

Features

- Low Gate Charge
- Low $R_{DS(ON)}$:
 - 30 m Ω @ $V_{GS} = 10V$
 - 40 m Ω @ $V_{GS} = 4.5V$
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**

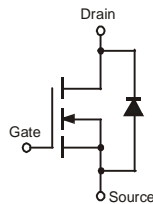
Mechanical Data

- Case: SC-59
- 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
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.014 grams (approximate)

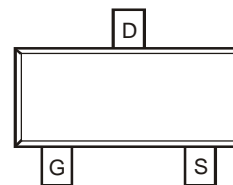
SC-59



Top View



Equivalent Circuit



Pin Configuration

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Note 1) Continuous	I_D	6	A
		5	A
Pulsed Drain Current (Note 2)	I_{DM}	24	A
Body-Diode Continuous Current (Note 1)	I_S	2.25	A

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

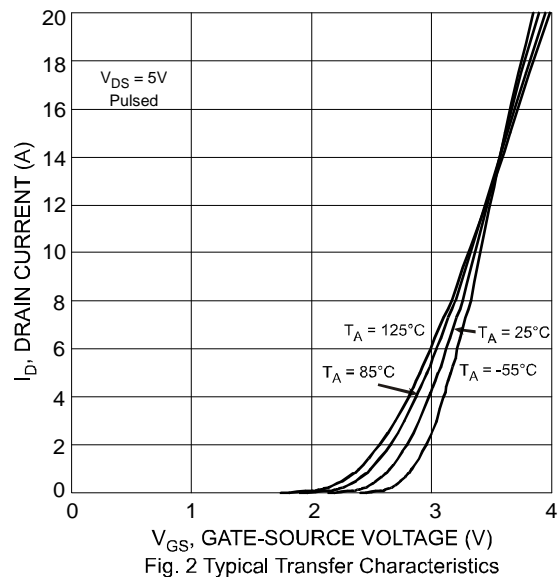
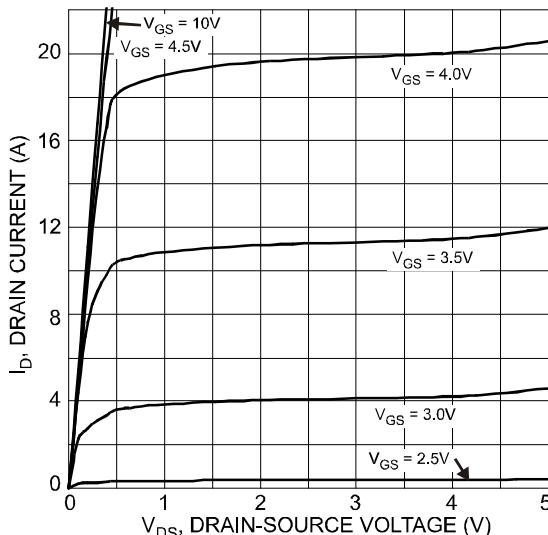
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	1.4	W
Thermal Resistance, Junction to Ambient (Note 1) $t \leq 10s$	$R_{\theta JA}$	90	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
1. Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper and test pulse width $t \leq 10s$.
 2. Repetitive Rating, pulse width limited by junction temperature.
 3. No purposefully added lead.
 4. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1 5	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$ $T_J = 25^\circ\text{C}$ $T_J = 55^\circ\text{C}$
Gate-Body Leakage Current	I_{GSS}	—	—	± 100	nA	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$
Gate Threshold Voltage	$V_{GS(th)}$	1.0	—	2.1	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance (Note 5)	$R_{DS(on)}$	—	25 36	30 40	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 6\text{A}$ $V_{GS} = 4.5\text{V}, I_D = 5\text{A}$
Forward Transconductance (Note 5)	g_{FS}	—	5	—	S	$V_{DS} = 10\text{V}, I_D = 8\text{A}$
Diode Forward Voltage (Note 5)	V_{SD}	—	0.7	1.1	V	$I_S = 2.25\text{A}, V_{GS} = 0\text{V}$
DYNAMIC PARAMETERS (Note 6)						
Total Gate Charge	Q_g	—	10.5	—	nC	$V_{GS} = 5\text{V}, V_{DS} = 15\text{V}, I_D = 6\text{A}$
Gate-Source Charge	Q_{gs}	—	3.8	—	nC	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, I_D = 6\text{A}$
Gate-Drain Charge	Q_{gd}	—	2.9	—	nC	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, I_D = 6\text{A}$
Turn-On Delay Time	$t_{D(on)}$	—	11	—	ns	$V_{DD} = 15\text{V}, V_{GS} = 10\text{V},$ $R_D = 1.8\Omega, R_G = 6\Omega$
Turn-On Rise Time	t_r	—	7	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	63	—	ns	
Turn-Off Fall Time	t_f	—	30	—	ns	
Input Capacitance	C_{iss}	—	755	—	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	136	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	108	—	pF	

