

COMPLEMENTARY PAIR ENHANCEMENT MODE MOSFET
Product Summary

Device	V _{(BR)DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
Q1	60V	1.7Ω @ V _{GS} = 10V	500mA
		3Ω @ V _{GS} = 4.5V	400mA
Q2	-60V	4Ω @ V _{GS} = -10V	-360mA
		6Ω @ V _{GS} = -4.5V	-310mA

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

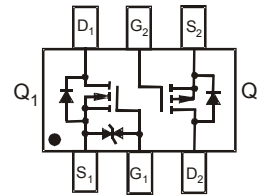
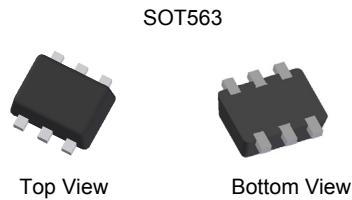
- General Purpose Interfacing Switch
- Power Management Functions
- Analog Switch

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Ultra-Small Surface Mount Package
- **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**

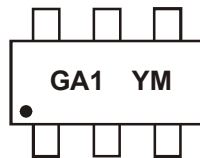
Mechanical Data

- Case: SOT563
- 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: 0.027 grams (approximate)


Ordering Information (Note 4 & 5)

Part Number	Compliance	Case	Packaging
DMG1029SV-7	Standard	SOT563	3000/Tape & Reel
DMG1029SVQ-7	Automotive	SOT563	3000/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>.
 5. 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_grade_definitions/.

Marking Information


GA1 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: W = 2009)
 M = Month (ex: 9 = September)

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015
Code	W	X	Y	Z	A	B	C

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 N-CHANNEL – Q1 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 7) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	500 400	mA
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	620 480	mA
Pulsed Drain Current (Note 7)			I_{DM}	1000	mA

Maximum Ratings P-CHANNEL – Q2 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-60	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 7) $V_{GS} = -10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-360 -280	mA
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-410 -320	mA
Pulsed Drain Current (Note 7)			I_{DM}	-650	mA

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

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	P_D	0.45	W
	$T_A = +70^\circ\text{C}$		0.28	
Thermal Resistance, Junction to Ambient (Note 6)	Steady state	$R_{\theta JA}$	281	$^\circ\text{C/W}$
	$t < 10\text{s}$		210	
Total Power Dissipation (Note 7)	$T_A = +25^\circ\text{C}$	P_D	1	W
	$T_A = +70^\circ\text{C}$		0.62	
Thermal Resistance, Junction to Ambient (Note 7)	Steady state	$R_{\theta JA}$	129	$^\circ\text{C/W}$
	$t < 10\text{s}$		97	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

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 N-CHANNEL – Q1 (@T_A = +25°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} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	10	nA	@T _C = +25°C V _{DS} = 50V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±50	nA	V _{GS} = ±5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	1.0	—	2.5	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	1.3	1.7	Ω	V _{GS} = 10V, I _D = 500mA
		—	1.5	3		V _{GS} = 4.5V, I _D = 200mA
Forward Transfer Admittance	Y _{fs}	80	—	—	mS	V _{DS} = 10V, I _D = 200mA
Diode Forward Voltage	V _{SD}	—	—	1.4	V	V _{GS} = 0V, I _S = 115mA
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	30	—	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	4.2	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	2.9	—	pF	
Total Gate Charge	Q _g	—	0.3	—	nC	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 250mA
Gate-Source Charge	Q _{gs}	—	0.2	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.08	—	nC	
Turn-On Delay Time	t _{D(on)}	—	3.9	—	ns	V _{DD} = 30V, V _{GS} = 10V, R _G = 25Ω, I _D = 200mA
Turn-On Rise Time	t _r	—	3.4	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	15.7	—	ns	
Turn-Off Fall Time	t _f	—	9.9	—	ns	

