

**COMPLEMENTARY PAIR ENHANCEMENT MODE MOSFET**
**Product Summary**

Device	V <sub>(BR)DSS</sub>	R <sub>DS(on)</sub>	I <sub>D</sub> T <sub>A</sub> = +25°C
Q1	30V	60mΩ @ V <sub>GS</sub> = 10V	3.4A
		100mΩ @ V <sub>GS</sub> = 4.5V	2.7A
Q2	-30V	95mΩ @ V <sub>GS</sub> = -10V	-2.8A
		140mΩ @ V <sub>GS</sub> = -4.5V	-2.3A

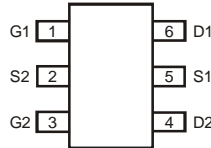
**Description and Applications**

This new generation MOSFET is designed to minimize the on-state resistance (R<sub>DS(on)</sub>) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Backlighting
- DC-DC Converters
- Power Management Functions



Top View



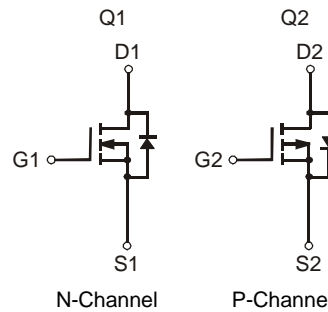
Top View

**Features and Benefits**

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **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)**

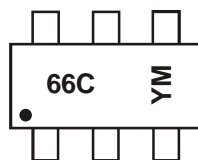
**Mechanical Data**

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


**Ordering Information** (Note 5)

Part Number	Case	Packaging
DMG6602SVTQ-7	TSOT26	3,000 / Tape & Reel
DMG6602SVTQ-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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


66C = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: X = 2010)  
 M = Month (ex: 9 = September)

## Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Code	X	Y	Z	A	B	C	D	E	F	G	H

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 – Q1** (@TA = +25°C unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 7) V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	3.4	A
		T <sub>A</sub> = +70°C		2.7	
Continuous Drain Current (Note 7) V <sub>GS</sub> = 4.5V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	2.7	A
		T <sub>A</sub> = +70°C		2.2	
Maximum Continuous Body Diode Forward Current (Note 5)			I <sub>S</sub>	1.5	A
Pulsed Drain Current (Note 5)			I <sub>DM</sub>	25	A

**Maximum Ratings – Q2** (@TA = +25°C unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	-30	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 7) V <sub>GS</sub> = -10V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	-2.8	A
		T <sub>A</sub> = +70°C		-2.4	
Continuous Drain Current (Note 7) V <sub>GS</sub> = -4.5V	Steady State	T <sub>A</sub> = +25°C	I <sub>D</sub>	-2.3	A
		T <sub>A</sub> = +70°C		-2.1	
Maximum Continuous Body Diode Forward Current (Note 7)			I <sub>S</sub>	-1.5	A
Pulsed Drain Current (Note 7)			I <sub>D</sub>	-20	A

**Thermal Characteristics**

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 6)	T <sub>A</sub> = +25°C	P <sub>D</sub>	0.84	W
	T <sub>A</sub> = +70°C		0.52	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R <sub>θJA</sub>	155	°C/W
	t < 10s		109	
Total Power Dissipation (Note 7)	T <sub>A</sub> = +25°C	P <sub>D</sub>	1.27	W
	T <sub>A</sub> = +70°C		0.8	
Thermal Resistance, Junction to Ambient (Note 7)	Steady State	R <sub>θJA</sub>	102	°C/W
	t < 10s		71	
Thermal Resistance, Junction to Case (Note 7)		R <sub>θJC</sub>	34	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes: 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.  
7. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

