

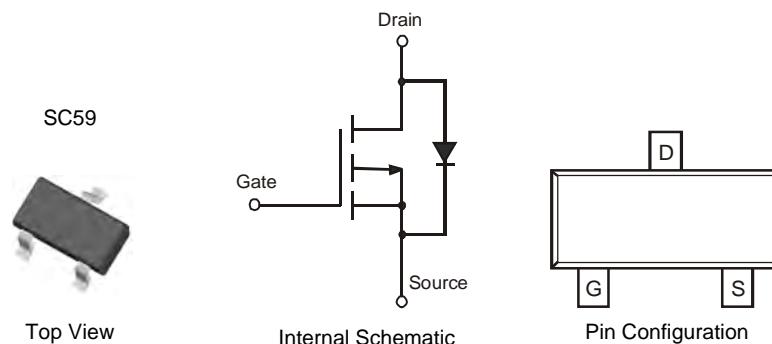
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D $T_A = 25^\circ C$
-30V	50m Ω @ $V_{GS} = -10V$	-4.0A
	72m Ω @ $V_{GS} = -4.5V$	-3.3A

Description and Applications

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.

- Load Switch
- DC-DC Converters
- Power management functions



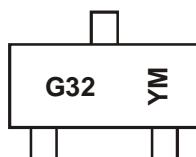
Ordering Information (Note 3)

Part Number	Case	Packaging
DMG3407SSN-7	SC59	3000 / 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



G32 = 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					
Code	X	Y	Z	A	B	C	D					
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}	-30	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 5) $V_{GS} = -10\text{V}$	Steady State	$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$	I_D	-4.0 -3.2	A
	$t < 10\text{s}$	$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$	I_D	-4.6 -3.6	A
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	-3.3 -2.6	A
	$t < 10\text{s}$	$T_A = 25^\circ\text{C}$ $T_A = 70^\circ\text{C}$	I_D	-3.9 -3.1	A
Pulsed Drain Current (10 μs pulse, duty cycle = 1%)			I_{DM}	-30	A
Maximum Body Diode Forward Current (Note 5)			I_S	-2.0	A

