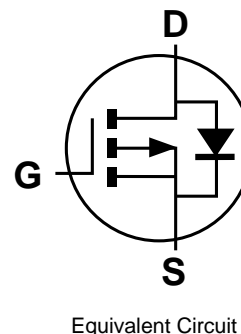
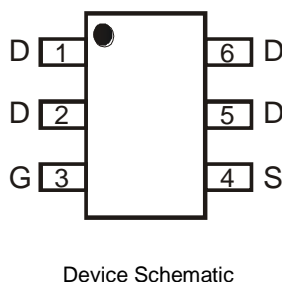
## Description and Applications

This 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.

- 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 **e3**
- Weight: 0.008 grams (Approximate)



## Ordering Information (Note 4)

Part Number	Case	Packaging
DMP6110SVT-7	TSOT26	3,000/Tape & Reel
DMP6110SVT-13	TSOT26	10,000/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](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



P61 = Product Type Marking Code  
 YM or YM = Date Code Marking  
 Y or Y = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021
Code	C	D	E	F	G	H	I

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>	-60	V
Gate-Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = -10V	I <sub>D</sub>	T <sub>C</sub> = +25°C	-7.3
		T <sub>C</sub> = +70°C	-5.8
Maximum Body Diode Forward Current (Note 6)	I <sub>S</sub>	-1.8	A
Pulsed Drain Current (380µs Pulse, 1% Duty Cycle)	I <sub>DM</sub>	-24	A
Avalanche Current (Note 7) L = 0.1mH	I <sub>AS</sub>	-19	A
Repetitive Avalanche Energy (Note 7) L = 0.1mH	E <sub>AS</sub>	18	mJ

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P <sub>D</sub>	T <sub>A</sub> = +25°C	1.2
		T <sub>A</sub> = +70°C	0.75
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	Steady state	105
		t < 10s	60
Total Power Dissipation (Note 6)	P <sub>D</sub>	T <sub>A</sub> = +25°C	1.8
		T <sub>A</sub> = +70°C	1.1
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	Steady state	69
		t < 10s	39
Thermal Resistance, Junction to Case (Note 6)	R <sub>θJC</sub>	15	°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>	-60	—	—	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> = -48V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	100	nA	V <sub>GS</sub> = ±16V, 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>	—	—	105	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.5A
		—	—	130		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.5A
Diode Forward Voltage	V <sub>SD</sub>	—	-0.7	-1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>ISS</sub>	—	969	—	pF	V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>OSS</sub>	—	57	—		
Reverse Transfer Capacitance	C <sub>RSS</sub>	—	44	—		
Gate Resistance	R <sub>G</sub>	—	13.7	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz
Total Gate Charge (V <sub>GS</sub> = -4.5V)	Q <sub>g</sub>	—	8.2	—	nC	V <sub>DS</sub> = -30V, I <sub>D</sub> = -12A
Total Gate Charge (V <sub>GS</sub> = -10V)	Q <sub>g</sub>	—	17.2	—		
Gate-Source Charge	Q <sub>gs</sub>	—	3.0	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	3.1	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	4.4	—	ns	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -30V, R <sub>GEN</sub> = 3Ω, I <sub>D</sub> = -12A
Turn-On Rise Time	t <sub>R</sub>	—	23	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	34	—		
Turn-Off Fall Time	t <sub>F</sub>	—	42	—		
Body Diode Reverse Recovery Time	t <sub>RR</sub>	—	13.2	—	ns	I <sub>S</sub> = -12A, dI/dt = 100A/µs
Body Diode Reverse Recovery Charge	Q <sub>RR</sub>	—	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 1inch square copper plate.
  - I<sub>AS</sub> and E<sub>AS</sub> rating are based on low frequency and duty cycles to keep T<sub>J</sub> = +25°C.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

