Features

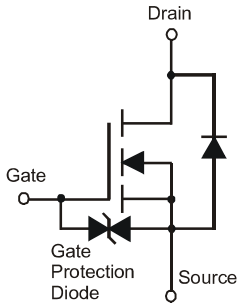
- Extremely Low On-Resistance: 170mΩ @ V_{GS} = 4.5V
- High Drain Current: 1.1A
- Ideal for Notebook Computer, Portable Phone, PCMCIA Cards, and Battery Powered Circuits
- **ESD Protected Gate**
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

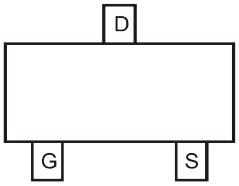
- Case: SC59
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.014 grams (approximate)

SC59

Top View



Equivalent Circuit



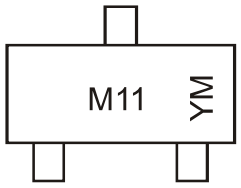
Top View

Ordering Information (Note 3)

Part Number	Case	Packaging
DMN100-7-F	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



M11 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: T = 2006)
M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	T	U	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°C unless otherwise specified

Characteristic		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage	Continuous	V_{GSS}	±20	V
Drain Current	Continuous Pulsed	I_D	1.1 4.0	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation	P_D	500	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	250	K/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)							
Drain-Source Breakdown Voltage		BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current	@ T_J = 25°C @ T_J = 125°C	I_{DSS}	—	—	1.0 10	μA	V_{DS} = 24V, V_{GS} = 0V
Gate-Body Leakage		I_{GSS}	—	—	± 100	nA	V_{GS} = ± 12V, V_{DS} = 0V
ON CHARACTERISTICS (Note 4)							
Gate Threshold Voltage		$V_{GS(th)}$	1.0	—	3.0	V	V_{DS} = 10V, I_D = 1.0mA
Static Drain-Source On-Resistance		$R_{DS\ (ON)}$	—	—	0.170 0.150	Ω	V_{GS} = 4.5V, I_D = 0.5A V_{GS} = 10V, I_D = 1.0A
Forward Transconductance		g_{FS}	1.3	2.4	—	S	V_{DS} = 10V, I_D = 0.5A
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{iss}	—	150	—	pF	V_{DS} = 10V, V_{GS} = 0V f = 1.0MHz
Output Capacitance		C_{oss}	—	90	—	pF	
Reverse Transfer Capacitance		C_{rss}	—	30	—	pF	
Total Gate Charge		Q_g	—	5.5	—	nC	V_{DS} = 24V, I_D = 1.0A, V_{GS} = 10V
Gate-to-Source Charge		Q_{gs}	—	0.8	—	nC	
Gate-to-Drain Charge		Q_{gd}	—	1.3	—	nC	
SWITCHING CHARACTERISTICS							
Turn-On Delay Time		$t_{D(ON)}$	—	10	—	ns	V_{DD} = 10V, I_D = 0.5A, V_{GS} = 5.0V, R_{GEN} = 50Ω
Turn-Off Delay Time		$t_{D(OFF)}$	—	25	—	ns	
Turn-On Rise Time		t_r	—	15	—	ns	
Turn-Off Fall Time		t_f	—	45	—	ns	
SOURCE-DRAIN RATINGS (BODY DIODE)							
Continuous Source Current		I_S	—	—	0.54	A	—
Pulse Source Current		I_{SM}	—	—	4.0	A	—
Forward Voltage		V_{SD}	—	—	1.2	V	I_F = 1.0A, V_{GS} = 0V
Reverse Recovery Time		t_{rr}	—	35	—	ns	I_F = 1.0A, di/dt = 50A/μs

Notes: 4. Pulse width ≤ 300μs, duty cycle ≤ 2%.

