



**THE DATASHEET OF
DMN1019UVT-7**



Product Summary

$V_{(BR)DSS}$	$R_{DS(ON) MAX}$	I_D $T_A = +25^\circ C$
12V	10m Ω @ $V_{GS} = 4.5V$	10.7A
	12m Ω @ $V_{GS} = 2.5V$	9.8A
	14m Ω @ $V_{GS} = 1.8V$	9.1A
	18m Ω @ $V_{GS} = 1.5V$	8.0A
	41m Ω @ $V_{GS} = 1.2V$	5.3A

Description

This new generation MOSFET has been 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.

Applications

- Load Switch
- DC-DC Converters
- Power Management Functions

Features

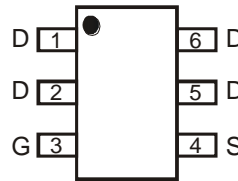
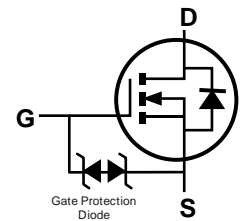
- Low On-Resistance
- ESD Protected Gate
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: TSOT26
- Case Material – Molded Plastic. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208 e3
- Terminal Connections: See Diagram
- Weight: 0.008 grams (Approximate)

NEW PRODUCT

ESD PROTECTED
TSOT26

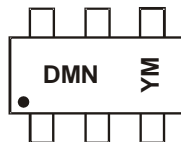
Top View

**Top View
Pin Configuration**

Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN1019UVT-7	TSOT26	3,000/Tape & Reel
DMN1019UVT-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 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



DMN = 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	2022
Code	C	D	E	F	G	H	I	J

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	Units
Drain-Source Voltage			V_{DSS}	12	V
Gate-Source Voltage			V_{GSS}	± 8	V
Continuous Drain Current (Note 5) $V_{GS} = 4.5\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	10.7 8.6	A
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	12.7 10.1	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	70	A
Maximum Body Diode Forward Current (Note 5)			I_S	2	A
Avalanche Current (Note 6) $L = 0.1\text{mH}$			I_{AS}	9.7	A
Avalanche Energy (Note 6) $L = 0.1\text{mH}$			E_{AS}	4.7	mJ

Thermal Characteristics

Characteristic			Symbol	Value	Units
Total Power Dissipation (Note 5)	$T_A = +25^\circ\text{C}$		P_D	1.73	W
	$T_A = +70^\circ\text{C}$			1.11	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State		$R_{\theta JA}$	72.2	$^\circ\text{C/W}$
	$t < 10\text{s}$			37.5	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case (Note 5)			$R_{\theta JC}$	14.4	$^\circ\text{C/W}$
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 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	12	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 12\text{V}, V_{GS} = 0\text{V}$
Gate-Body Leakage	I_{GSS}	—	—	± 2	μA	$V_{GS} = \pm 8\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.35	0.53	0.8	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	7	10	m Ω	$V_{GS} = 4.5\text{V}, I_D = 9.7\text{A}$
		—	8	12		$V_{GS} = 2.5\text{V}, I_D = 9\text{A}$
		—	10	14		$V_{GS} = 1.8\text{V}, I_D = 8.1\text{A}$
		—	14	18		$V_{GS} = 1.5\text{V}, I_D = 4.5\text{A}$
		—	28	41		$V_{GS} = 1.2\text{V}, I_D = 2.4\text{A}$
Diode Forward Voltage	V_{SD}	—	0.8	1.2	V	$V_{GS} = 0\text{V}, I_S = 10\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{ISS}	—	2588	—	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Output Capacitance	C_{OSS}	—	415	—	pF	
Reverse Transfer Capacitance	C_{RSS}	—	394	—	pF	
Gate Resistance	R_g	—	1.1	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge ($V_{GS} = 8\text{V}$)	Q_g	—	50.4	—	nC	$V_{DS} = 4\text{V}, I_D = 10\text{A}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	—	28.0	—		
Gate-Source Charge	Q_{gs}	—	3.2	—		
Gate-Drain Charge	Q_{gd}	—	5.6	—		
Turn-On Delay Time	$t_{D(ON)}$	—	4.7	—	ns	$V_{DD} = 4\text{V}, V_{GEN} = 5\text{V}, I_D = 10\text{A}, R_G = 1\Omega, R_L = 0.4\Omega$
Turn-Off Delay Time	$t_{D(OFF)}$	—	32.2	—	ns	
Turn-On Rise Time	t_R	—	3.7	—	ns	
Turn-Off Fall Time	t_F	—	11.6	—	ns	
Body Diode Reverse Recovery Time	t_{RR}	—	20.55	—	ns	
Body Diode Reverse Recovery Charge	Q_{rr}	—	4.5	—	nC	$I_F = 10\text{A}, di/dt = 100\text{A}/\mu\text{s}$