Electrical Characteristics P-CHANNEL – Q2 (@T_A = +25°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} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-25	nA	@T _C = +25°C V _{DS} = -50V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(th)}	-1	—	-3.0	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	2.7	4	Ω	V _{GS} = -10V, I _D = -500mA
		—	3.2	6		V _{GS} = -4.5V, I _D = -200mA
Forward Transfer Admittance	Y _{fs}	50	—	—	mS	V _{DS} = -25V, I _D = -100mA
Diode Forward Voltage	V _{SD}	—	—	-1.4	V	V _{GS} = 0V, I _S = -115mA
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	25	—	pF	V _{DS} = -25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	4.7	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	2.7	—	pF	
Total Gate Charge	Q _g	—	0.28	—	nC	V _{GS} = -4.5V, V _{DS} = -10V, I _D = -500mA
Gate-Source Charge	Q _{gs}	—	0.14	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.08	—	nC	
Turn-On Delay Time	t _{D(on)}	—	5.5	—	ns	V _{DD} = -30V, V _{GS} = -10V, R _G = 50Ω, I _D = -270mA
Turn-On Rise Time	t _r	—	7.9	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	10.6	—	ns	
Turn-Off Fall Time	t _f	—	11.6	—	ns	

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

N-CHANNEL - Q1

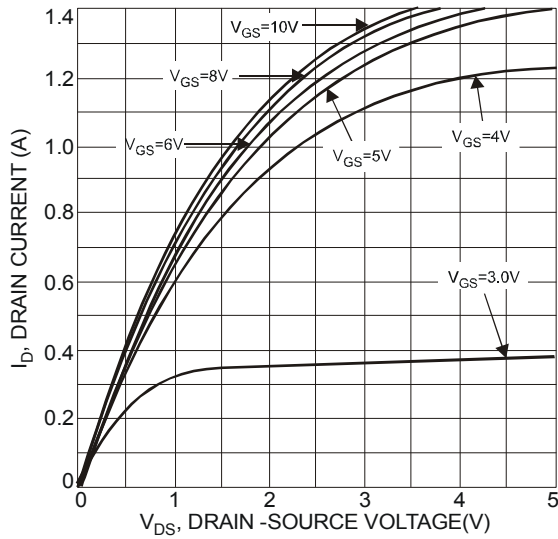


Fig. 1 Typical Output Characteristics

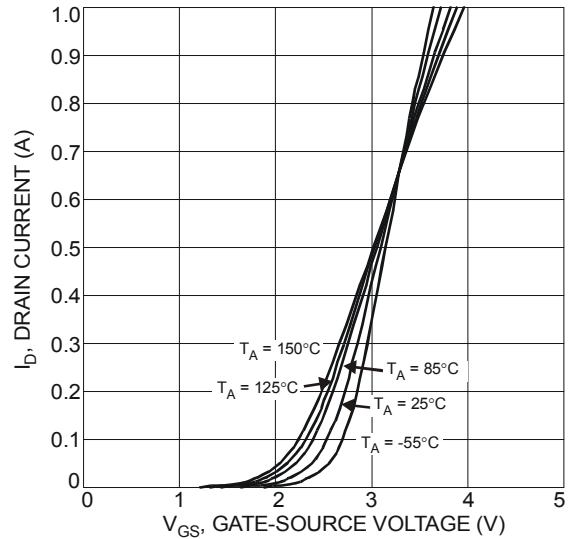


Fig. 2 Typical Transfer Characteristics

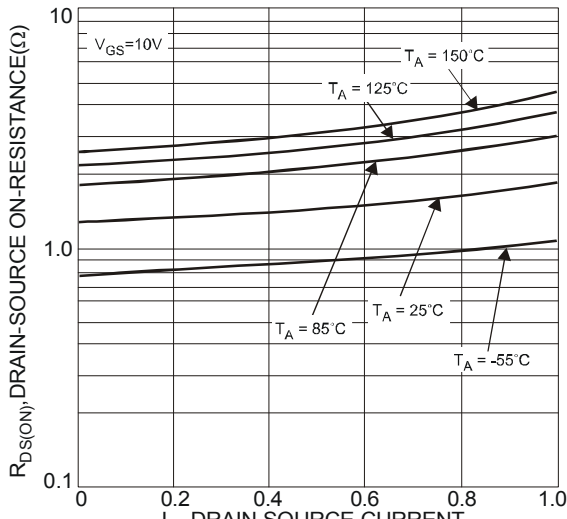


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

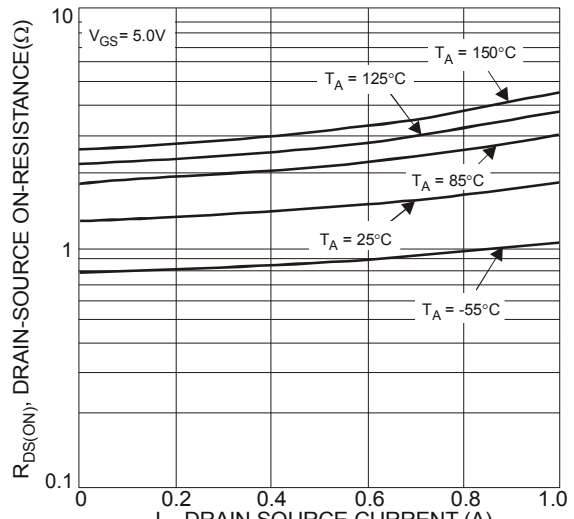


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

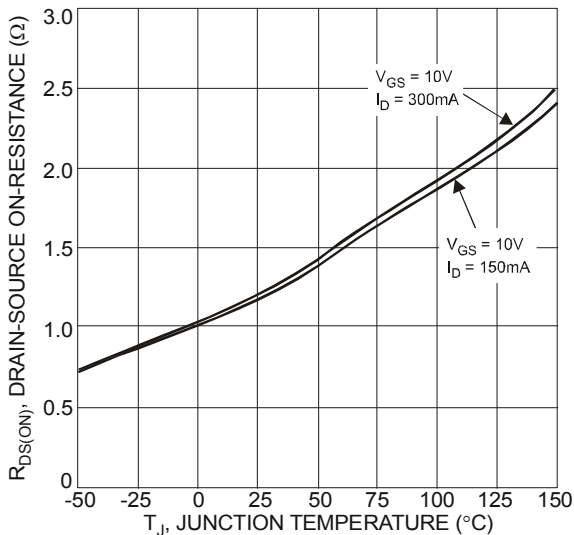


Fig. 5 On-Resistance Variation with Temperature

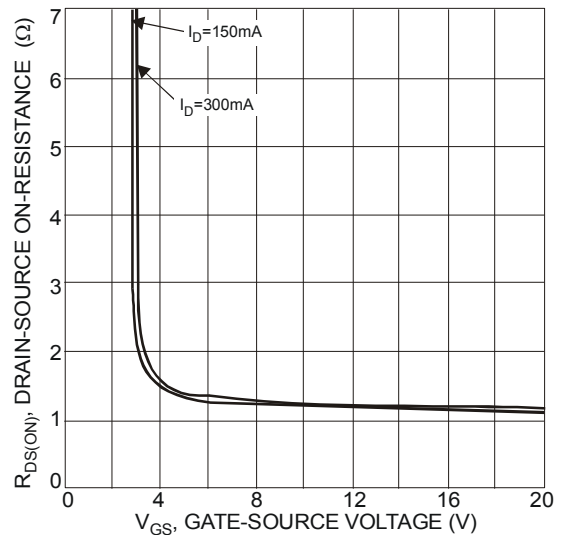
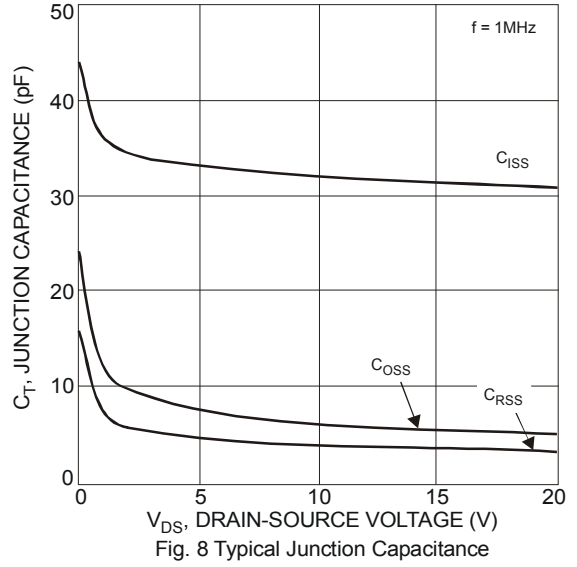
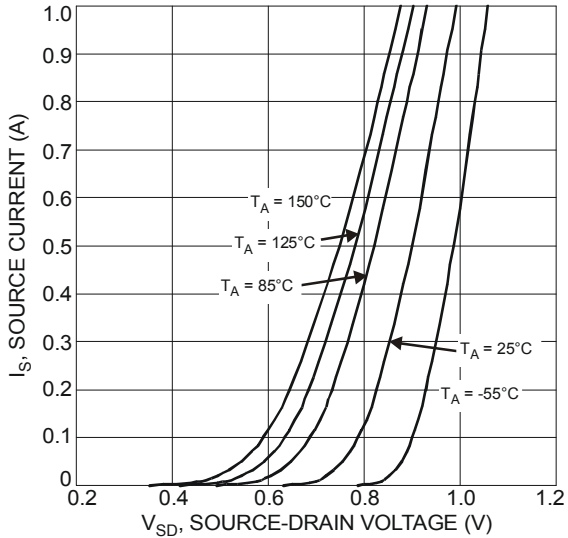