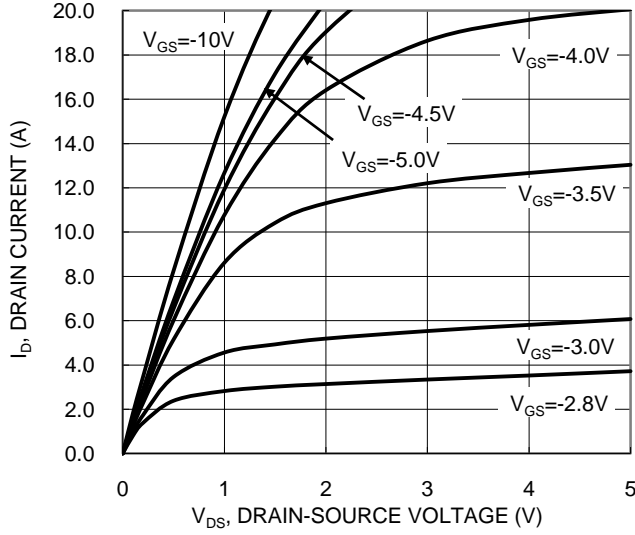


Figure 1. Typical Output Characteristic

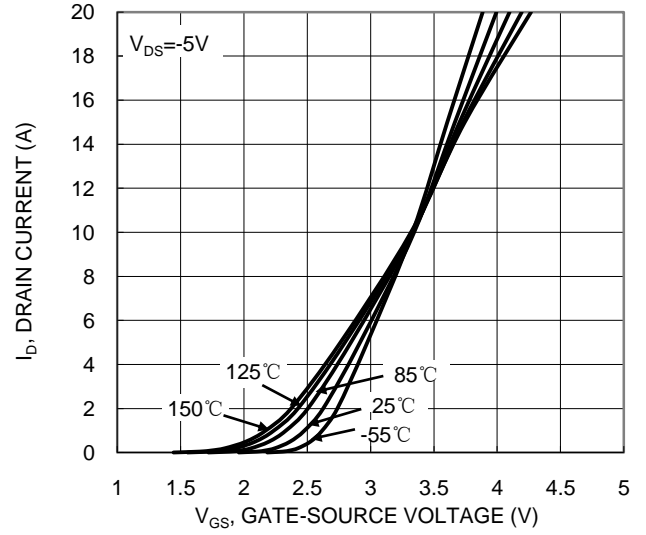


Figure 2. Typical Transfer Characteristic

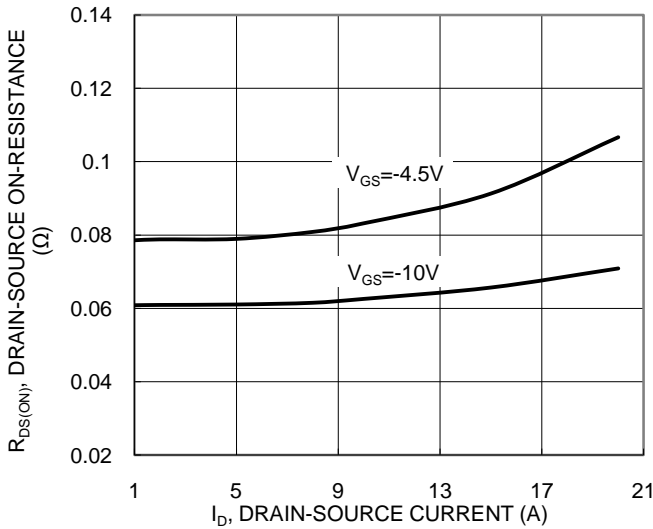


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

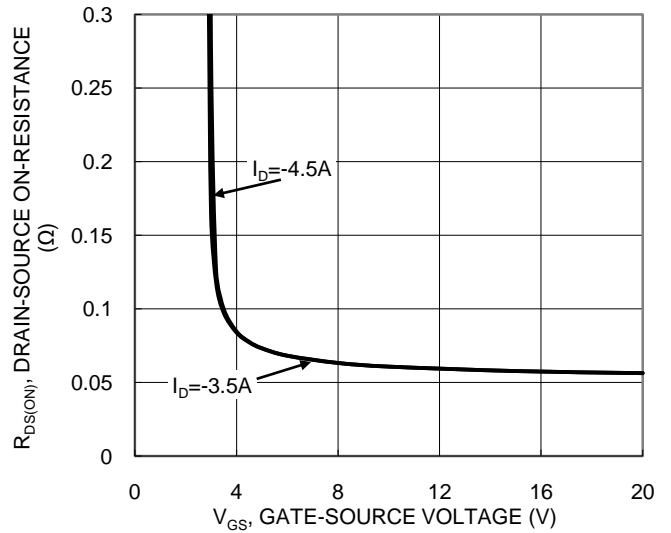


Figure 4. Typical Transfer Characteristic

