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Stocking Distributor

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[Diodes Incorporated](#)
[DMG1023UV-7](#)

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DMG1023UV

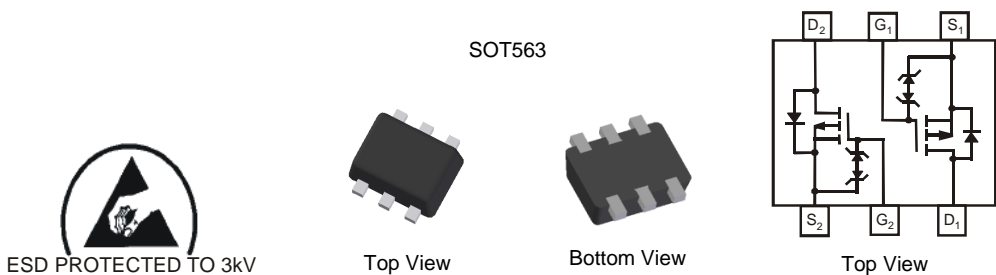
DUAL P-CHANNEL ENHANCEMENT MODE MOSFET

Features

- Dual P-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **ESD Protected Up To 3kV**
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **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: See Diagram Below
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.006 grams (approximate)

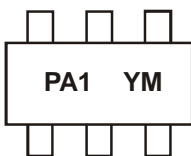


Ordering Information (Note 3)

Part Number	Case	Packaging
DMG1023UV-7	SOT563	3,000 / Tape & Reel
DMG1023UV-13	SOT563	10,000 / Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead. Halogen and Antimony free.
 2. Diodes Inc.'s "Green" Policy can be found on our website at <http://www.diodes.com>
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



PA1 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: W = 2009)
 M = Month (ex: 9 = September)

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	V	W	X	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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 6	V
Continuous Drain Current (Note 4) $V_{GS} = -4.5\text{V}$	I_D	$T_A = 25^\circ\text{C}$ $T_A = 85^\circ\text{C}$	-1.03 -0.68
Pulsed Drain Current (Note 5)		I_{DM}	-3

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	530	mW
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 4)	$R_{\theta JA}$	235	$^\circ\text{C/W}$
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 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	-20	-	-	V	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = 25^\circ\text{C}$	I_{DSS}	-	-	-100	nA	$V_{DS} = -20\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 2.0	μA	$V_{GS} = \pm 4.5\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-	-1.0	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	0.5	0.75	Ω	$V_{GS} = -4.5\text{V}, I_D = -430\text{mA}$
			0.7	1.05		$V_{GS} = -2.5\text{V}, I_D = -300\text{mA}$
			1.0	1.5		$V_{GS} = -1.8\text{V}, I_D = -150\text{mA}$
			-	20		$V_{GS} = -1.7\text{V}, I_D = -100\text{mA}$
			-	25		$V_{GS} = -1.5\text{V}, I_D = -100\text{mA}$
Forward Transfer Admittance	$ Y_{fs} $	-	0.9	-	S	$V_{DS} = -10\text{V}, I_D = -250\text{mA}$
Diode Forward Voltage	V_{SD}	-	-0.8	-1.2	V	$V_{GS} = 0\text{V}, I_S = -150\text{mA}$
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	-	59.76	-	pF	$V_{DS} = -16\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	12.07	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	6.36	-	pF	
Total Gate Charge	Q_g	-	622.4	-	pC	$V_{GS} = -4.5\text{V}, V_{DS} = -10\text{V}, I_D = -250\text{mA}$
Gate-Source Charge	Q_{gs}	-	100.3	-	pC	
Gate-Drain Charge	Q_{gd}	-	132.2	-	pC	
Turn-On Delay Time	$t_{D(on)}$	-	5.1	-	ns	$V_{DD} = -10\text{V}, V_{GS} = -4.5\text{V}, R_L = 47\Omega, R_G = 10\Omega, I_D = -200\text{mA}$
Turn-On Rise Time	t_r	-	8.1	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	28.4	-	ns	
Turn-Off Fall Time	t_f	-	20.7	-	ns	

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout.
 - Repetitive rating, pulse width limited by junction temperature.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to production testing.