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage



P-CHANNEL – Q2

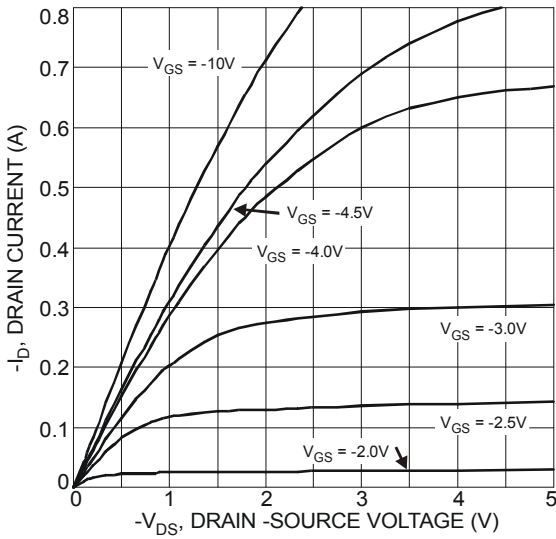


Fig. 9 Typical Output Characteristics

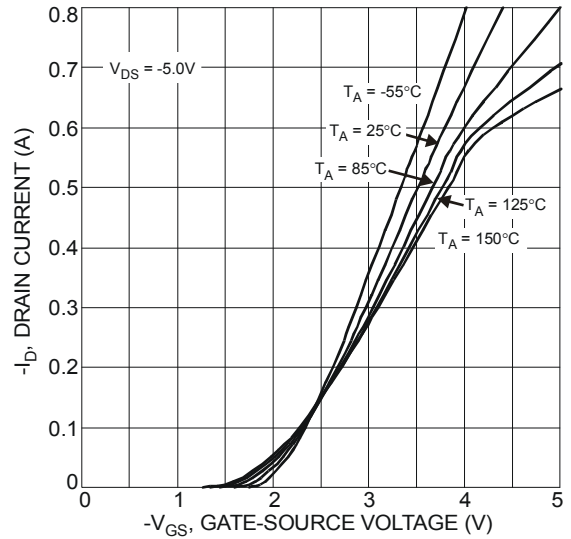


Fig. 10 Typical Transfer Characteristics

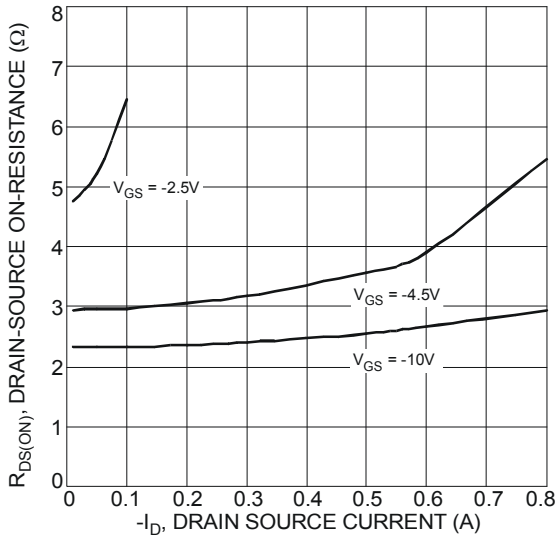


Fig. 11 Typical On-Resistance vs. Drain Current and Gate Voltage

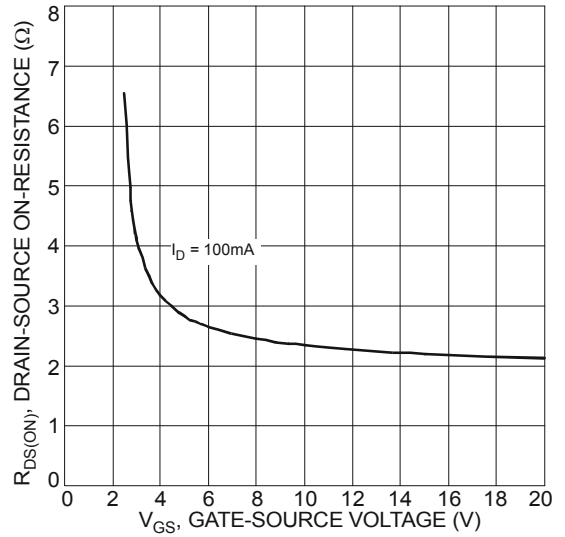


Fig. 12 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

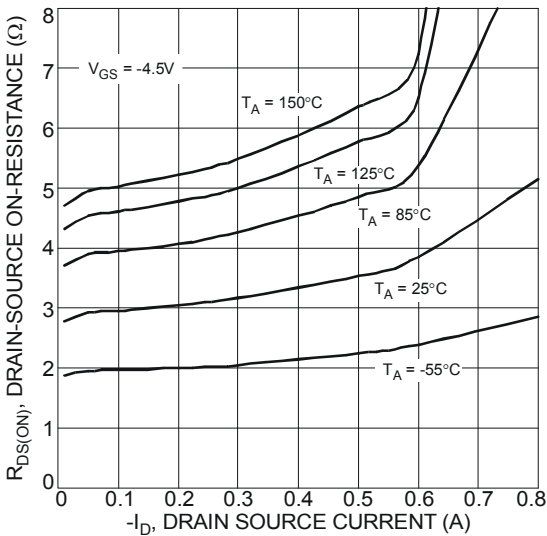