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

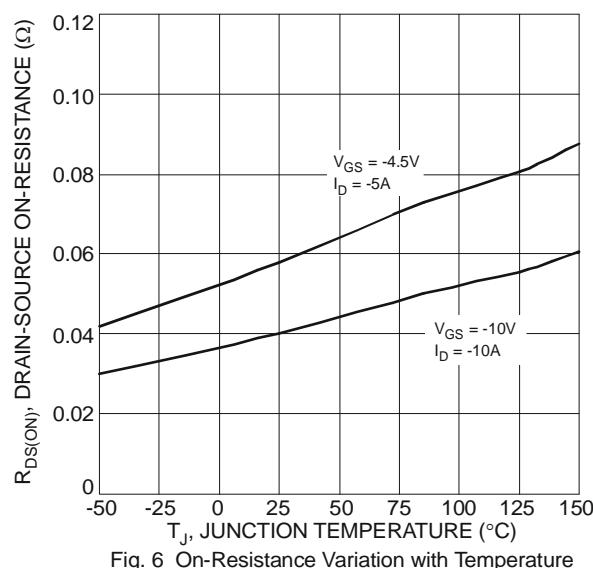
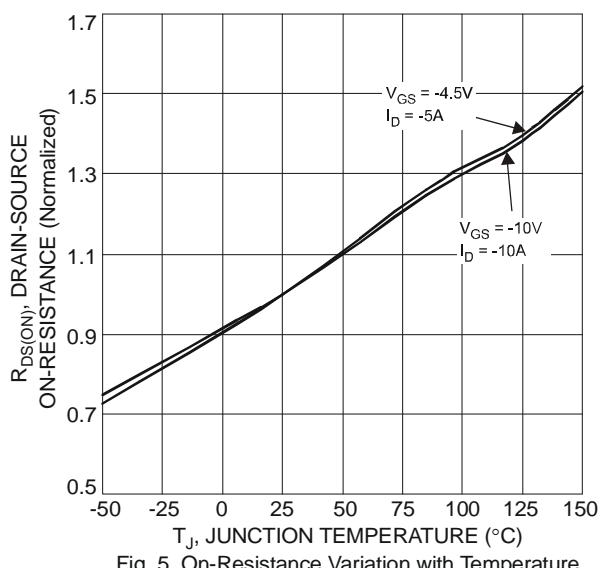
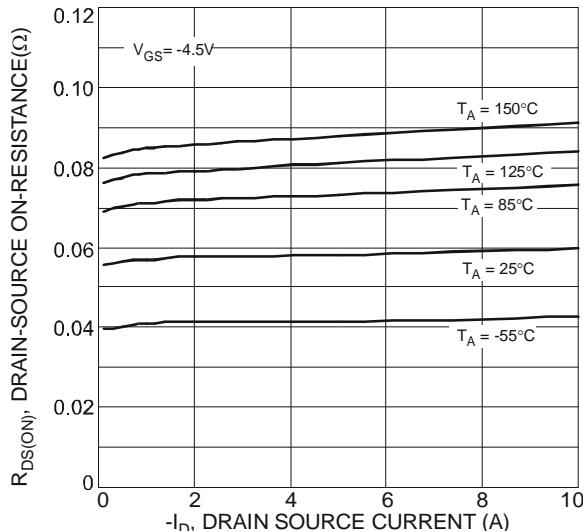
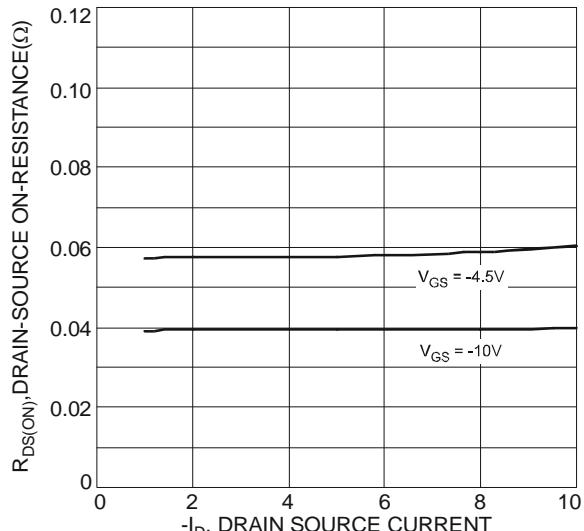
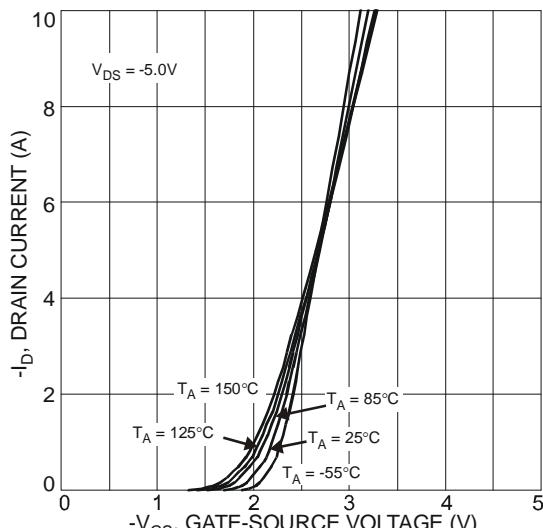
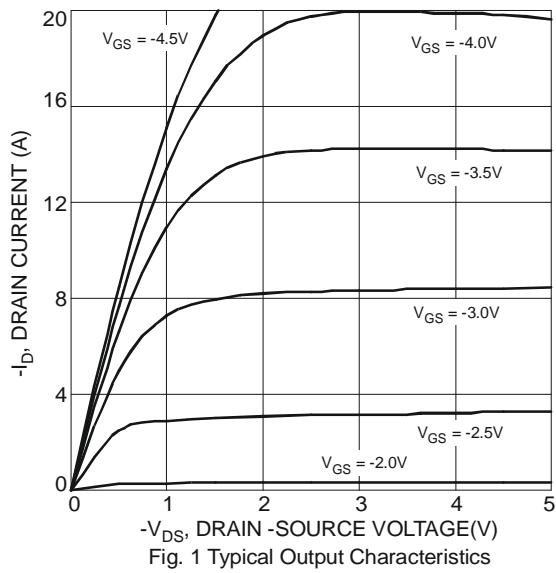
Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 4)	$T_A = 25^\circ\text{C}$	P_D	1.1	W
	$T_A = 70^\circ\text{C}$		0.7	
Thermal Resistance, Junction to Ambient (Note 4)	Steady state	$R_{\theta JA}$	166	°C/W
	$t < 10\text{s}$		118	
Total Power Dissipation (Note 5)	$T_A = 25^\circ\text{C}$	P_D	1.8	W
	$T_A = 70^\circ\text{C}$		1.1	
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	$R_{\theta JA}$	98	°C/W
	$t < 10\text{s}$		71	
Thermal Resistance, Junction to Case (Note 5)		$R_{\theta JC}$	18	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise stated

