DMG6601LVT

COMPLEMENTARY PAIR ENHANCEMENT MODE MOSFET

Product Summary

Device	$V_{(BR)DSS}$	$R_{DS(ON)}$ max	Package	I_D max T_A = +25°C
Q1	30V	55mΩ @ V_{GS} = 10V	TSOT26	3.8A
		65mΩ @ V_{GS} = 4.5V	TSOT26	3.6A
Q2	-30V	110mΩ @ V_{GS} = -10V	TSOT26	-2.5A
		142mΩ @ V_{GS} = -4.5V	TSOT26	-2.1A

Features

- Complementary MOSFET
- 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)**

Description

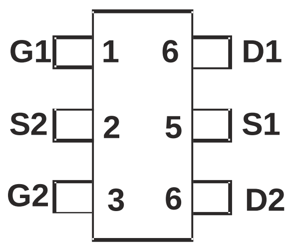
This MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

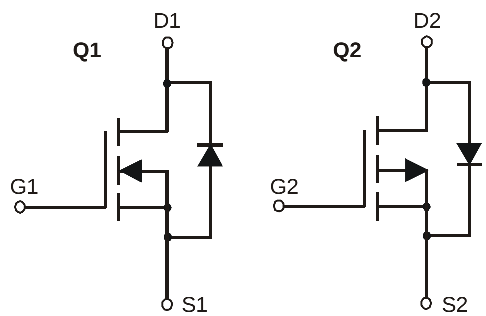
- Backlighting
- Power Management Functions
- DC-DC Converters

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 — NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.008 grams (approximate)



Top View
Pin-Out



N-Channel P-Channel

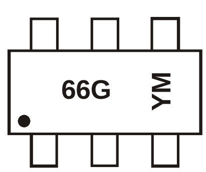
Device Schematic

Ordering Information (Note 4)

Part Number	Case	Packaging
DMG6601LVT-7	TSOT26	3K/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 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.

Marking Information



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

Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017
Code	Y	Z	A	B	C	D	E

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 and Q2 (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Q1	Q2	Units
Drain-Source Voltage			V_{DSS}	30	-30	V
Gate-Source Voltage			V_{GSS}	±12	±12	V
Continuous Drain Current (Note 6) V_{GS} = 10V	Steady State	T_A = +25°C T_A = +70°C	I_D	3.8 3.0	-2.5 -2	A
	t<10s	T_A = +25°C T_A = +70°C	I_D	4.5 3.4	-3 -2.3	A
Maximum Body Diode Forward Current (Note 6)			I_S	1.5	-1.5	A
Pulsed Drain Current (Note 6)			I_{DM}	20	-15	A

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

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	0.85	W
	T_A = +70°C		0.54	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	$R_{\theta JA}$	147	°C/W
	t<10s		103	
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	1.3	W
	T_A = +70°C		0.83	
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	$R_{\theta JA}$	96	°C/W
	t<10s		67	
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	36	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics - Q1 (@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}	30	-	-	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current @T_J = +25°C	I_{DSS}	-	-	1	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±12V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	1	1.5	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	34	55	mΩ	V_{GS} = 10V, I_D = 3.4A
		-	38	65		V_{GS} = 4.5V, I_D = 3A
			49	85		V_{GS} = 2.5V, I_D = 2A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	6	-	S	V_{DS} = 5V, I_D = 3.4A
Diode Forward Voltage (Note 7)	V_{SD}	-	0.75	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	422	-	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	41	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	39	-	pF	
Gate resistance	R_g		1.26	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	-	5.4	-	nC	V_{GS} = 10V, V_{DS} = 15V, I_D = 3.1A
Total Gate Charge (V_{GS} = 10V)	Q_g		12.3	-	nC	
Gate-Source Charge	Q_{gs}	-	0.8	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.2	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	1.6	-	ns	V_{DS} = 15V, V_{GS} = 10V, R_L = 4.7Ω, R_G =3Ω,
Turn-On Rise Time	t_r	-	7.4	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	31.2	-	ns	
Turn-Off Fall Time	t_f	-	15.6	-	ns	

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 thermal vias to bottom layer 1inch square copper plate
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