Fig. 13 Typical On-Resistance vs. Drain Current and Temperature

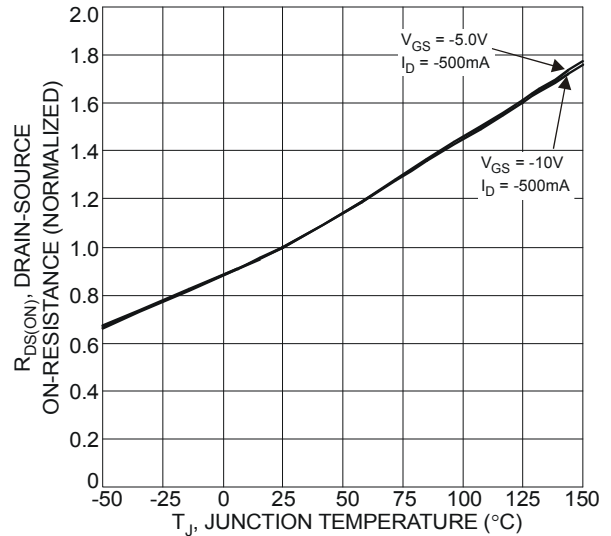


Fig. 14 On-Resistance Variation with Temperature

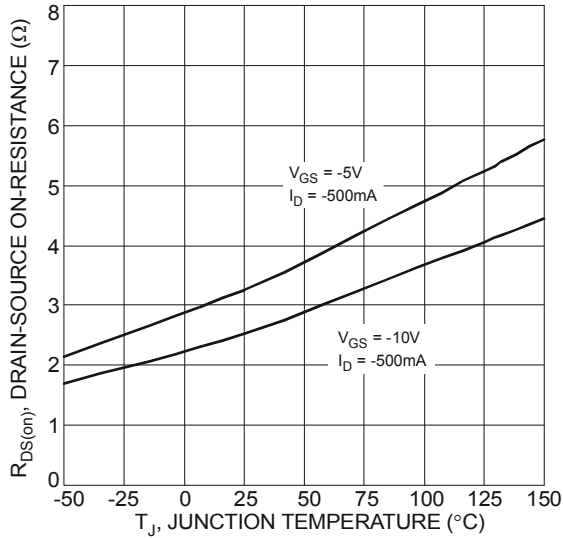


Fig. 15 On-Resistance Variation with Temperature

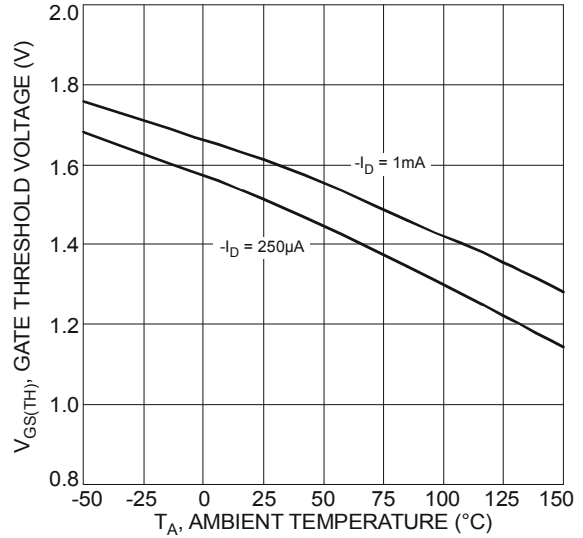


Fig. 16 Gate Threshold Variation vs. Ambient Temperature

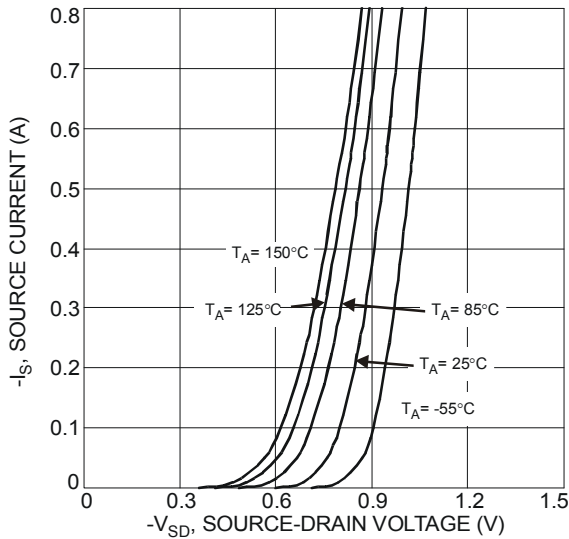


Fig. 17 Diode Forward Voltage vs. Current

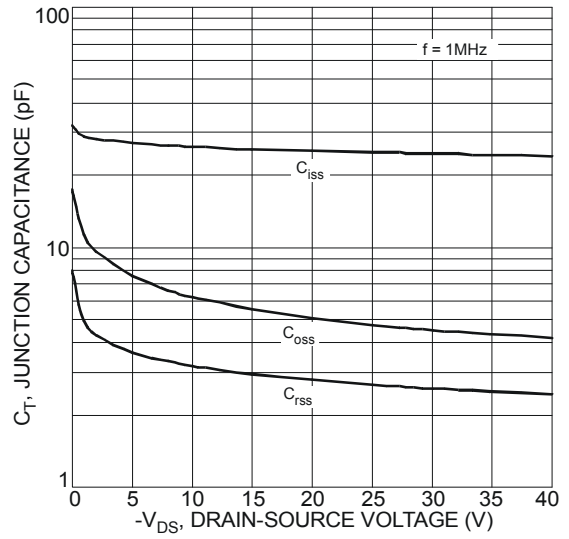