**Electrical Characteristics – Q1 NMOS** (@  $T_A = +25^\circ\text{C}$  unless otherwise stated.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	-	-	1.0	$\mu A$	$V_{DS} = 24V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	-	-	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	2.3	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	38 55	60 100	m $\Omega$	$V_{GS} = 10V, I_D = 3.1A$ $V_{GS} = 4.5V, I_D = 2A$
Forward Transfer Admittance	$ Y_{fs} $	-	4	-	S	$V_{DS} = 5V, I_D = 3.1A$
Diode Forward Voltage	$V_{SD}$	-	0.8	1	V	$V_{GS} = 0V, I_S = 1A$
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	$C_{iss}$	-	290	400	pF	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1.2MHz$
Output Capacitance	$C_{oss}$	-	40	80		
Reverse Transfer Capacitance	$C_{rss}$	-	40	80		
Gate Resistance	$R_g$	-	1.4	-	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
Total Gate Charge ( $V_{GS} = 4.5V$ )	$Q_g$	-	4	6	nC	$V_{DS} = 15V, V_{GS} = 4.5V, I_D = 3.1A$
Total Gate Charge ( $V_{GS} = 10V$ )	$Q_g$	-	9	13		
Gate-Source Charge	$Q_{gs}$	-	1.2	-		
Gate-Drain Charge	$Q_{gd}$	-	1.5	-		
Turn-On Delay Time	$t_{D(on)}$	-	3	-	ns	$V_{GS} = 10V, V_{DS} = 15V,$ $R_G = 3\Omega, R_L = 4.7\Omega$
Turn-On Rise Time	$t_r$	-	5	-		
Turn-Off Delay Time	$t_{D(off)}$	-	13	-		
Turn-Off Fall Time	$t_f$	-	3	-		

Notes: 8. Short duration pulse test used to minimize self-heating effect.  
9. Guaranteed by design. Not subject to product testing.