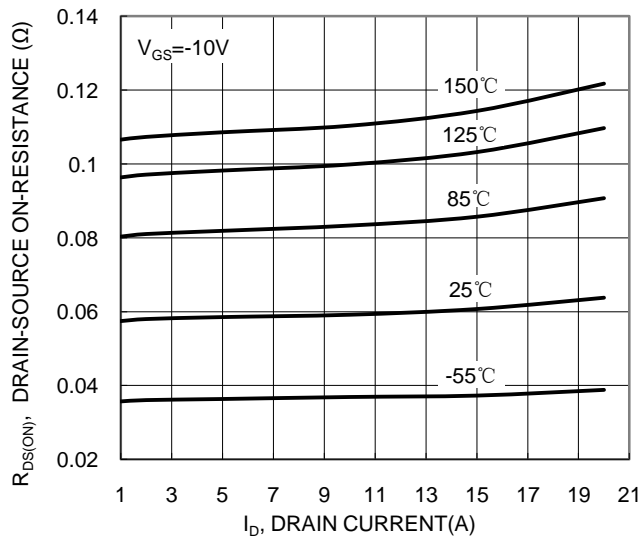


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

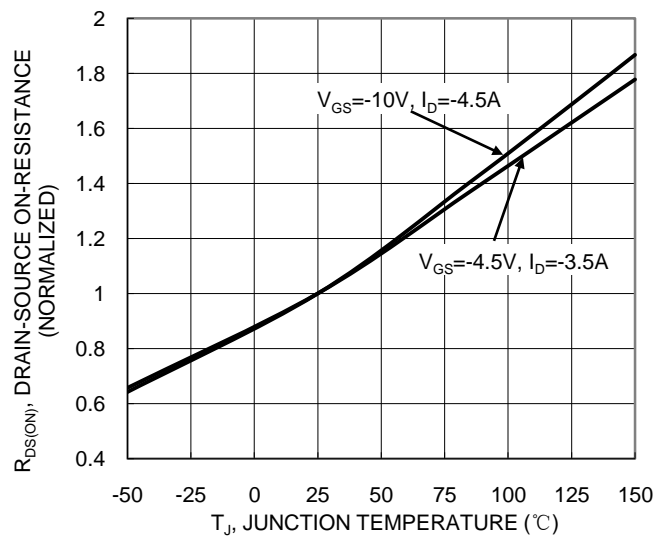


Figure 6. On-Resistance Variation with Temperature

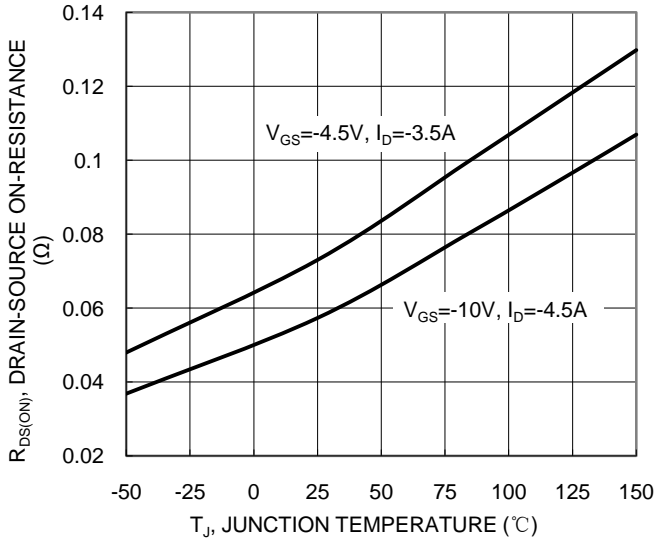


Figure 7. On-Resistance Variation with Temperature

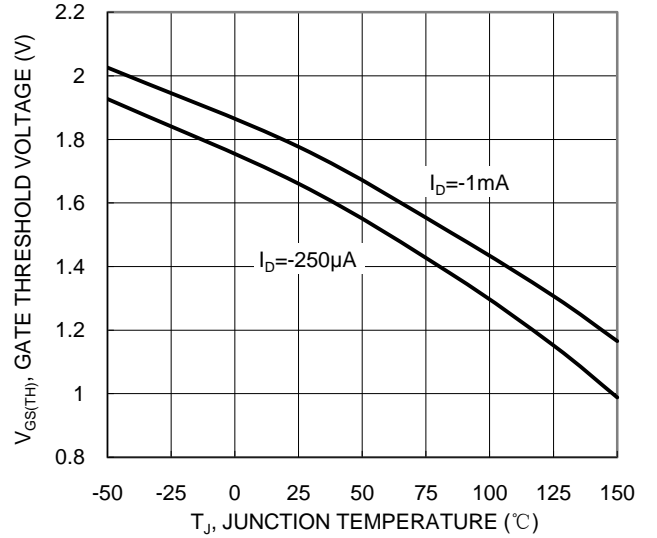


Figure 8. Gate Threshold Variation vs. Junction Temperature