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	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}	-	-	-1	μA	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	-1.5	-2.1	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	-	39	50	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -4.1\text{A}$
		-	56	72		$V_{GS} = -4.5\text{V}, I_D = -3.0\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	-	8.2	-	S	$V_{DS} = -5\text{V}, I_D = -4\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.75	-1.1	V	$V_{GS} = 0\text{V}, I_S = -1\text{A}$
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	466	582	700	pF	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	80	114	148		
Reverse Transfer Capacitance	C_{rss}	47	76	105		
Gate Resistance	R_g	2	5	8	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge	Q_g	10.6	13.3	16	nC	$V_{GS} = -10\text{V}, V_{DS} = -15\text{V}, I_D = -4\text{A}$
Total Gate Charge	Q_g	5.2	6.5	8.5		$V_{GS} = -4.5\text{V}, V_{DS} = -15\text{V}, I_D = -4\text{A}$
Gate-Source Charge	Q_{gs}	1.3	1.7	2		
Gate-Drain Charge	Q_{gd}	1.1	1.9	2.7		
Turn-On Delay Time	$t_{D(on)}$	-	6.0	-	ns	$V_{GS} = -10\text{V}, V_{DS} = -15\text{V}, R_L = 3.6\Omega, R_G = 3\Omega$
Turn-On Rise Time	t_r	-	12.9	-		
Turn-Off Delay Time	$t_{D(off)}$	-	35.4	-		
Turn-Off Fall Time	t_f	-	30.7	-		
Reverse Recovery Time	t_{rr}	6.8	8.5	10.2	ns	$I_F = 4\text{A}, di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge	Q_{rr}	5.5	7.0	8.5	nC	

Notes:

4. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided. The power dissipation P_D is based on $t < 10\text{s}$ $R_{\theta JA}$
5. Device mounted on 1" x 1" FR-4 PCB with high coverage 2 oz. Copper, single sided. The power dissipation P_D is based on $t < 10\text{s}$ $R_{\theta JA}$
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.