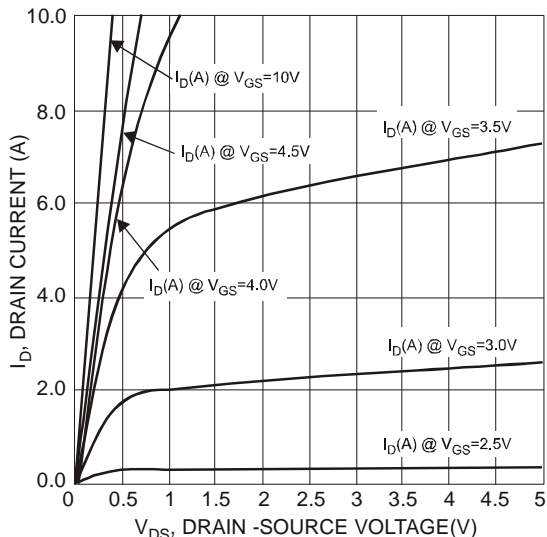


Fig. 1 Typical Output Characteristics

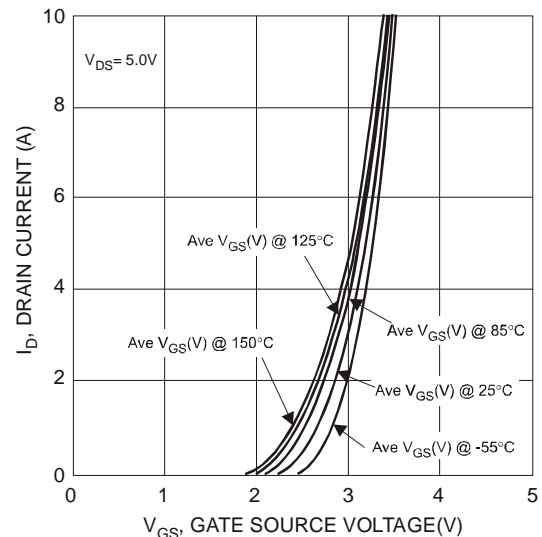


Fig. 2 Typical Transfer Characteristics

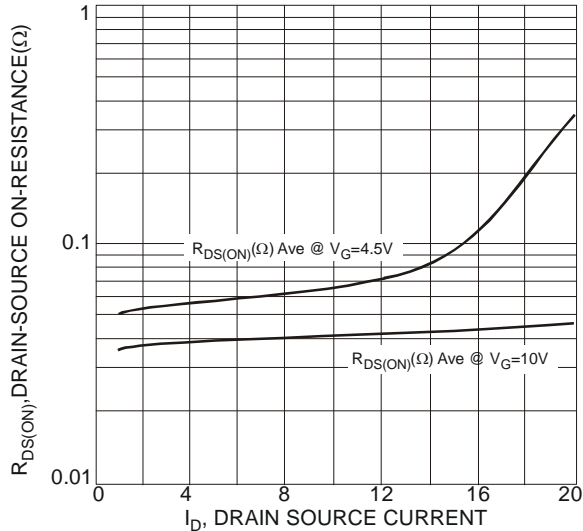


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

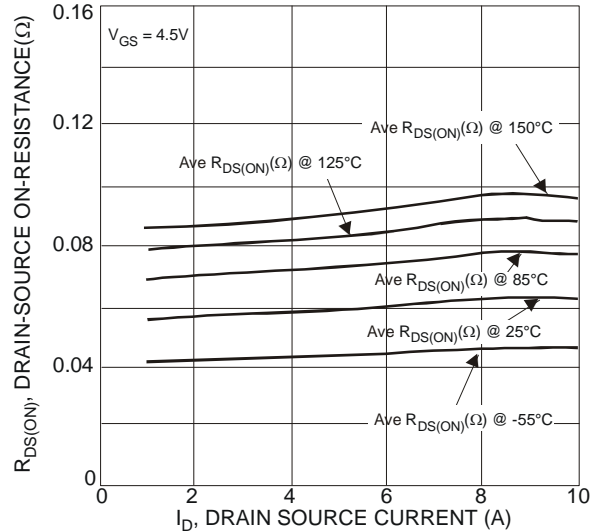


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

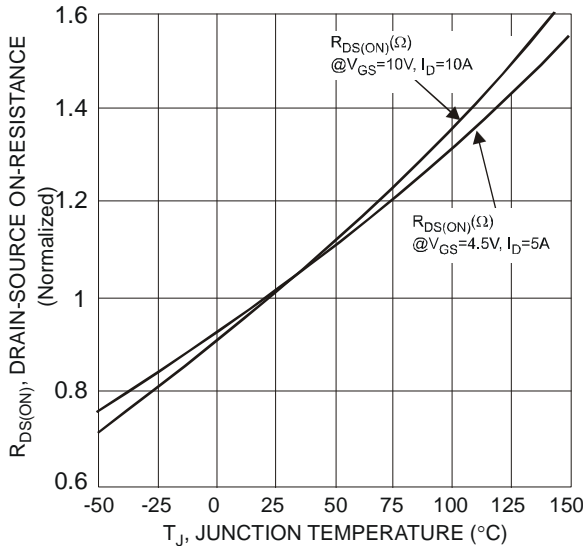