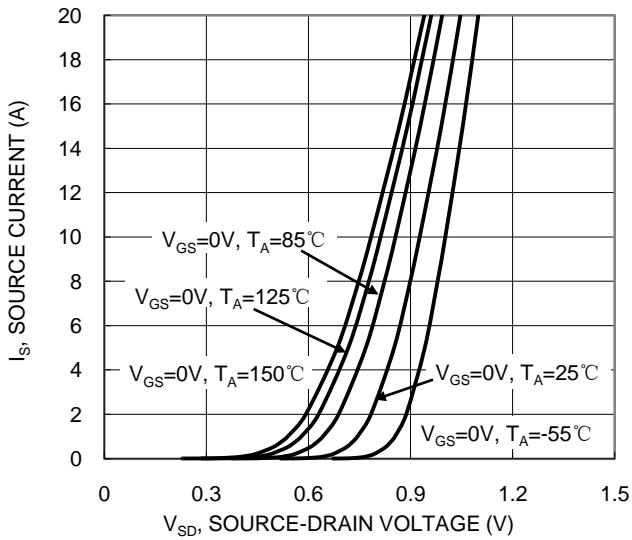


Figure 9. Diode Forward Voltage vs. Current

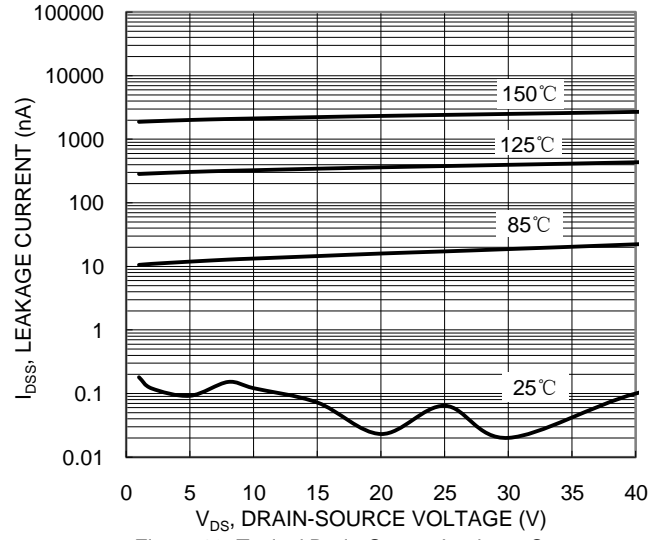


Figure 10. Typical Drain-Source Leakage Current vs. Voltage

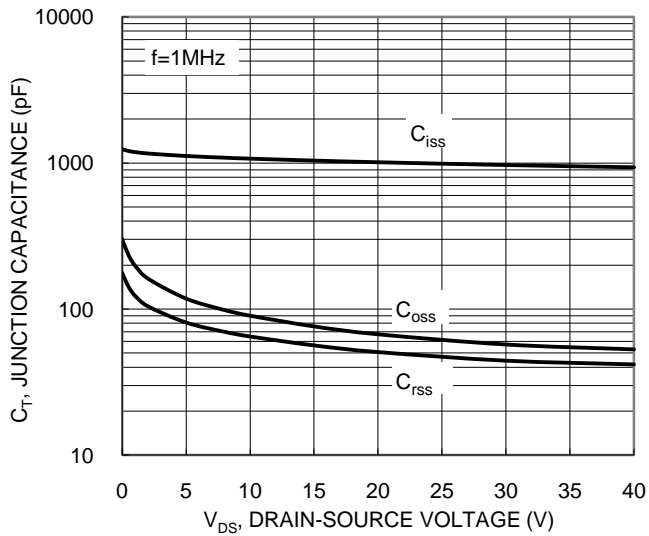


Figure 11. Typical Junction Capacitance

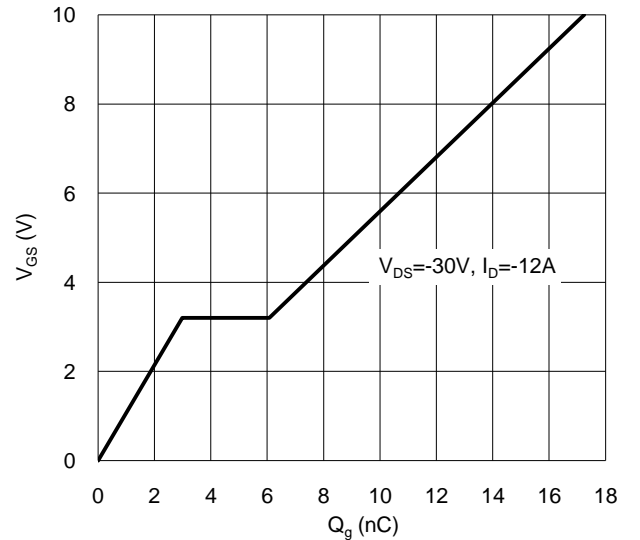


Figure 12. Gate Charge