DMG1023UV

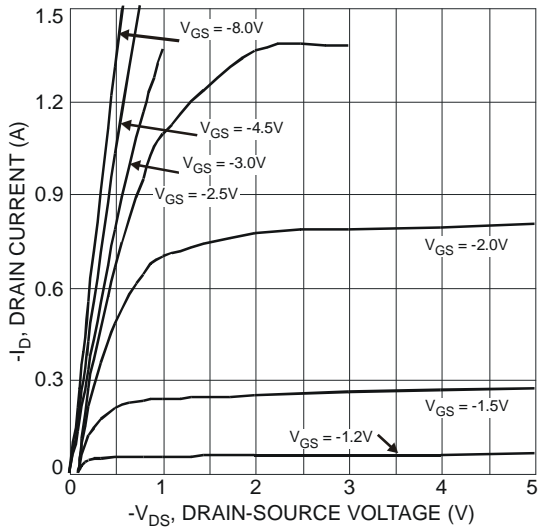


Fig. 1 Typical Output Characteristic

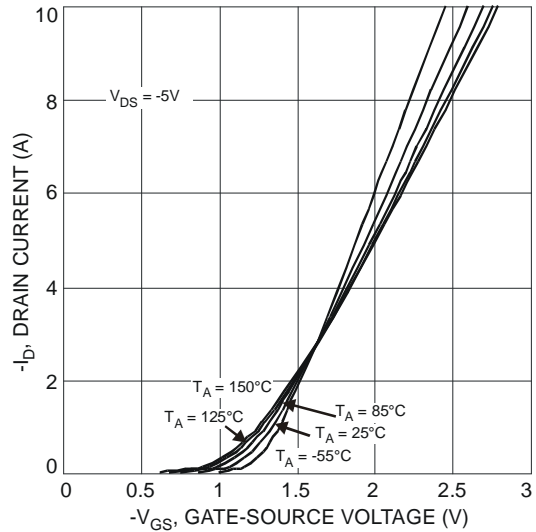


Fig. 2 Typical Transfer Characteristic

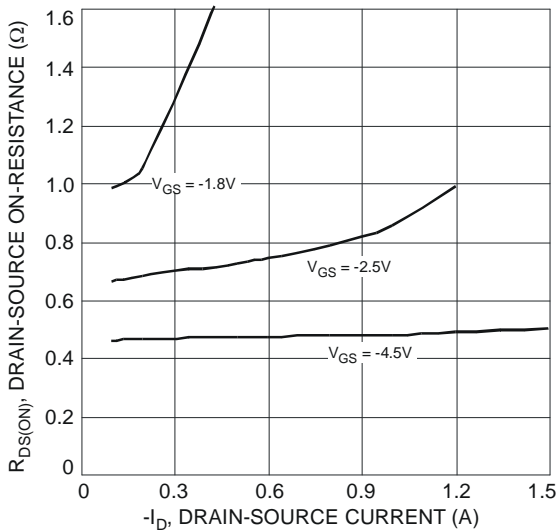


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

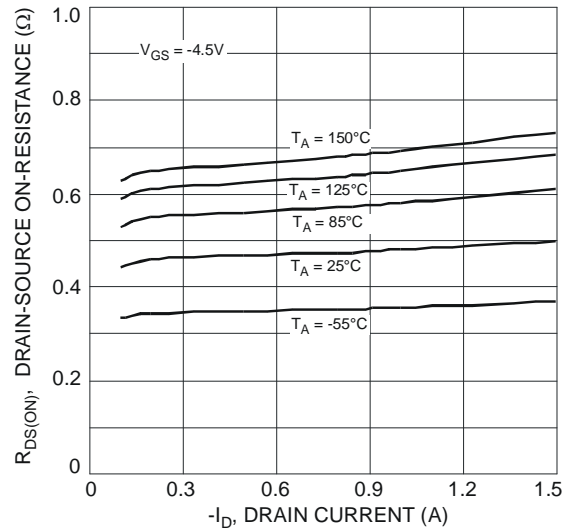