Electrical Characteristics - Q2 (@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}	-30	-	-	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current @T_J = +25°C	I_{DSS}	-	-	-1	μA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±12V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.4	-0.8	-1.2	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	70	110	mΩ	V_{GS} = -10V, I_D = -2.3A
		-	81	142		V_{GS} = -4.5V, I_D = -2A
			105	190		V_{GS} = -2.5V, I_D = -1A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	5.3	-	S	V_{DS} = -5V, I_D = -2.3A
Diode Forward Voltage (Note 7)	V_{SD}	-	-0.8	-1.0	V	V_{GS} = 0V, I_S = -1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	541	-	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	46	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	43	-	pF	
Gate resistance	R_g	-	16.9	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	-	6.5	-	nC	V_{GS} = -10V, V_{DS} = -15V, I_D = -2.3A
Total Gate Charge (V_{GS} = -10V)	Q_g		13.8	-	nC	
Gate-Source Charge	Q_{gs}	-	1.0	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.6	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	1.7	-	ns	V_{DS} = -15V, V_{GS} = -10V, R_L = 6Ω, R_G = 3Ω,
Turn-On Rise Time	t_r	-	4.6	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	18.3	-	ns	
Turn-Off Fall Time	t_f	-	2.2	-	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

N Channel - Q1

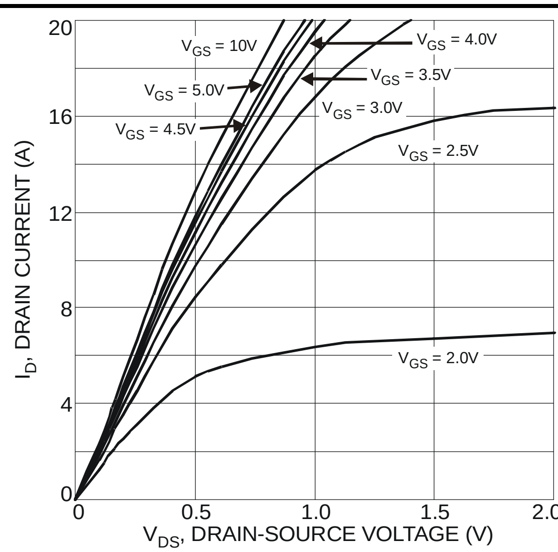


Fig. 1 Typical Output Characteristic

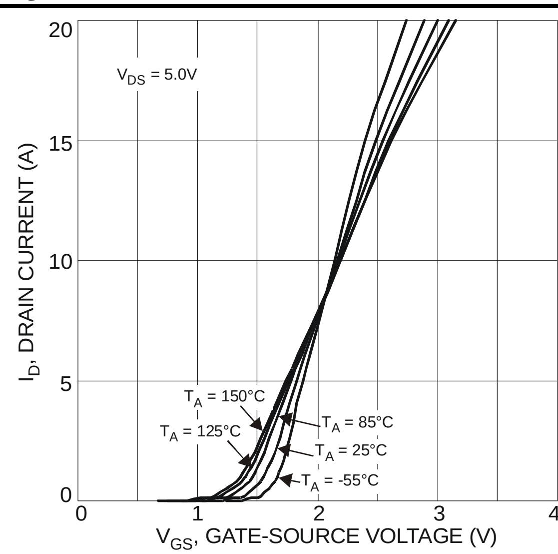


Fig. 2 Typical Transfer Characteristics

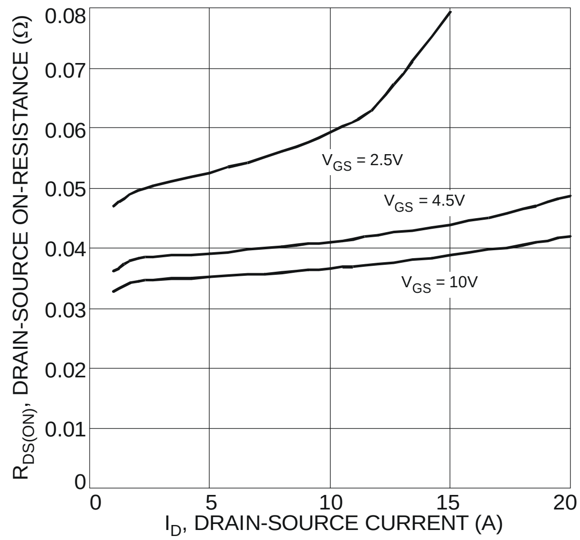


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

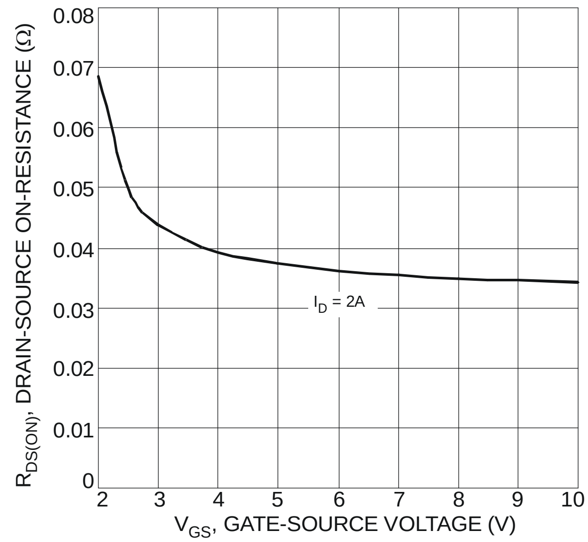


