

## Features

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

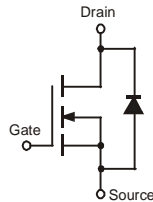
## Mechanical Data

- 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: 0.008 grams (approximate)

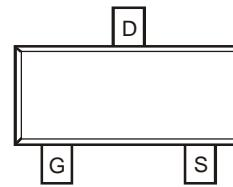
SC-59



Top View



Equivalent Circuit



Pin Configuration

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current (Note 1) Continuous	$I_D$	6	A
		5	
		$T_A = 25^\circ\text{C}$	
		$T_A = 70^\circ\text{C}$	
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	$^\circ\text{C/W}$
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](http://www.diodes.com/products/lead_free/index.php).

# Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	—	—	V	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Body Leakage Current	I <sub>GSS</sub>	—	—	±100	nA	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	—	2.1	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance (Note 5)	R <sub>DS(on)</sub>	—	25 36	30 40	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 6A V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5A
Forward Transconductance (Note 5)	g <sub>FS</sub>	—	5	—	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 8A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	—	0.7	1.1	V	I <sub>S</sub> = 2.25A, V <sub>GS</sub> = 0V
<b>DYNAMIC PARAMETERS (Note 6)</b>						
Total Gate Charge	Q <sub>g</sub>	—	10.5	—	nC	V <sub>GS</sub> = 5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 6A
Gate-Source Charge	Q <sub>gs</sub>	—	3.8	—	nC	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 6A
Gate-Drain Charge	Q <sub>gd</sub>	—	2.9	—	nC	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 6A
Turn-On Delay Time	t <sub>D(on)</sub>	—	11	—	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>D</sub> = 1.8Ω, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	7	—	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	—	63	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	30	—	ns	
Input Capacitance	C <sub>iss</sub>	—	755	—	pF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	136	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	108	—	pF	