Fig. 5 On-Resistance Variation with Temperature

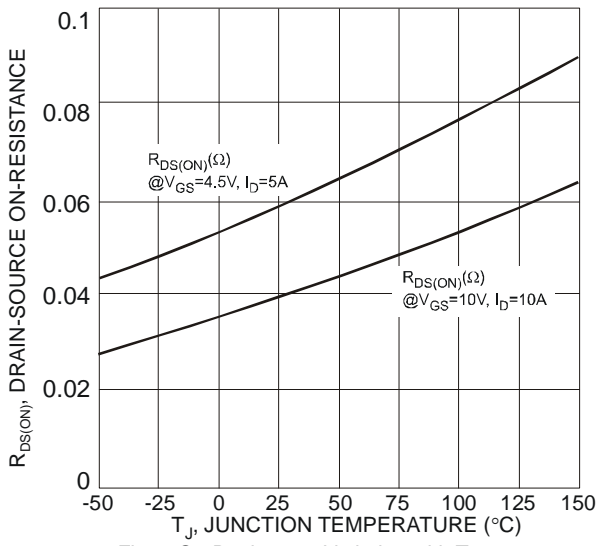


Fig. 6 On-Resistance Variation with Temperature

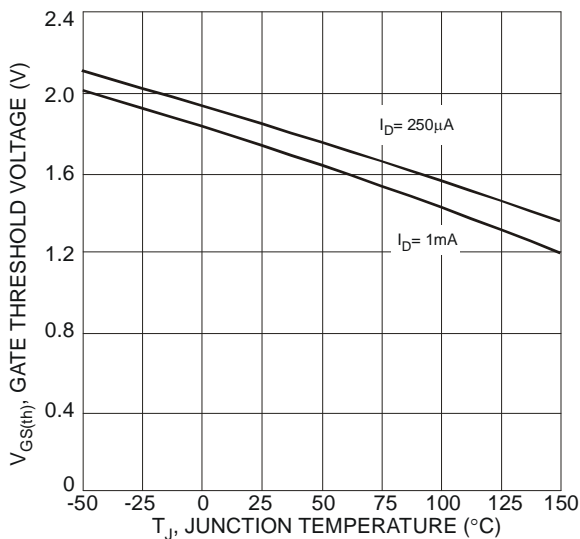


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

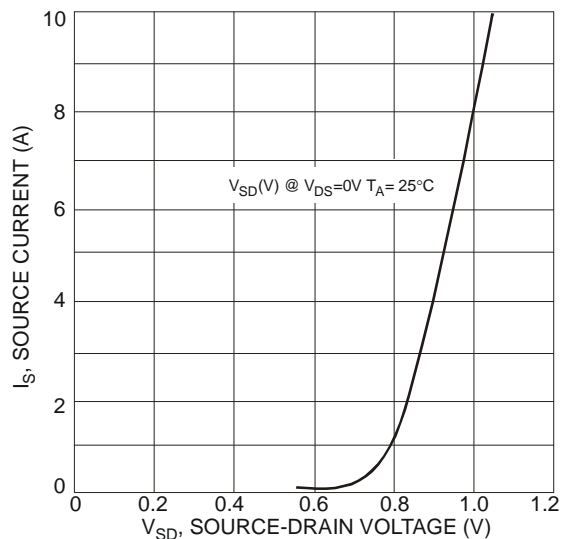
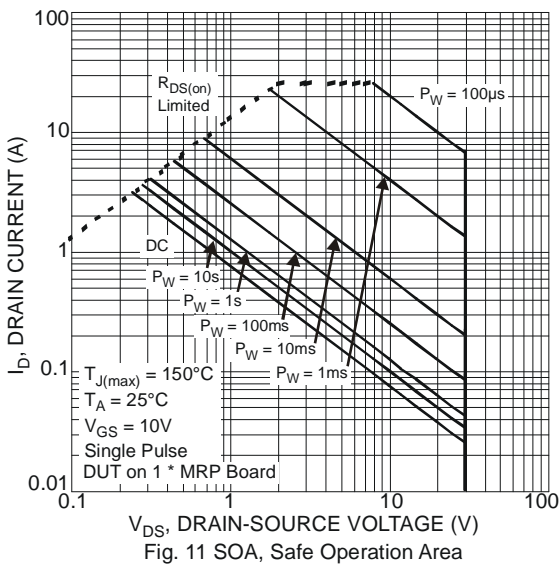
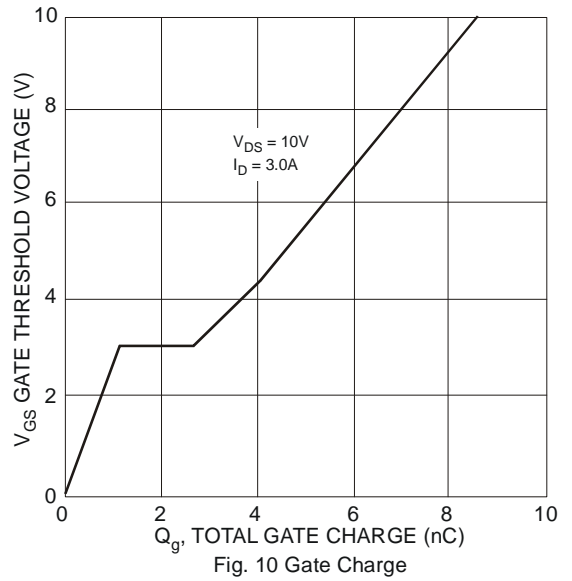
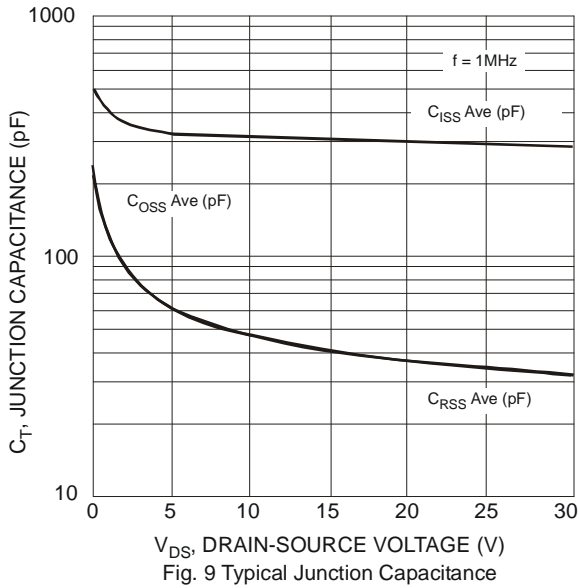