Fig. 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

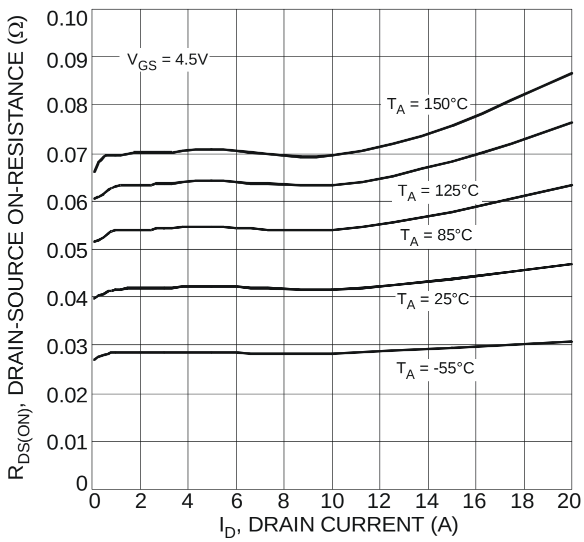


Fig. 5 Typical On-Resistance vs. Drain Current and Temperature

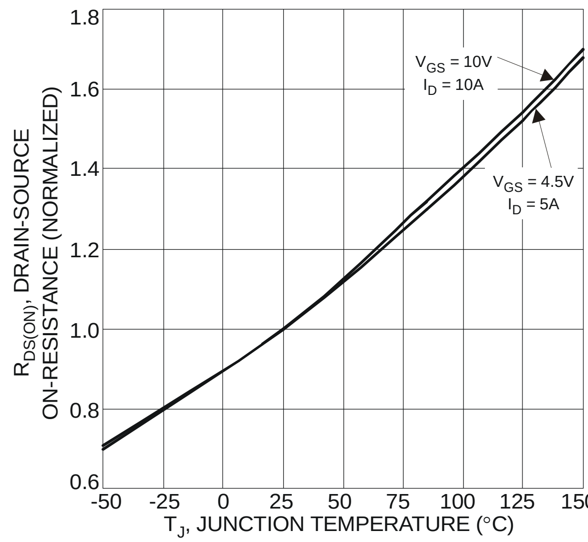


Fig. 6 On-Resistance Variation with Temperature

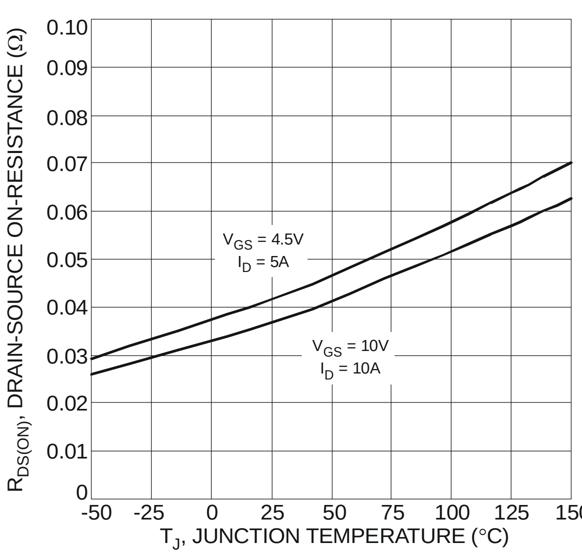


Fig. 7 On-Resistance Variation with Temperature

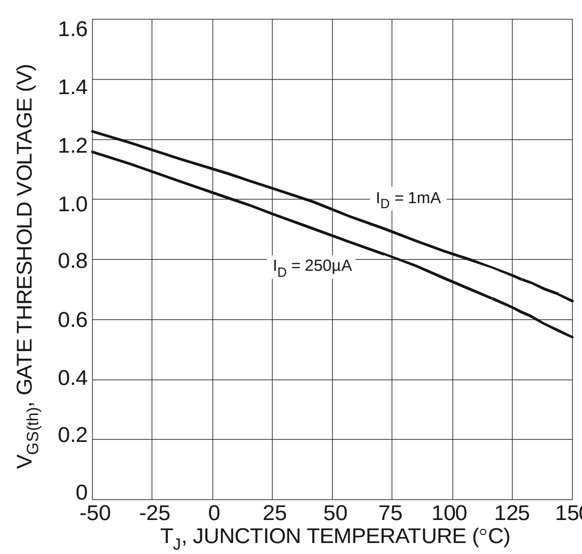


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

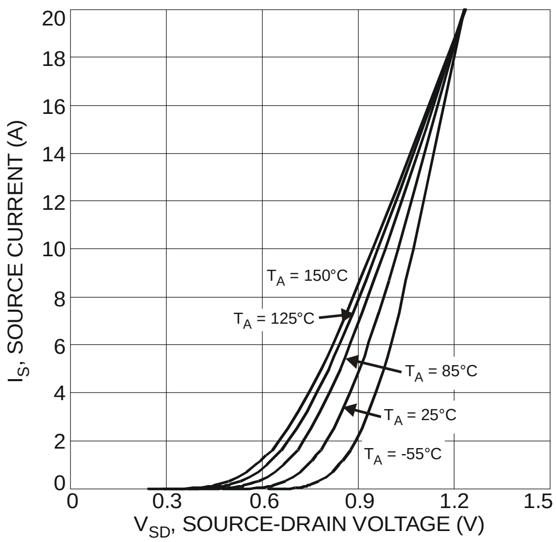


Fig. 9 Diode Forward Voltage vs. Current

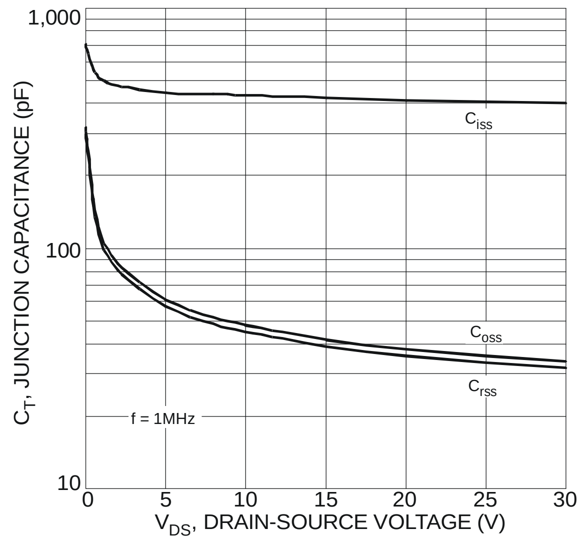


Fig. 10 Typical Junction Capacitance