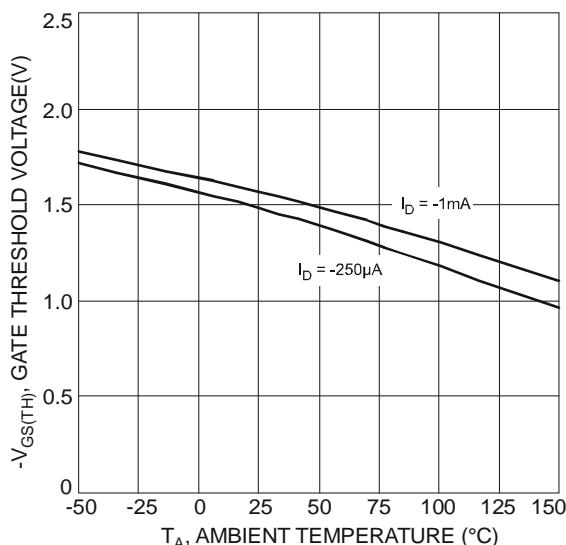


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

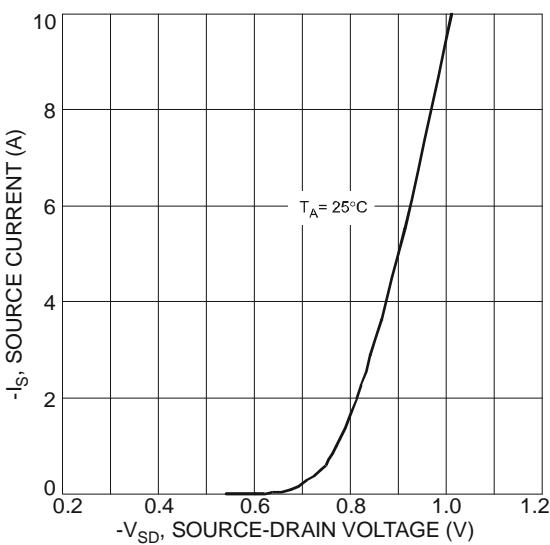


Fig. 8 Diode Forward Voltage vs. Current

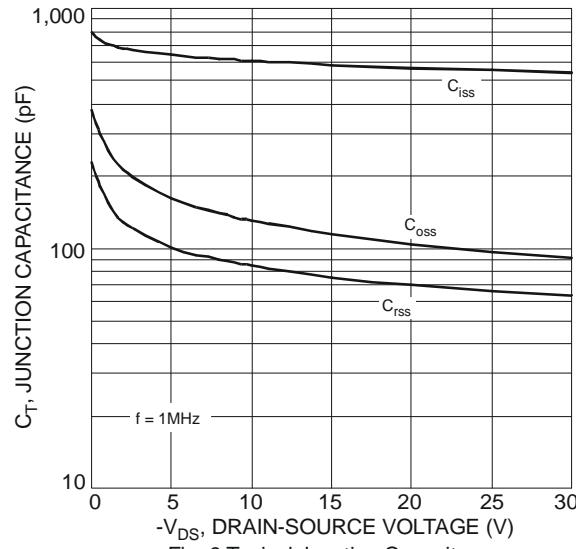


Fig. 9 Typical Junction Capacitance

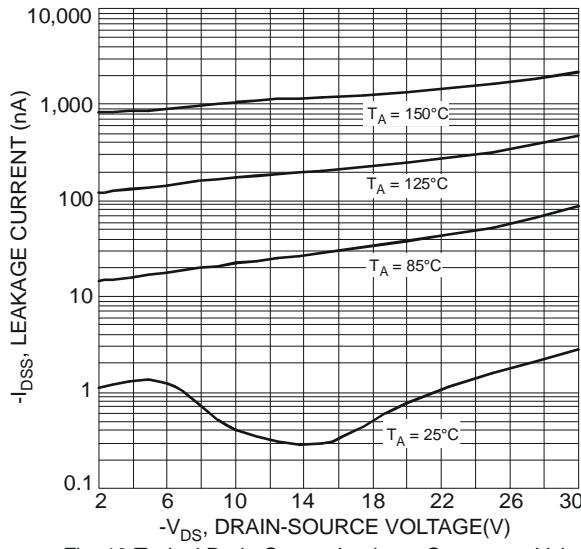


Fig. 10 Typical Drain-Source Leakage Current vs. Voltage

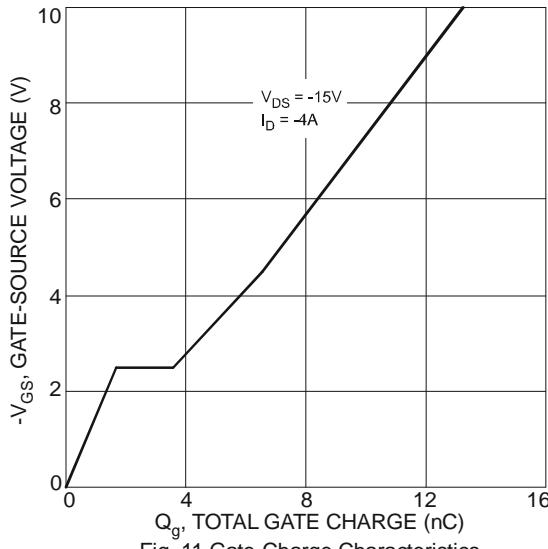


Fig. 11 Gate-Charge Characteristics

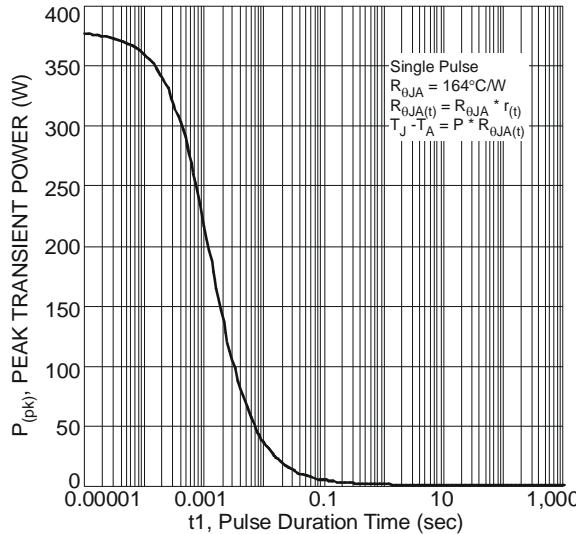