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

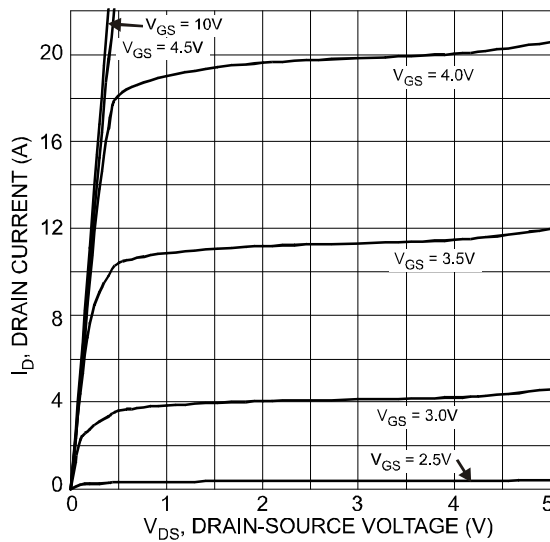


Fig. 1 Typical Output Characteristics

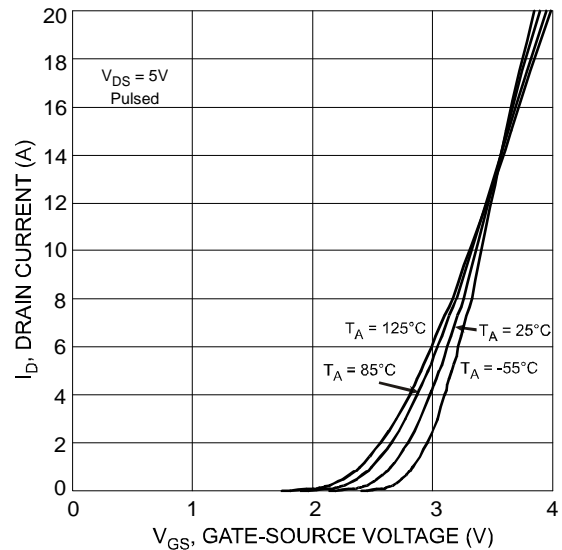


Fig. 2 Typical Transfer Characteristics

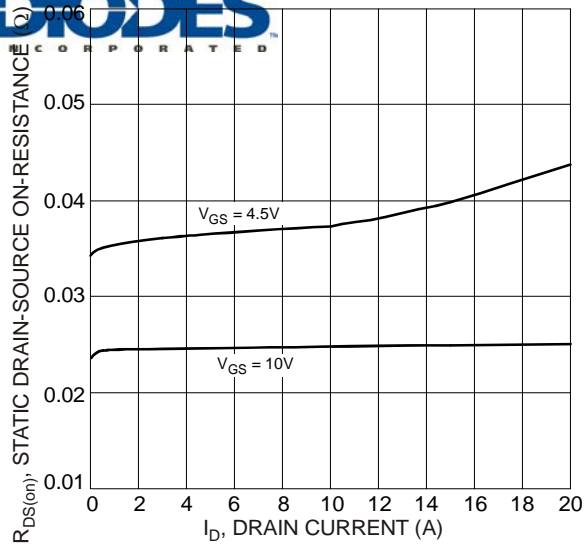


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

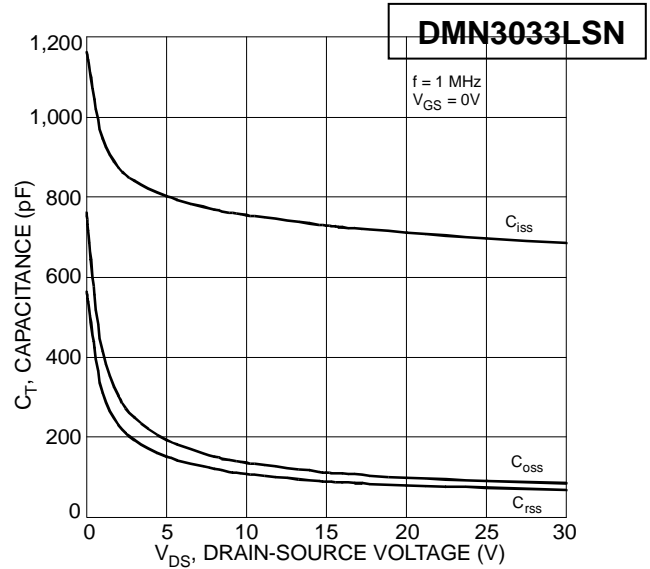


Fig. 4 Typical Total Capacitance

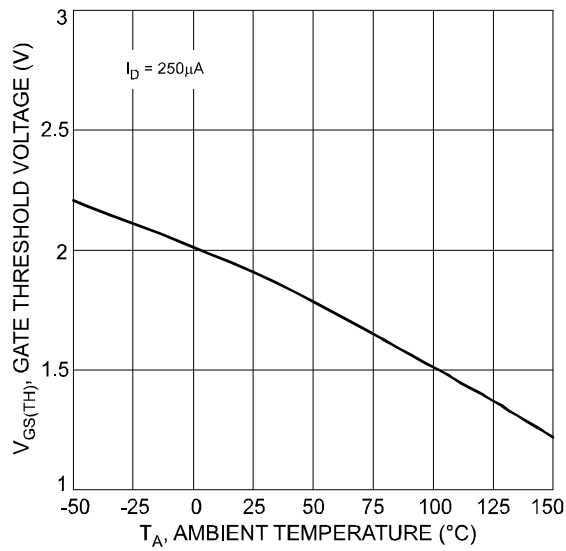


Fig. 5 Gate Threshold Voltage vs. Ambient Temperature

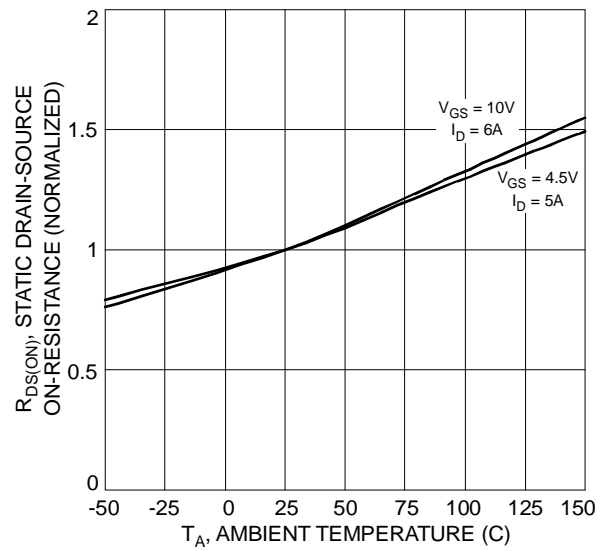


Fig. 6 Normalized Static Drain-Source On-Resistance vs. Ambient Temperature

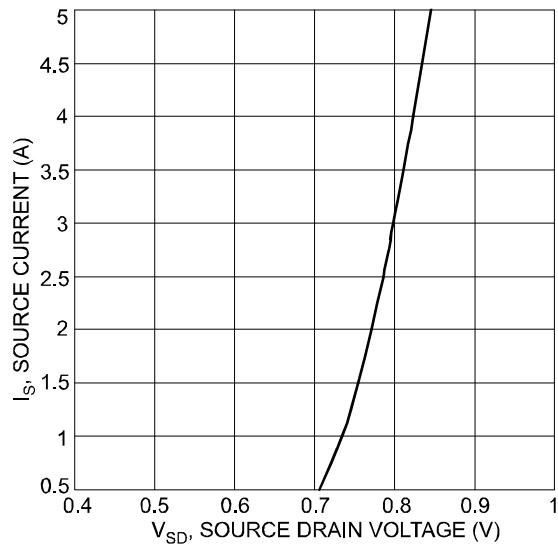
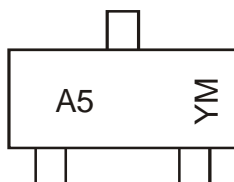


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

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



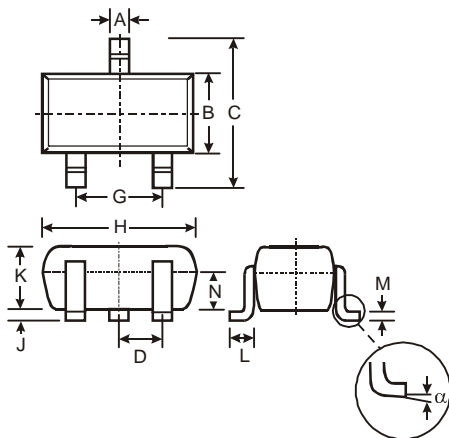
A5 = Product Type Marking Code  
YM = Date Code Marking  
Y = Year (ex: U = 2007)  
M = Month (ex: 9 = September)

Date Code Key

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	U	V	W	X	Y	Z	A	B	C

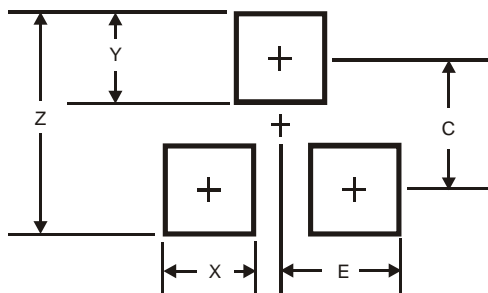
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

## 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
$\alpha$	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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