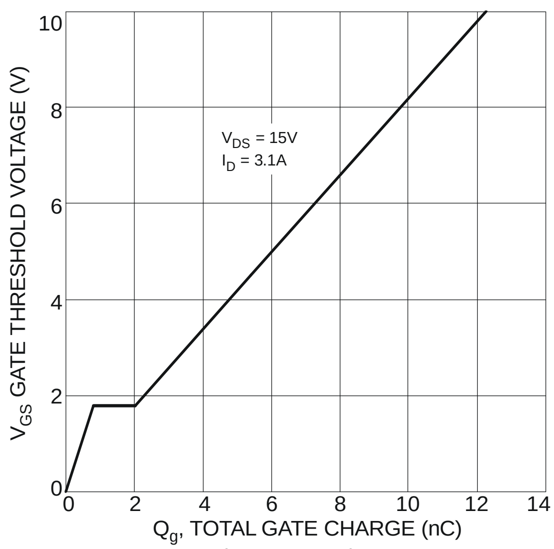


Fig. 11 Gate Charge

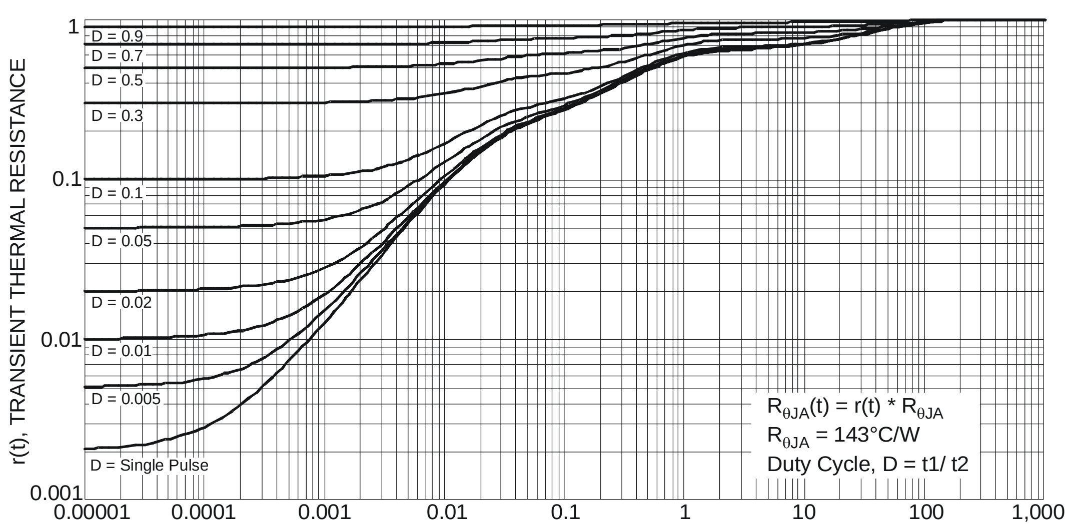


Fig. 12 Transient Thermal Resistance

P Channel - Q2

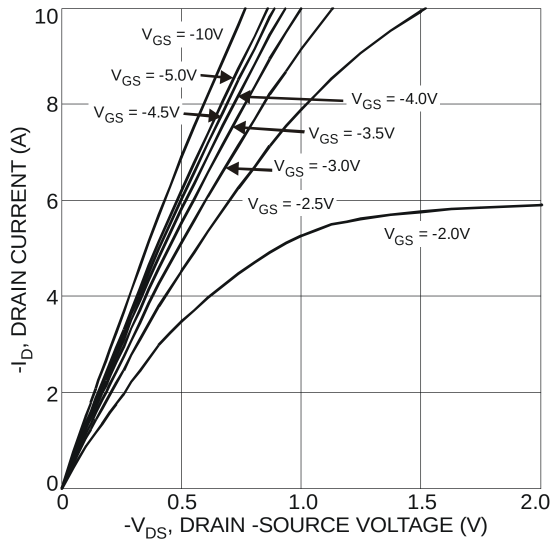


Fig. 13 Typical Output Characteristics

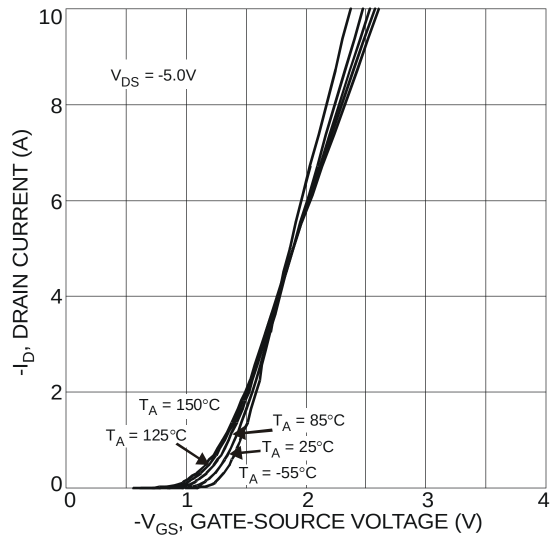


Fig. 14 Typical Transfer Characteristics

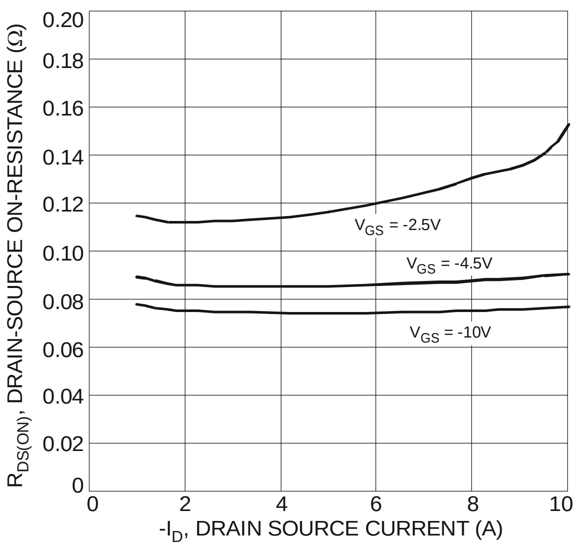


Fig. 15 Typical On-Resistance vs. Drain Current and Gate Voltage

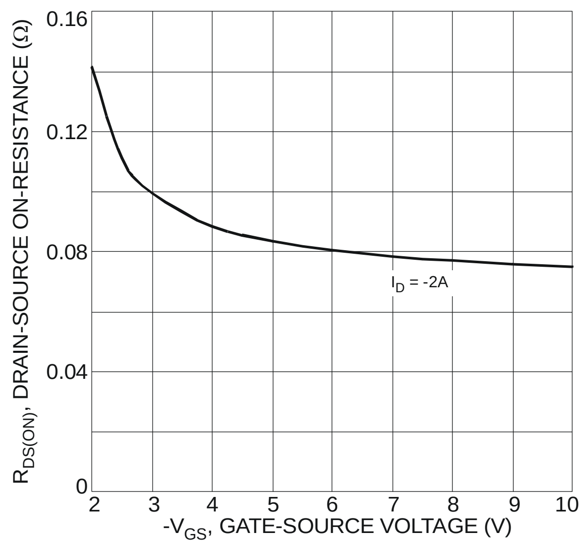


Fig. 16 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