Fig. 8 Diode Forward Voltage vs. Current



**Electrical Characteristics – Q2 PMOS** (@ T<sub>A</sub> = +25°C unless otherwise stated.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	-1.0	μA	V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	-	-2.3	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	73 99	95 140	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -2.7A V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A
Forward Transfer Admittance	Y <sub>fs</sub>	-	6	-	S	V <sub>DS</sub> = -5V, I <sub>D</sub> = -2.7A
Diode Forward Voltage	V <sub>SD</sub>	-	-0.8	-1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>iss</sub>	-	350	420	pF	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1.2MHz
Output Capacitance	C <sub>oss</sub>	-	50	100		
Reverse Transfer Capacitance	C <sub>rss</sub>	-	45	80		
Gate Resistance	R <sub>g</sub>	-	17.1	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = -4.5V)	Q <sub>g</sub>	-	4	6	nC	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A
Total Gate Charge (V <sub>GS</sub> = -10V)	Q <sub>g</sub>	-	7	9		
Gate-Source Charge	Q <sub>gs</sub>	-	0.9	-		
Gate-Drain Charge	Q <sub>gd</sub>	-	1.2	-		
Turn-On Delay Time	t <sub>D(on)</sub>	-	4.8	-	ns	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -15V, R <sub>G</sub> = 6Ω, R <sub>L</sub> = 15Ω
Turn-On Rise Time	t <sub>r</sub>	-	7.3	-		
Turn-Off Delay Time	t <sub>D(off)</sub>	-	20	-		
Turn-Off Fall Time	t <sub>f</sub>	-	13	-		

Notes: 8. Short duration pulse test used to minimize self-heating effect.  
9. Guaranteed by design. Not subject to production testing.