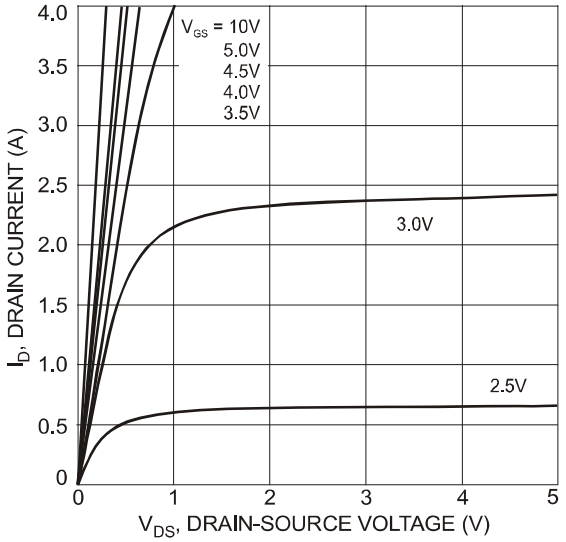


Fig. 1 On-Region Characteristics

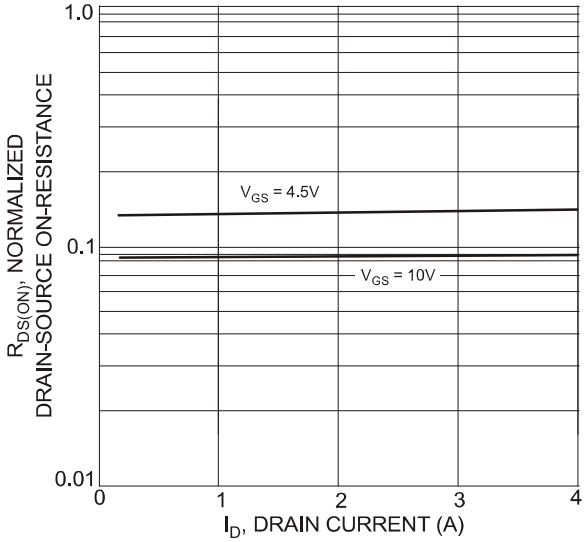


Fig. 2 On-Resistance vs. Drain Current

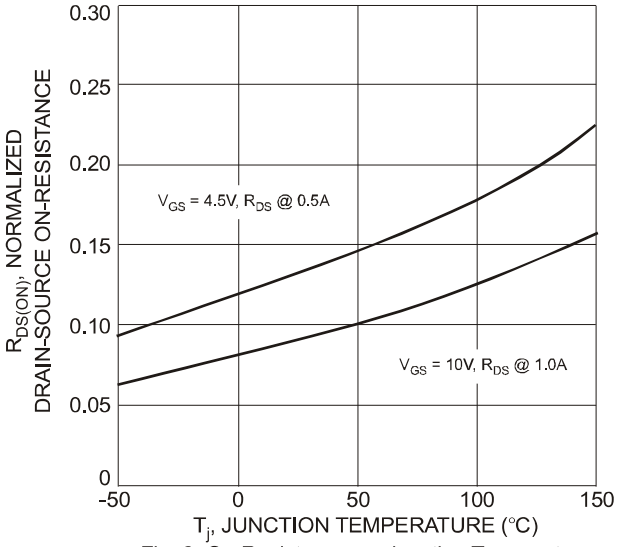


Fig. 3 On-Resistance vs. Junction Temperature

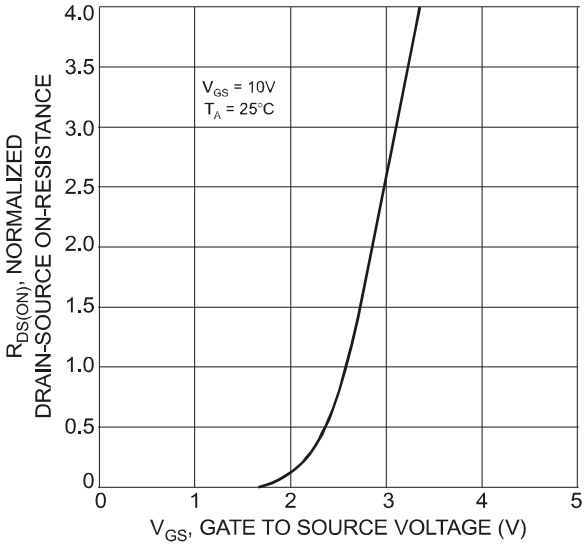
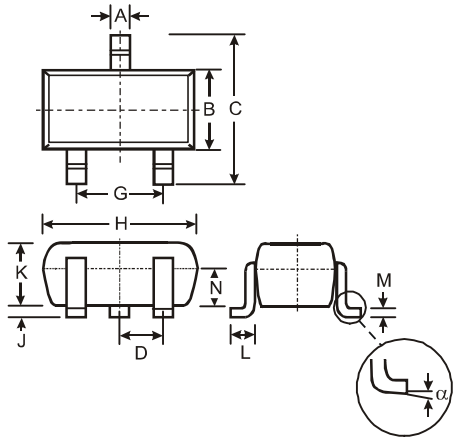


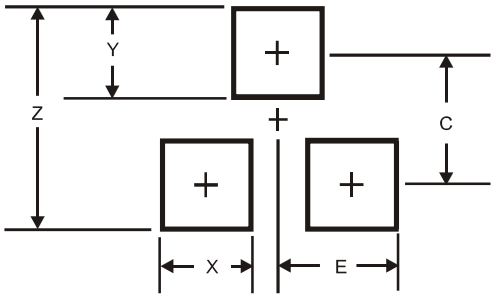
Fig. 4 On-Resistance vs. Gate-Source Voltage

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