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

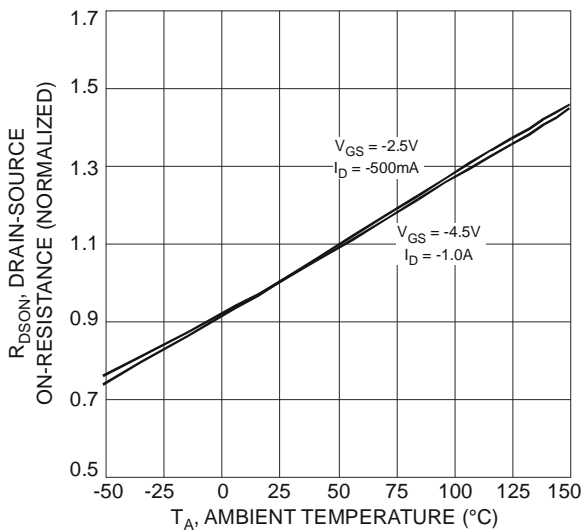


Fig. 5 On-Resistance Variation with Temperature

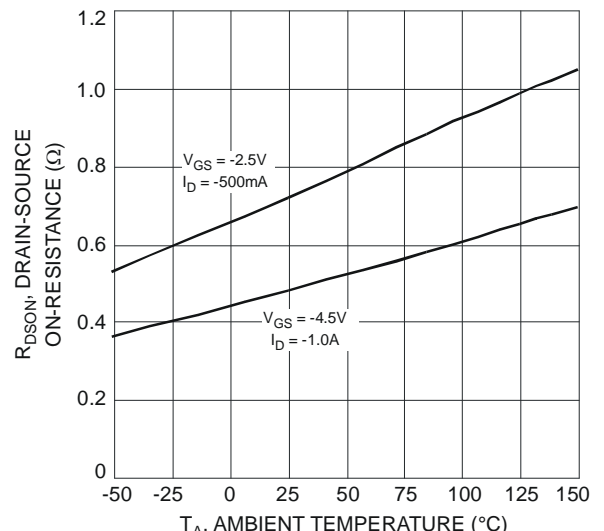


Fig. 6 On-Resistance Variation with Temperature



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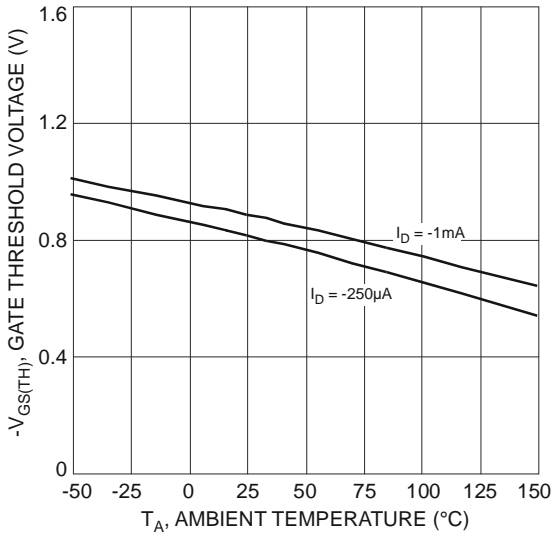