Notes: 5. Test pulse width $t = 300\text{ms}$.
6. Guaranteed by design. Not subject to production testing.



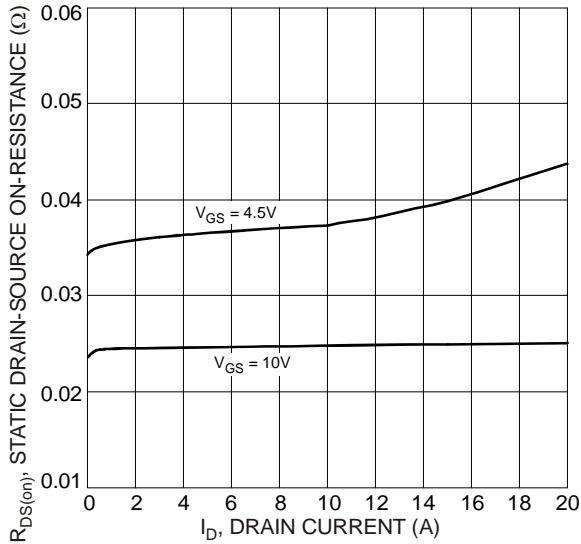


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

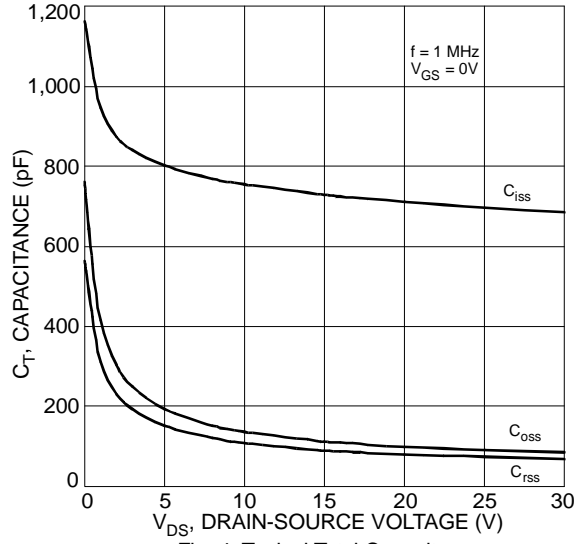


Fig. 4 Typical Total Capacitance

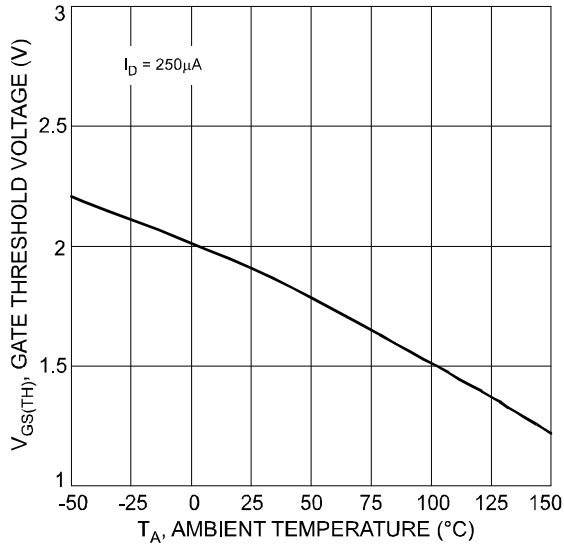


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

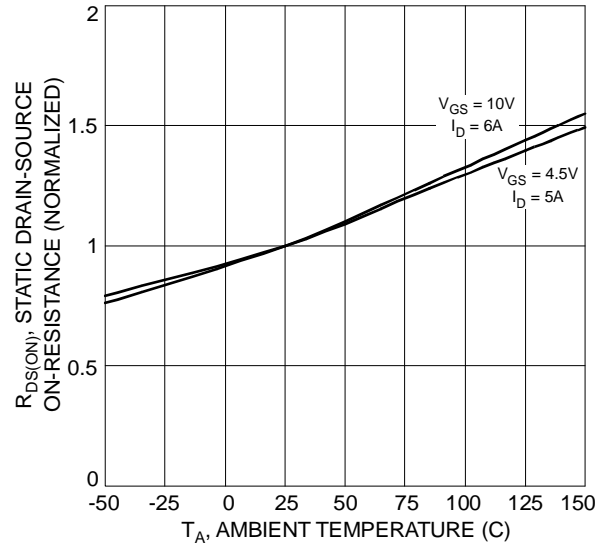


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

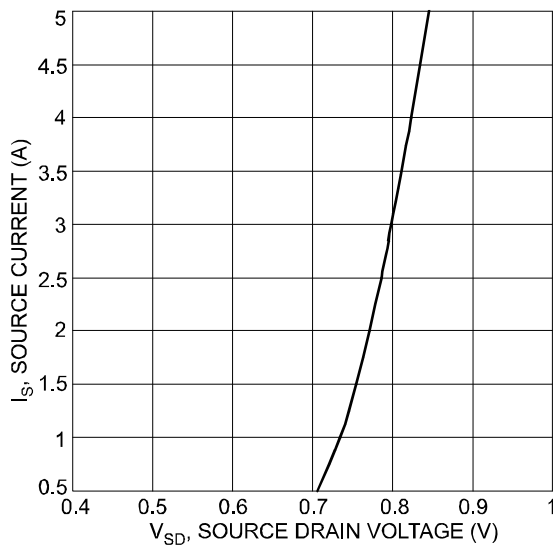


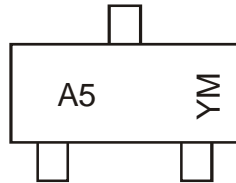
Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