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad.
 - I_{AS} and E_{AS} rating are based on low frequency and duty cycles to keep $T_J = +25^\circ\text{C}$.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.

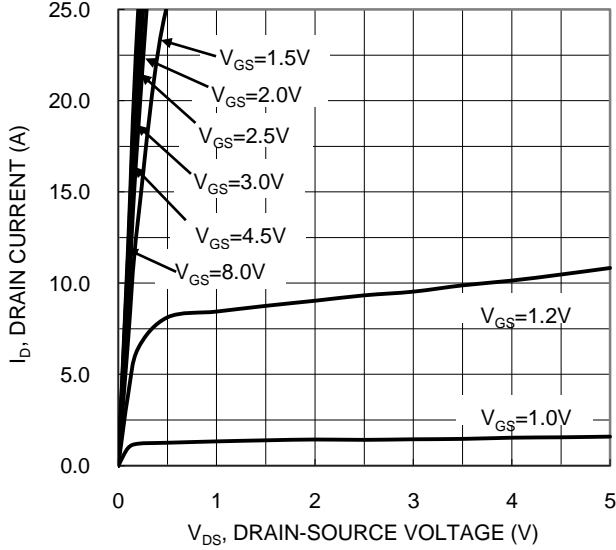


Figure 1 Typical Output Characteristic

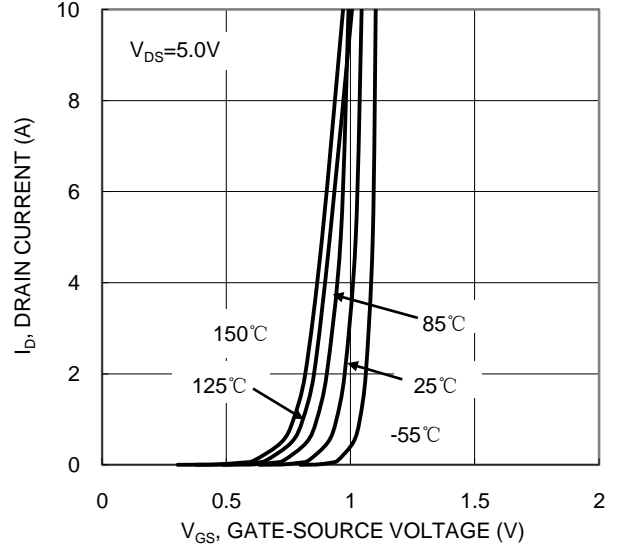