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

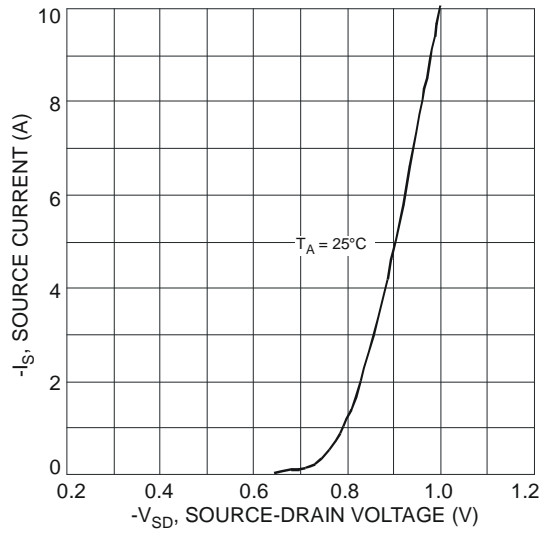


Fig. 8 Diode Forward Voltage vs. Current

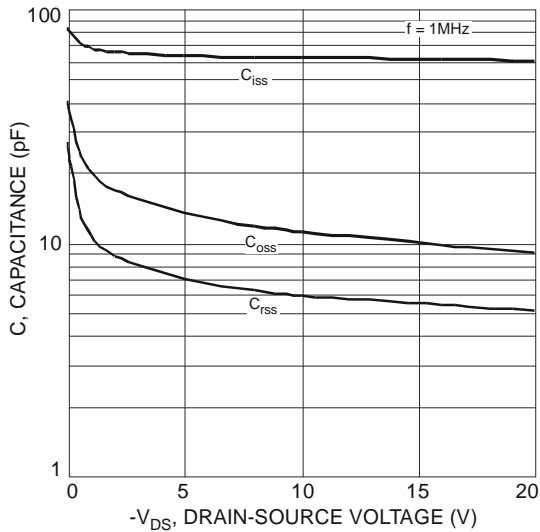


Fig. 9 Typical Total Capacitance

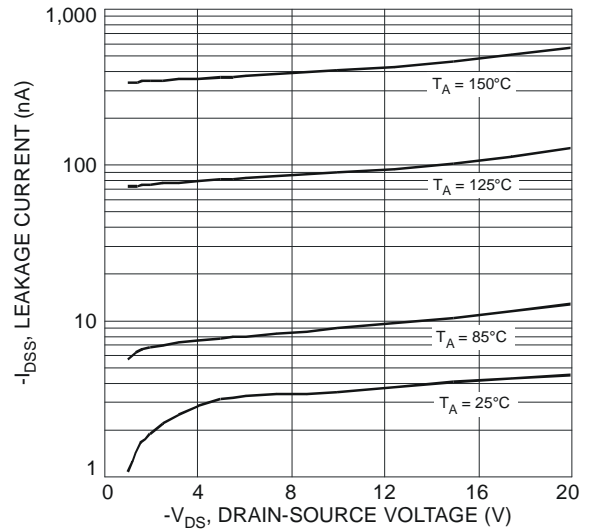


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

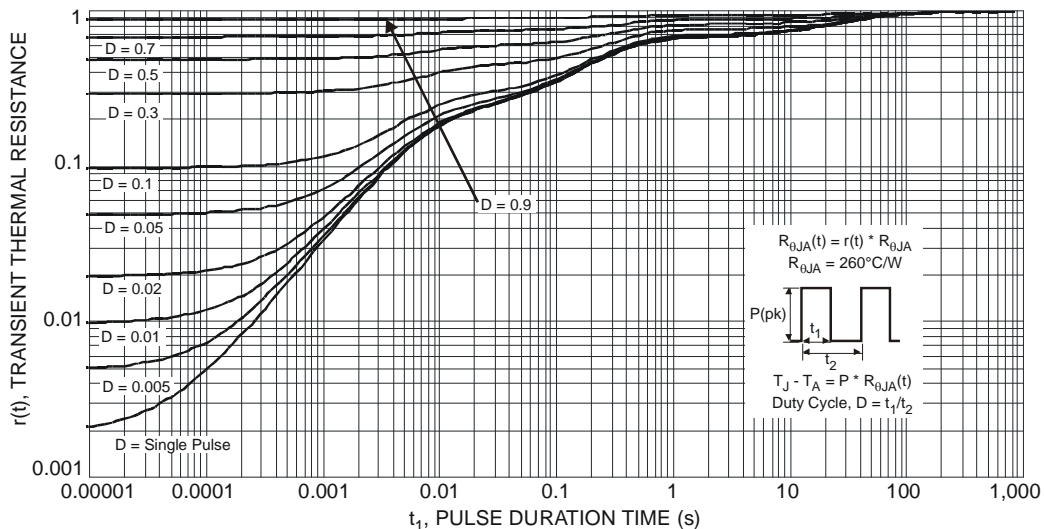
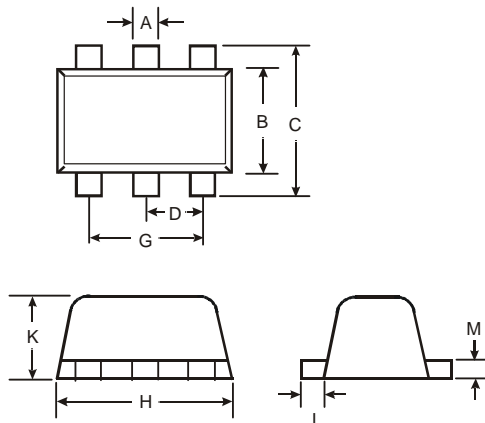


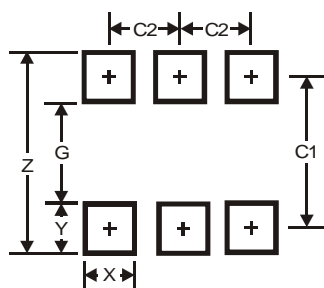
Fig. 11 Transient Thermal Response

Package Outline Dimensions



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



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



DMG1023UV

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