

Features

- Extremely Low On-Resistance: $170\text{m}\Omega$ @ $V_{GS} = 4.5\text{V}$
- 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

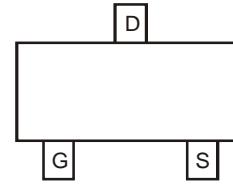
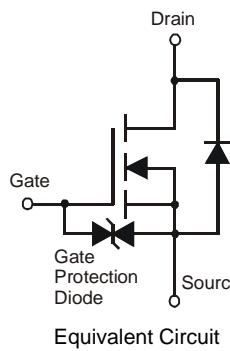
- Case: SC59
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram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



ESD PROTECTED



Top View



Top View

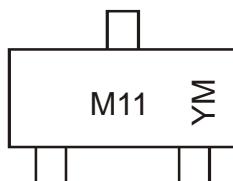
Ordering Information (Note 3)

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

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

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

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

Notes: 4. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

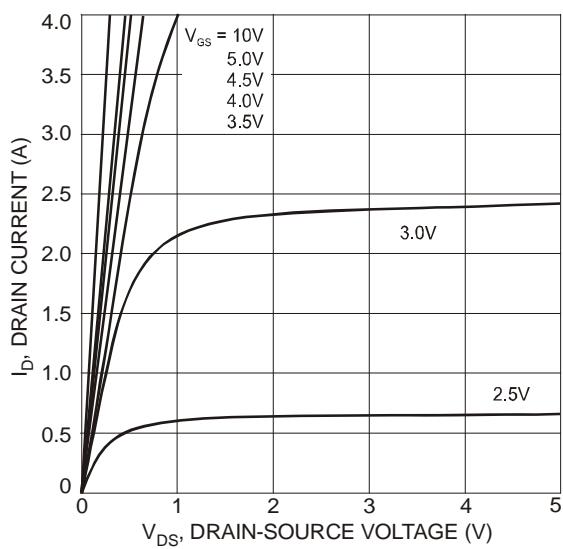


Fig. 1 On-Region Characteristics

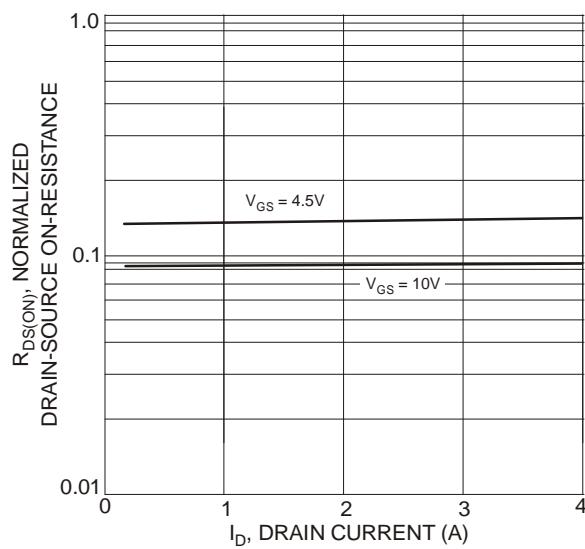


Fig. 2 On-Resistance vs. Drain Current

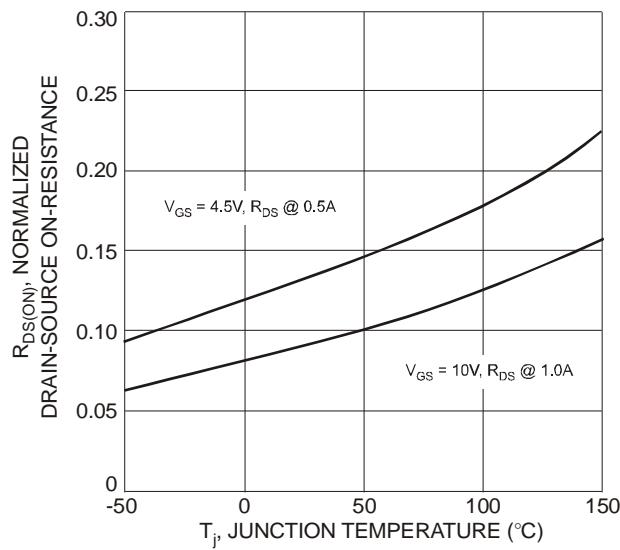


Fig. 3 On-Resistance vs. Junction Temperature

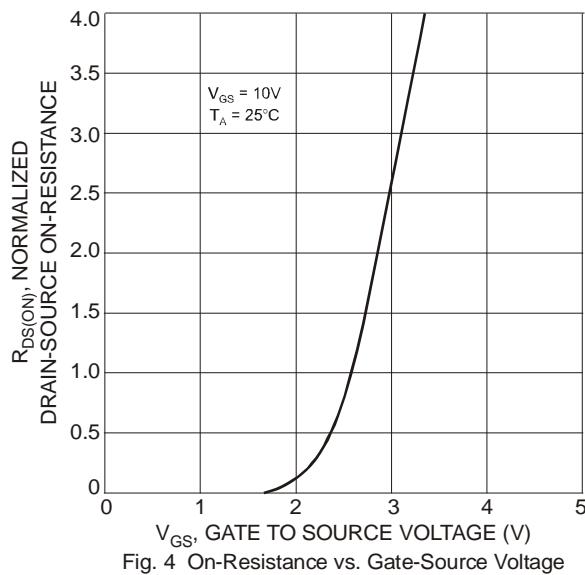
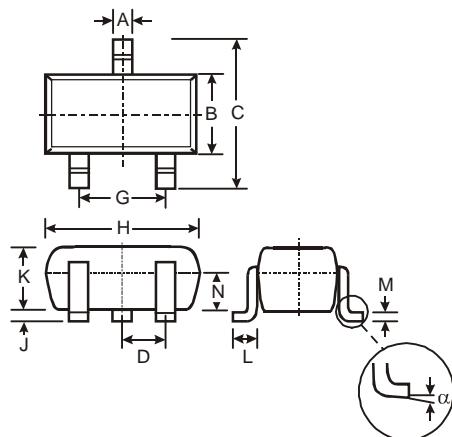


Fig. 4 On-Resistance vs. Gate-Source Voltage

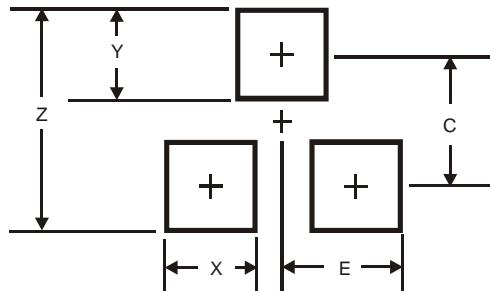
Package Outline Dimensions



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

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