Figure 2 Typical Transfer Characteristic

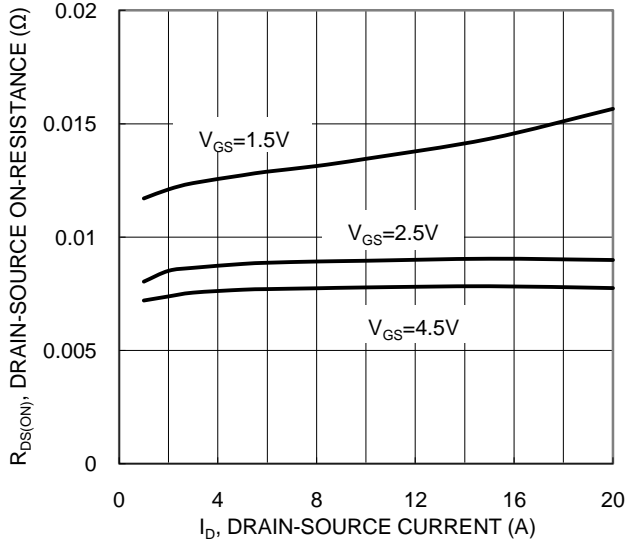


Figure 3 Typical On-Resistance vs Drain Current and Gate Voltage

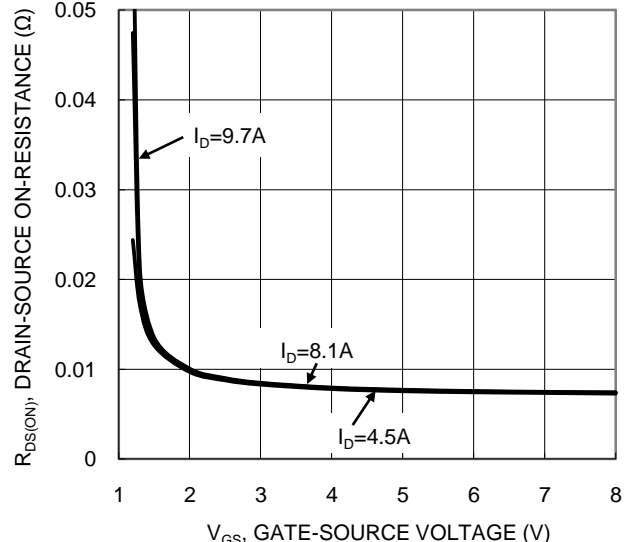


Figure 4 Typical On-Resistance vs Drain Current and Gate Voltage

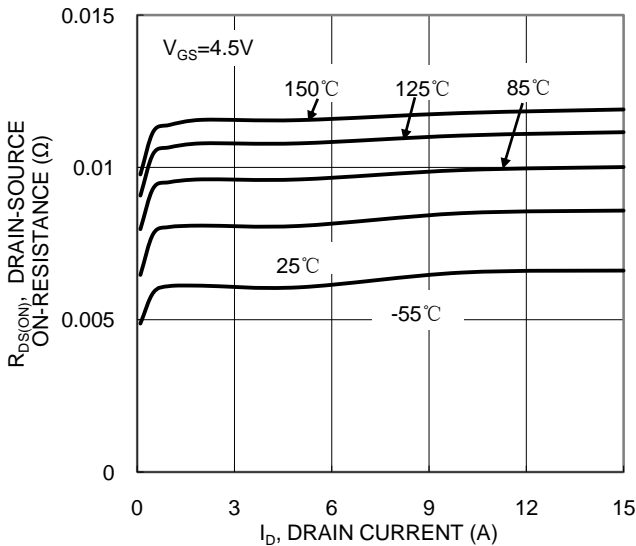


Figure 5 Typical On-Resistance vs Drain Current and Temperature