Ordering Information (Note 7)

Part Number	Case	Packaging
DMN3033LSN-7	SC-59	3000/Tape & Reel

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



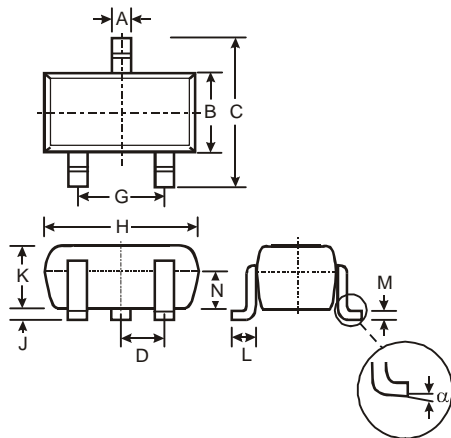
A5 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: U = 2007)
 M = Month (ex: 9 = September)

Date Code Key

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	U	V	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

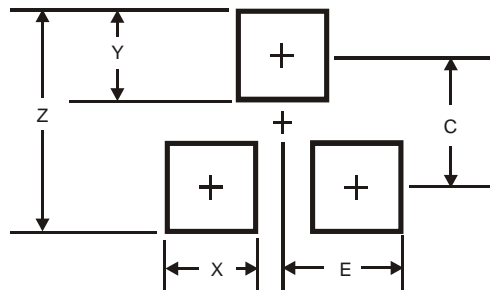
Package Outline Dimensions



SC-59			
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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