Fig. 18 Typical Junction Capacitance

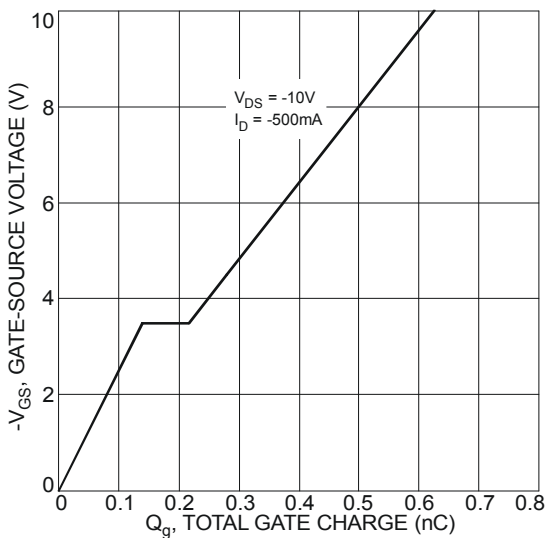
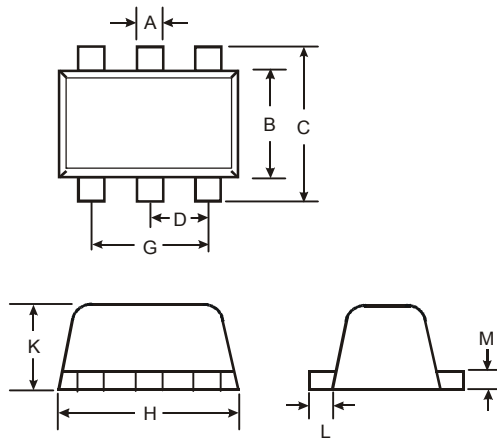


Fig. 19 Gate-Charge Characteristics

Package Outline Dimensions

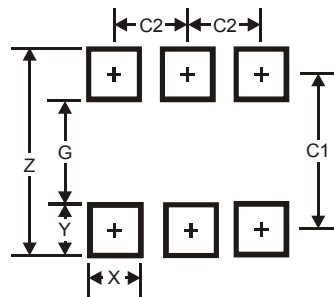
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
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.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2013, Diodes Incorporated

www.diodes.com

单击下面可查看定价，库存，交付和生命周期等信息

[>>Diodes Incorporated\(达达科技\(美台\)\)](#)