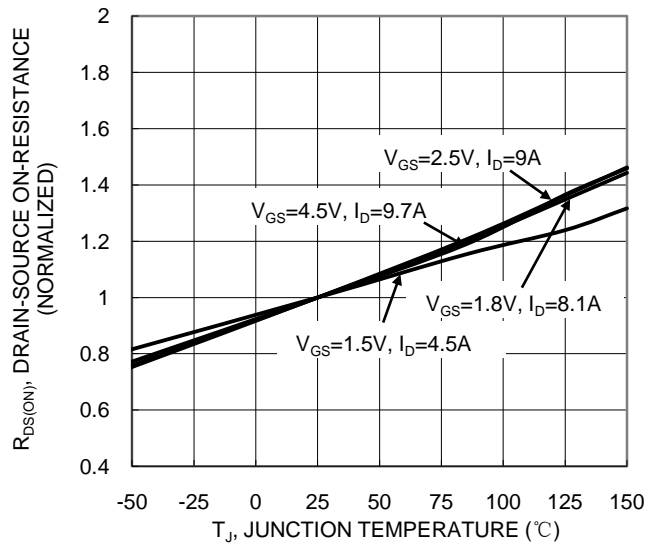


Figure 6 On-Resistance Variation with Temperature

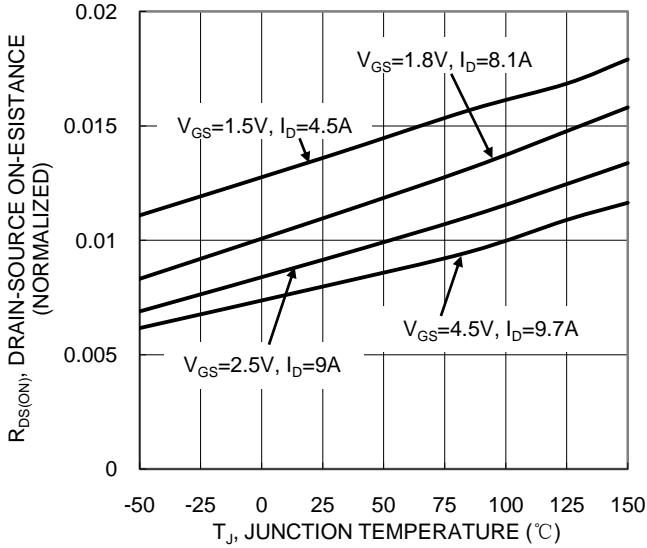


Figure 7 On-Resistance Variation with Temperature

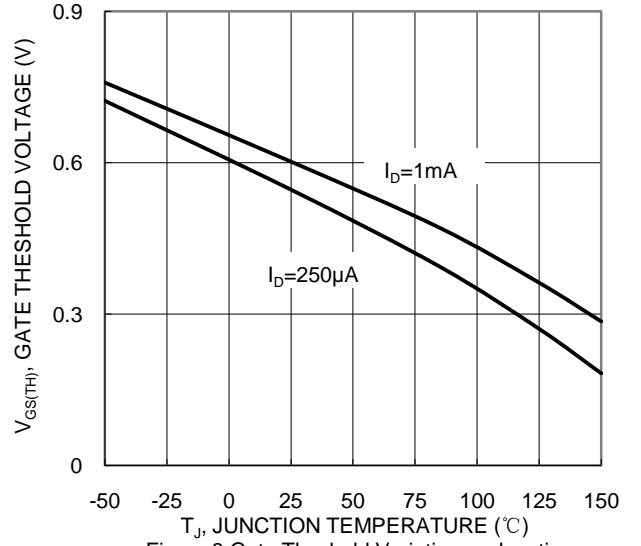


Figure 8 Gate Threshold Variation vs Junction Temperature

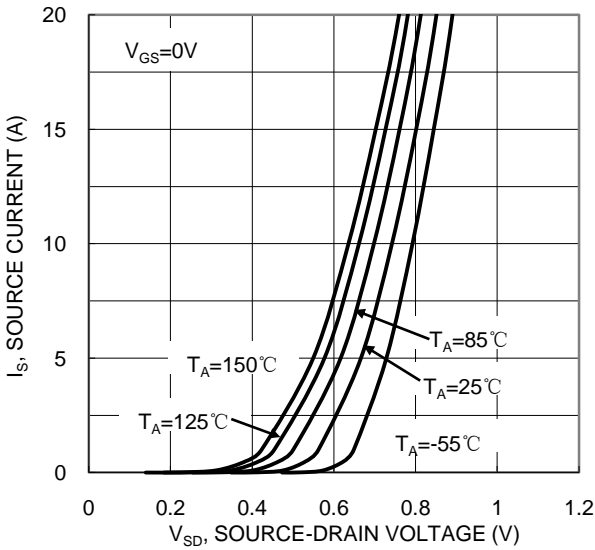