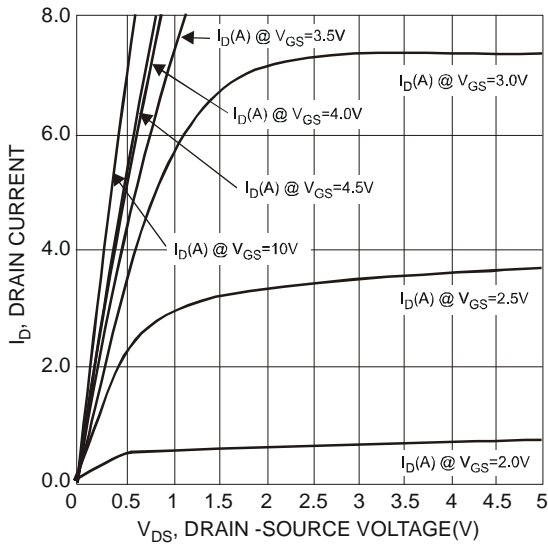


Fig. 12 Typical Output Characteristics

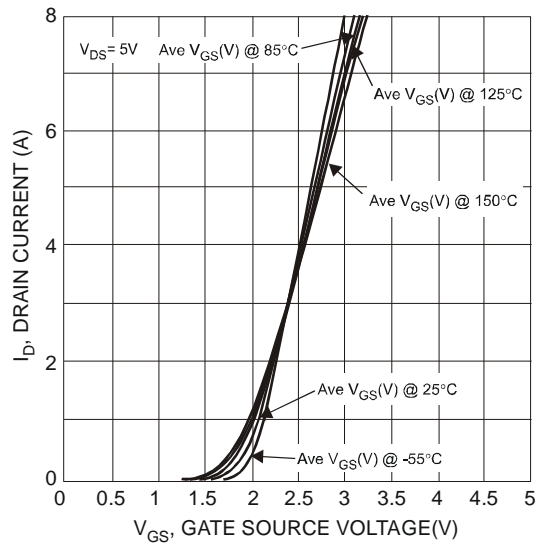


Fig. 13 Typical Transfer Characteristics

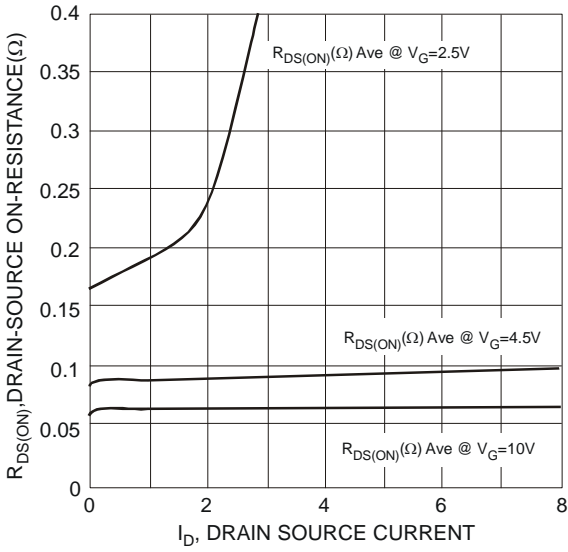


Fig. 14 Typical On-Resistance vs. Drain Current and Gate Voltage

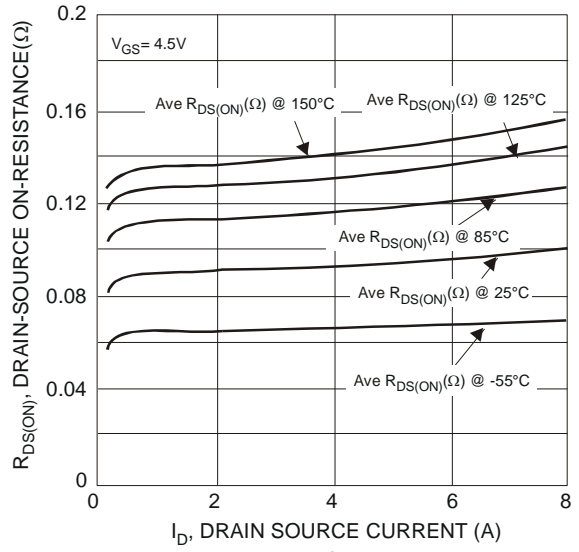


Fig. 15 Typical On-Resistance vs. Drain Current and Temperature

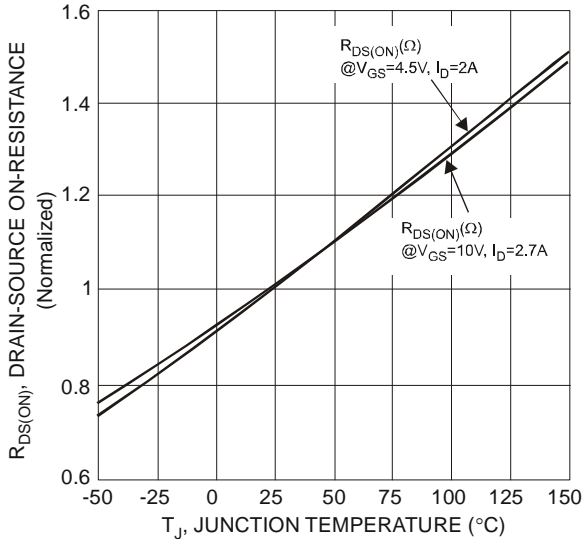


Fig. 16 On-Resistance Variation with Temperature

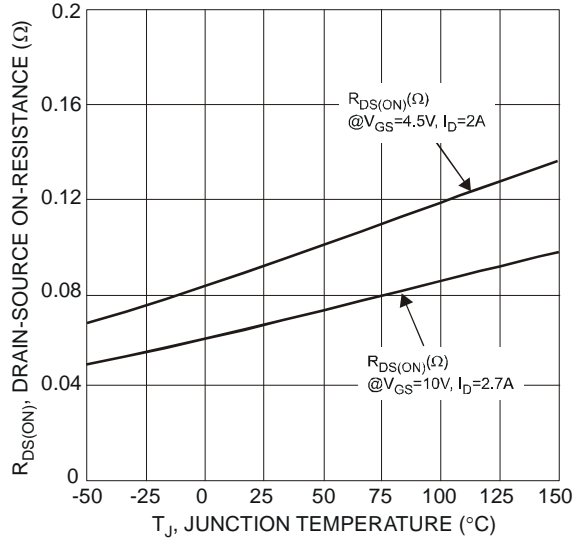