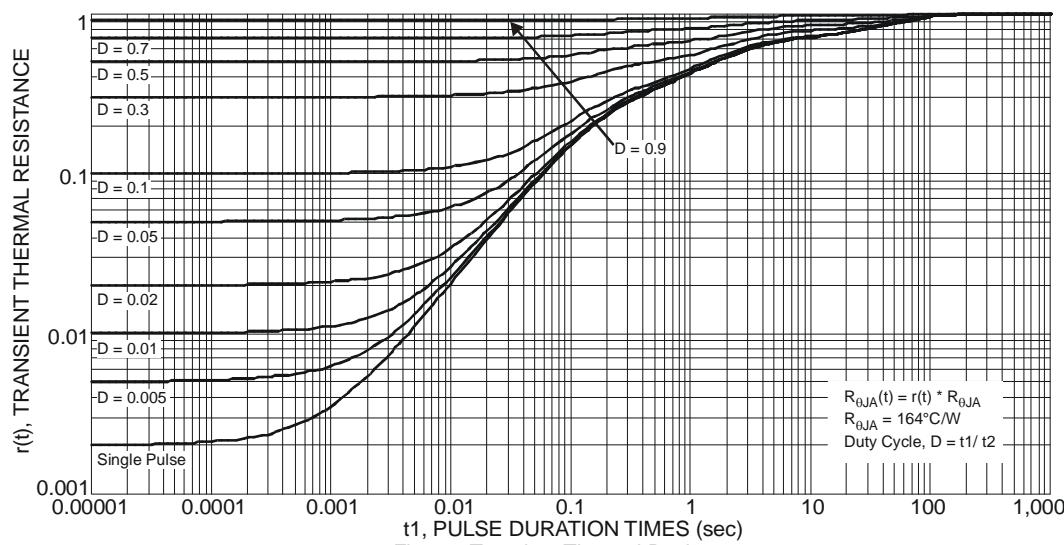
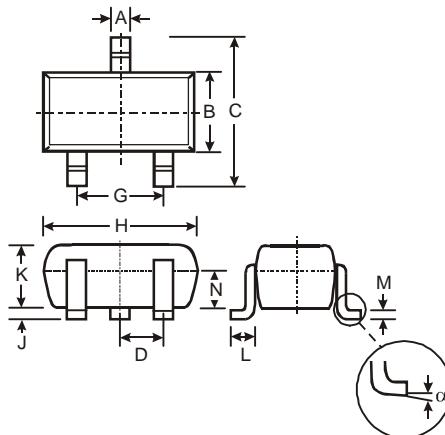


Fig. 12 Single Pulse Maximum Power Dissipation



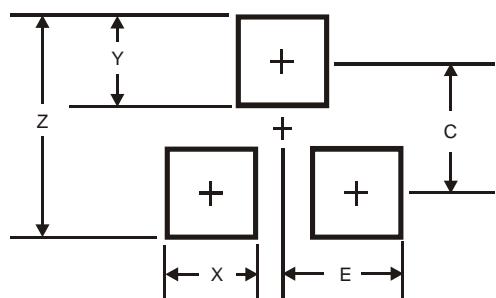
Package Outline Dimensions



SC59			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	-	-	0.95
G	-	-	1.90
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
N	0.70	0.80	0.75
α	0°	8°	-

All Dimensions in mm

Suggested Pad Layout



Dimensions	Value (in mm)
Z	3.4
X	0.8
Y	1.0
C	2.4
E	1.35

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