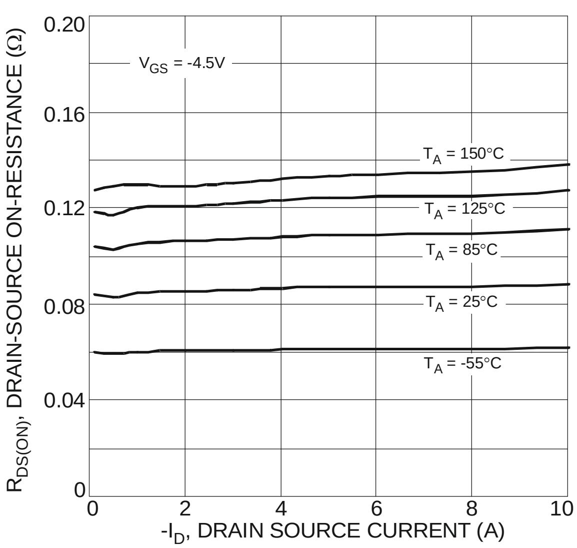


Fig. 17 Typical On-Resistance vs. Drain Current and Temperature

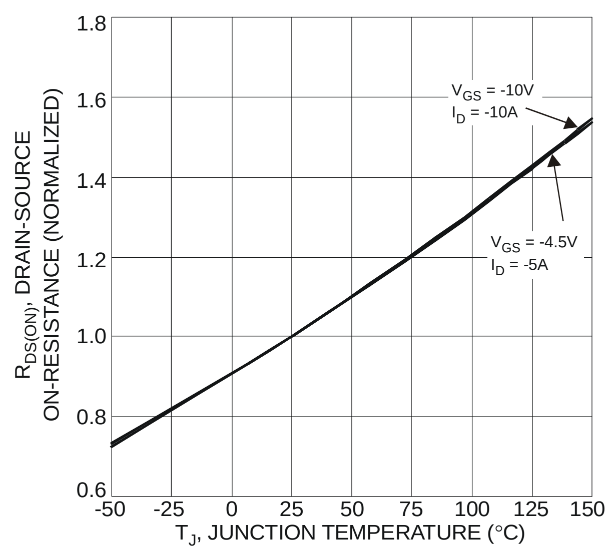


Fig. 18 On-Resistance Variation with Temperature

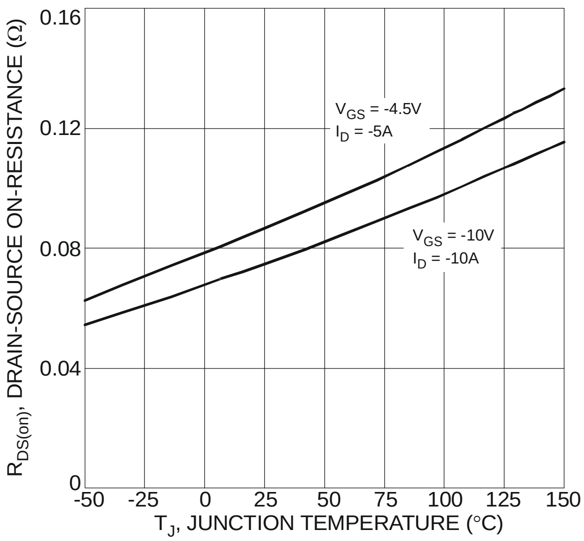


Fig. 19 On-Resistance Variation with Temperature

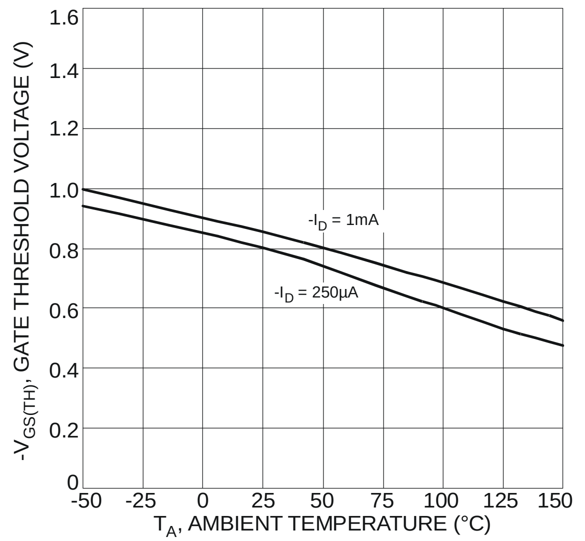


Fig. 20 Gate Threshold Variation vs. Ambient Temperature

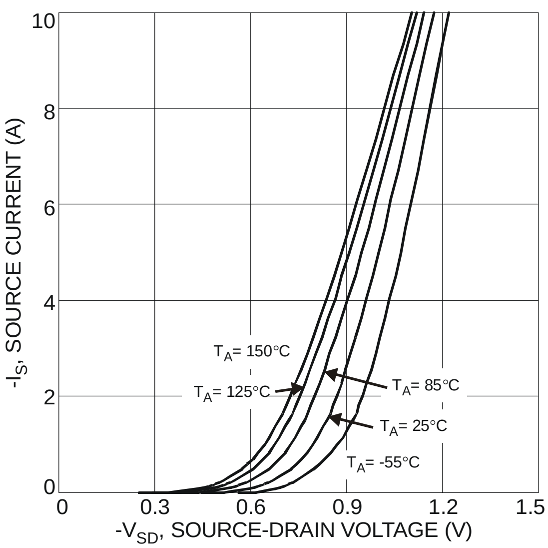


Fig. 21 Diode Forward Voltage vs. Current

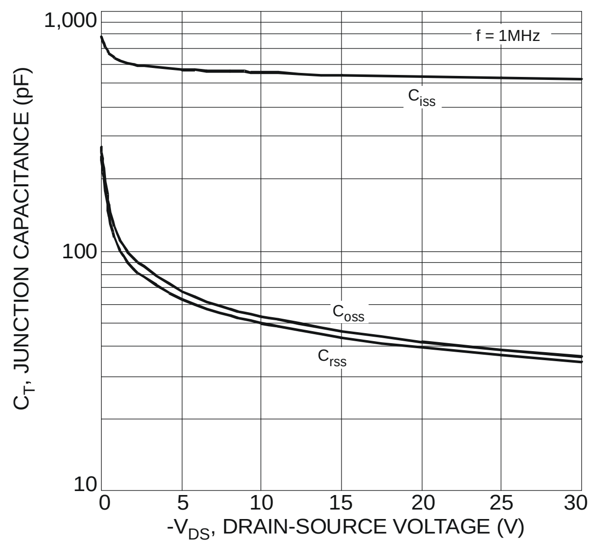


Fig. 22 Typical Junction Capacitance

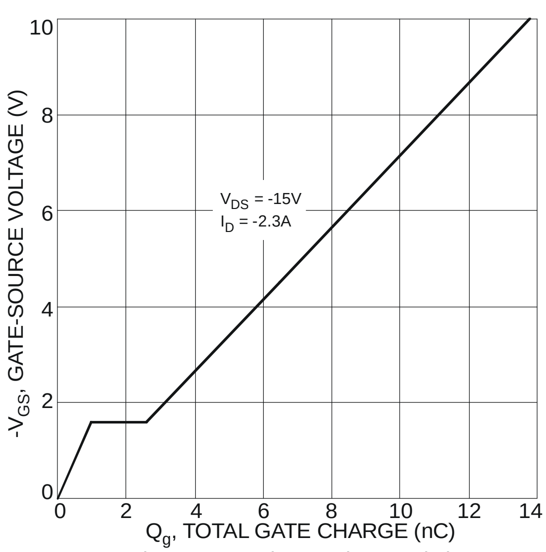