Fig. 17 On-Resistance Variation with Temperature

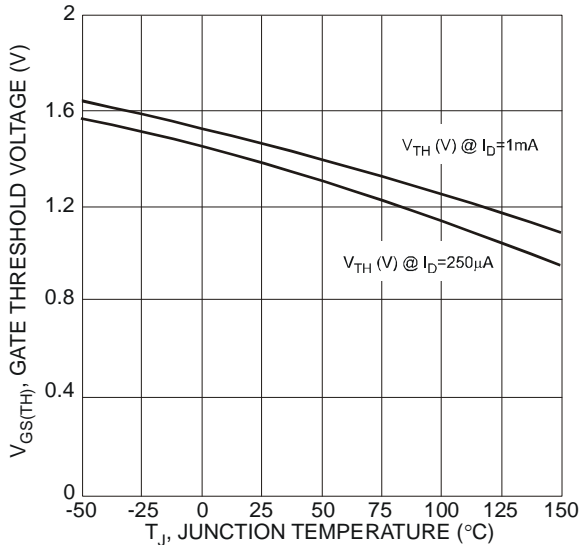


Fig. 18 Gate Threshold Variation vs. Ambient Temperature

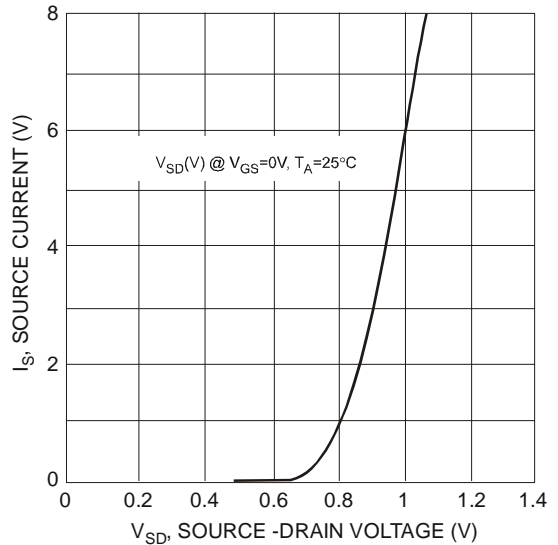


Fig. 19 Diode Forward Voltage vs. Current

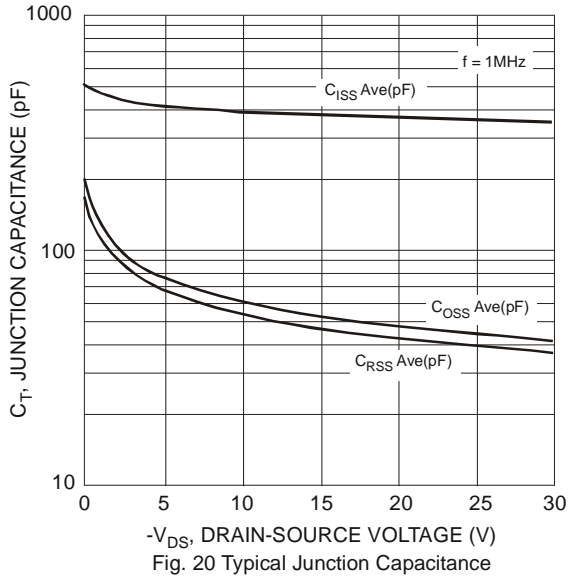


Fig. 20 Typical Junction Capacitance

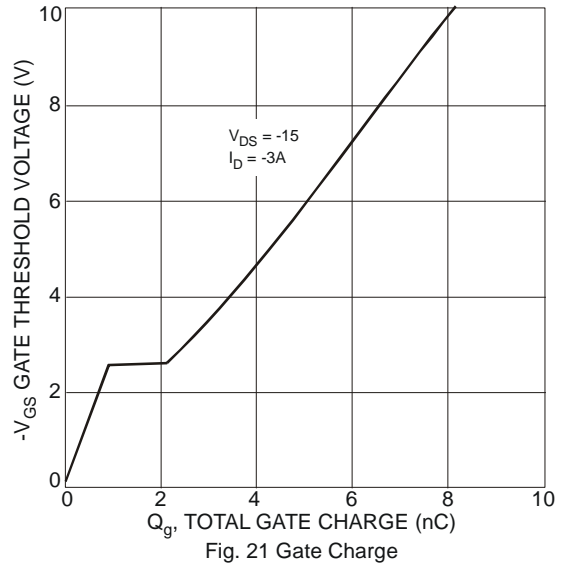


Fig. 21 Gate Charge

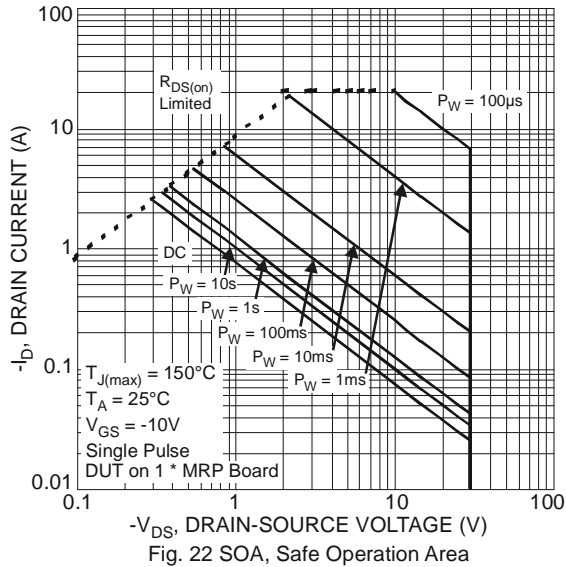


Fig. 22 SOA, Safe Operation Area

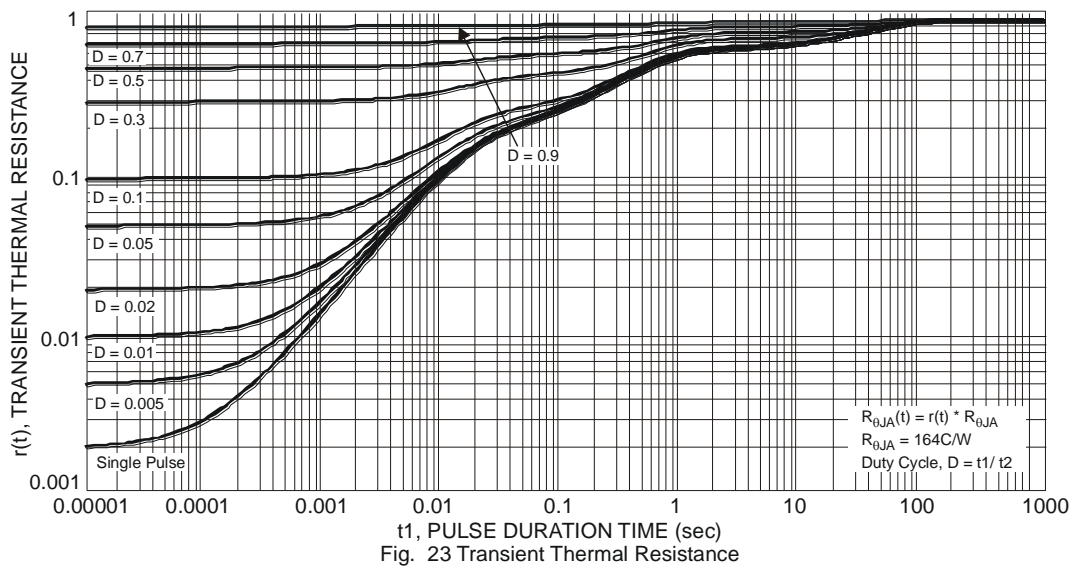
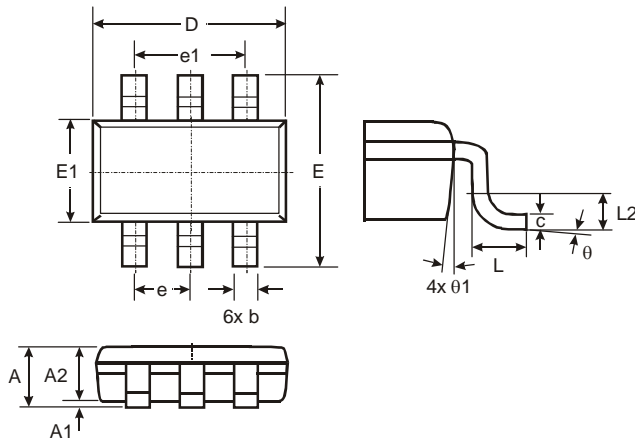


Fig. 23 Transient Thermal Resistance



**Package Outline Dimensions**

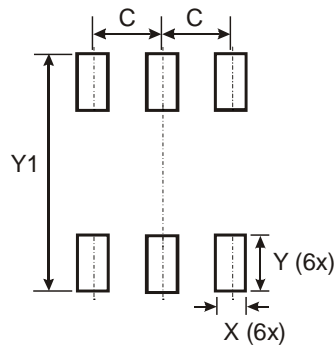
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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
theta	0°	8°	4°
theta1	4°	12°	-
<b>All Dimensions in mm</b>			

**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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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,  
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



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