Figure 9 Diode Forward Voltage vs Current

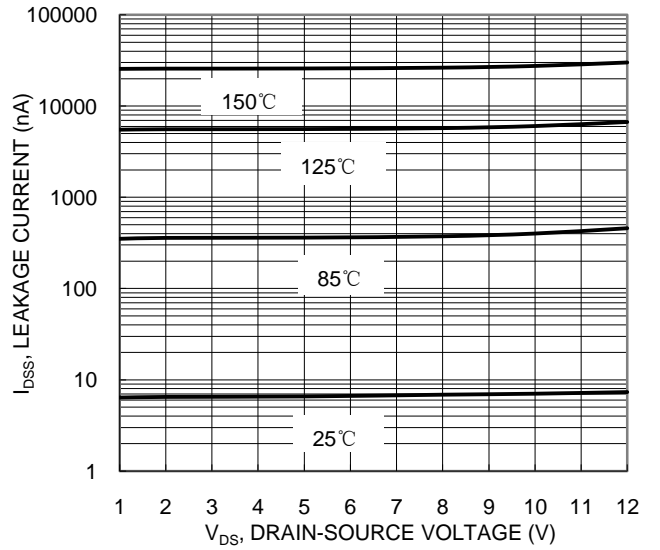


Figure 10 Typical Drain-Source Leakage Current vs Voltage

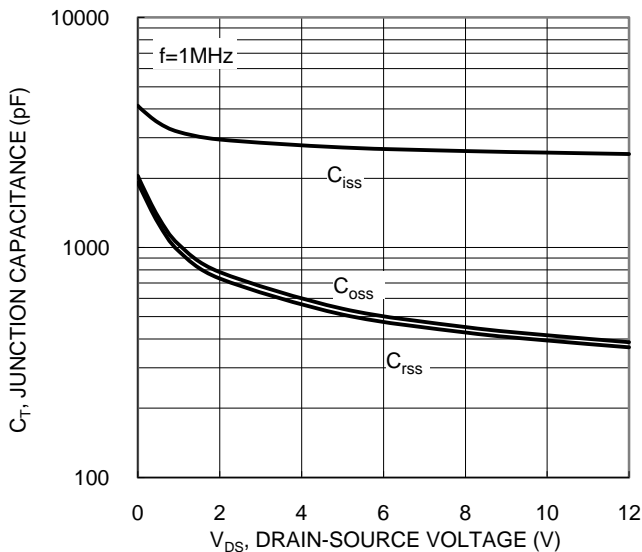


Figure 11 Typical Junction Capacitance

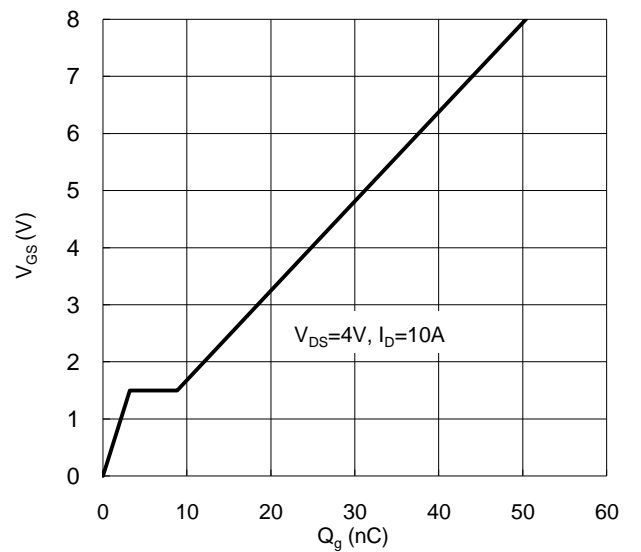
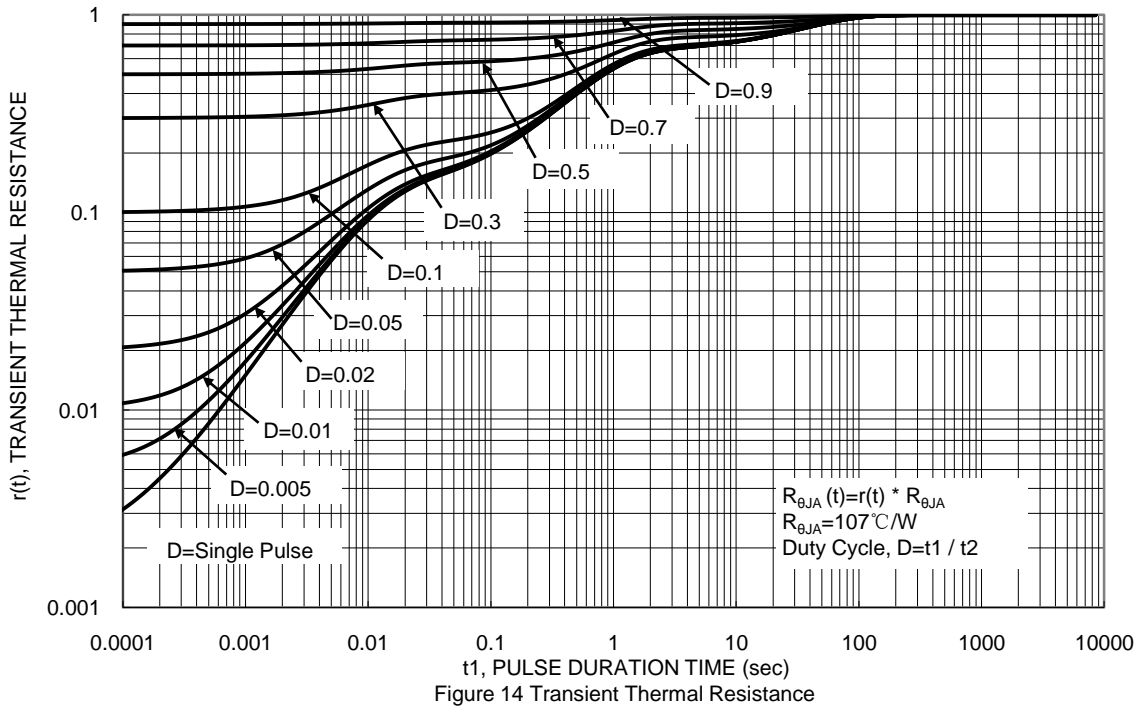
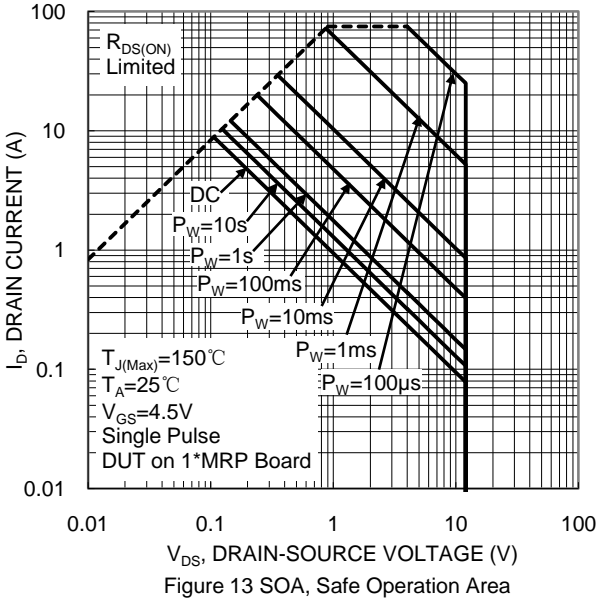