Fig. 23 Gate-Charge Characteristics

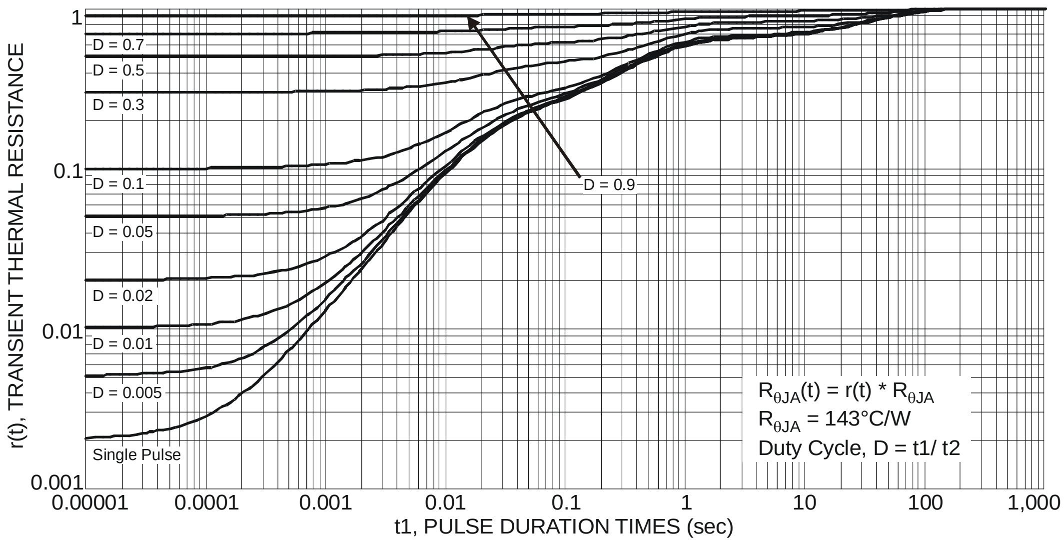
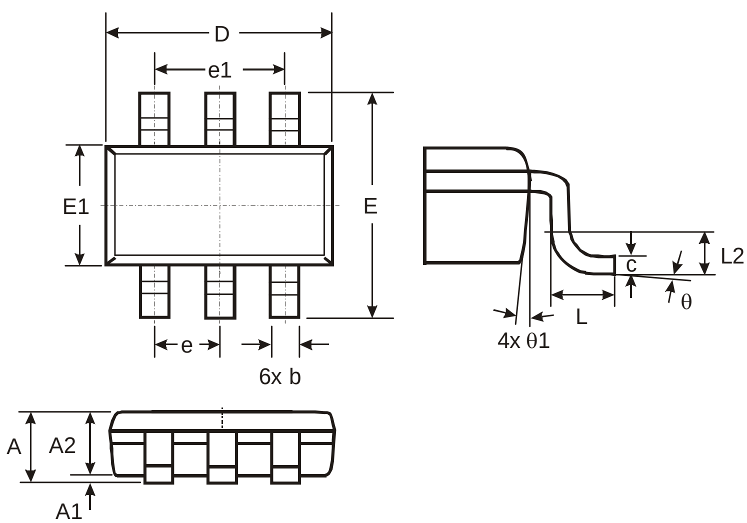


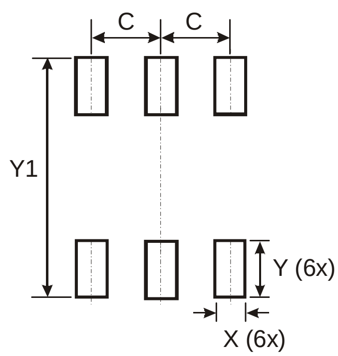
Fig. 24 Transient Thermal Resistance

Package Outline Dimensions



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



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

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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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»**.

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