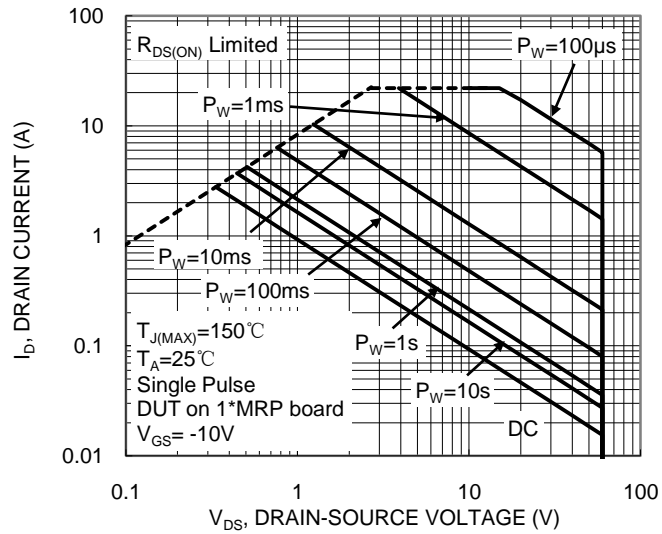


Figure 13. SOA, Safe Operation Area

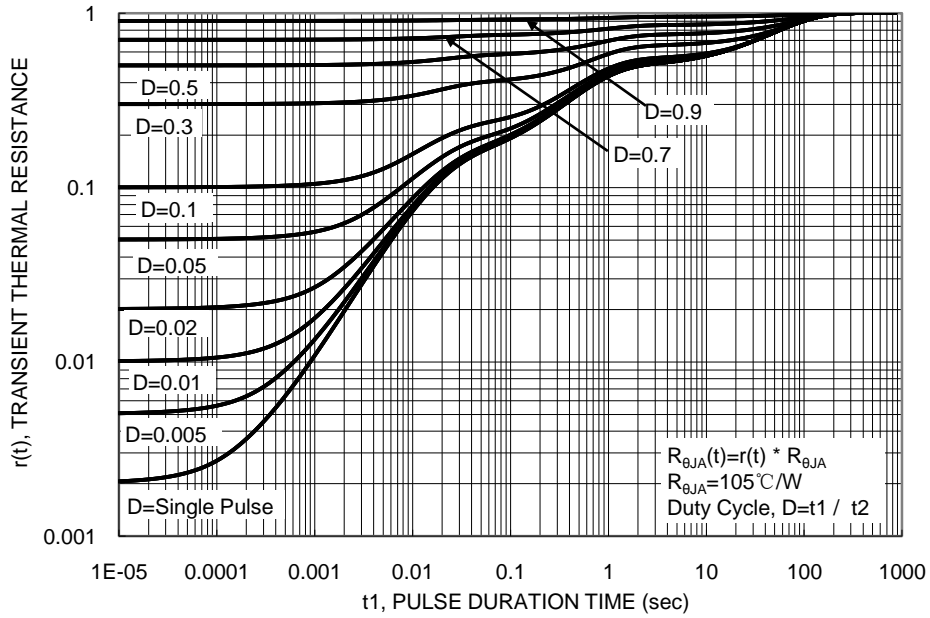
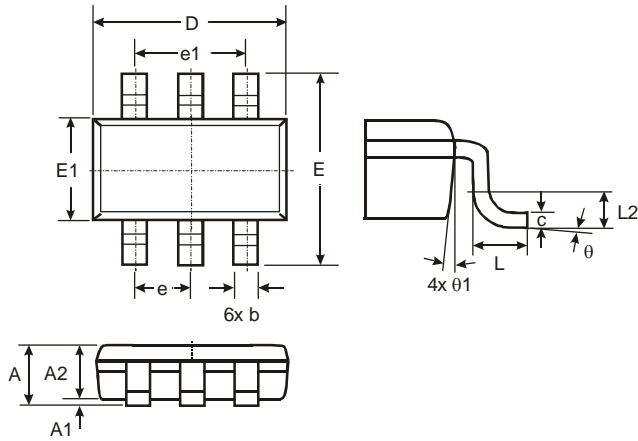


Figure 14. Transient Thermal Resistance

**Package Outline Dimensions**

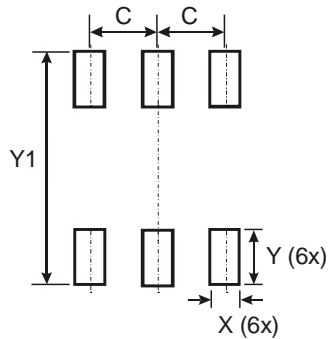
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



TSOT26			
Dim	Min	Max	Typ
A	-	1.00	-
A1	0.01	0.10	-
A2	0.84	0.90	-
D	-	-	2.90
E	-	-	2.80
E1	-	-	1.60
b	0.30	0.45	-
c	0.12	0.20	-
e	-	-	0.95
e1	-	-	1.90
L	0.30	0.50	-
L2	-	-	0.25
θ	0°	8°	4°
θ1	4°	12°	-
All Dimensions in mm			

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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

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