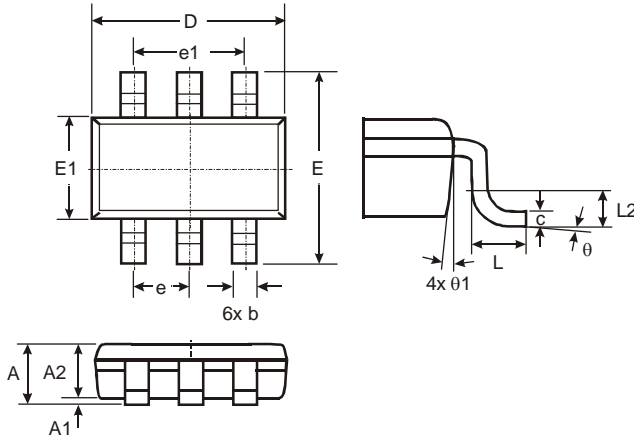


Figure 12 Gate Charge



Package Outline Dimensions

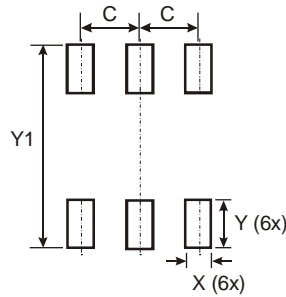
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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
theta	0°	8°	4°
theta1	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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