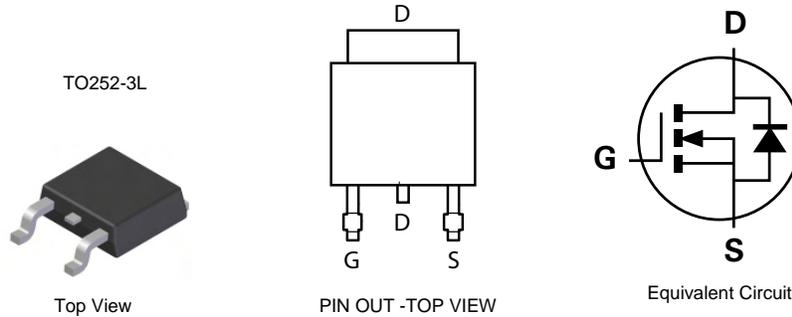


**Features**

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

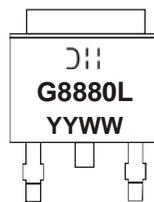
**Mechanical Data**

- Case: TO252-3L
- Case Material: Molded Plastic, "Green" Molding Compound.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 0.33 grams (approximate)


**Ordering Information** (Note 3)

Part Number	Case	Packaging
DMG8880LK3-13	TO252-3L	2500 / Tape & Reel

- Notes:
1. No purposefully added lead.
  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**


G8880L = Product Type Marking Code  
 Ⓜ||| = Manufacturer's Marking  
 YYWW = Date Code Marking  
 YY = Year (ex: 09 = 2009)  
 WW = Week (01 ~ 53)

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V <sub>DSS</sub>	30	V
Gate-Source Voltage			V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 4) V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = 25°C T <sub>A</sub> = 85°C	I <sub>D</sub>	11 8	A
Continuous Drain Current (Note 5) V <sub>GS</sub> = 10V	Steady State	T <sub>A</sub> = 25°C T <sub>A</sub> = 85°C	I <sub>D</sub>	16.5 12	A
Pulsed Drain Current (Note 6)			I <sub>DM</sub>	48	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P <sub>D</sub>	1.68	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C (Note 4)	R <sub>θJA</sub>	74.3	°C/W
Power Dissipation (Note 5)	P <sub>D</sub>	4.1	W
Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C (Note 5)	R <sub>θJA</sub>	30.8	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current T <sub>J</sub> = 25°C	I <sub>DSS</sub>	-	-	1.0	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.2	1.5	2.3	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	5 8	7.5 12	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 11.6A V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10.7A
Forward Transfer Admittance	Y <sub>fs</sub>	-	22	-	S	V <sub>DS</sub> = 15V, I <sub>D</sub> = 15A
Diode Forward Voltage	V <sub>SD</sub>	-	0.7	1.0	V	V <sub>GS</sub> = 0V, I <sub>SD</sub> = 2.1A
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	C <sub>iss</sub>	-	1289	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	187	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	162	-	pF	
Gate Resistance	R <sub>g</sub>	-	0.97	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge at 10V	Q <sub>g</sub>	-	27.6	-	nC	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 11.6A, I <sub>g</sub> = 1.0mA
Total Gate Charge at 5V	Q <sub>g</sub>	-	14.4	-	nC	V <sub>GS</sub> = 5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 11.6A
Gate-Source Charge	Q <sub>gs</sub>	-	3.6	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	4.9	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	7.04	-	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>G</sub> = 11Ω, I <sub>D</sub> = 11.6A, R <sub>L</sub> = 1.3Ω
Turn-On Rise Time	t <sub>r</sub>	-	17.52	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	36.13	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	19.67	-	ns	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	-	17.6	-	ns	I <sub>F</sub> = 20A, dI/dt = 500A/μs
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	-	65.9	-	nC	I <sub>F</sub> = 20A, dI/dt = 500A/μs

- Notes:
- Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
  - Device mounted on 2" x 2" FR-4 PCB with high coverage 2oz. copper, single sided.
  - Repetitive rating, pulse width limited by junction temperature and current limited by package.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to production testing.

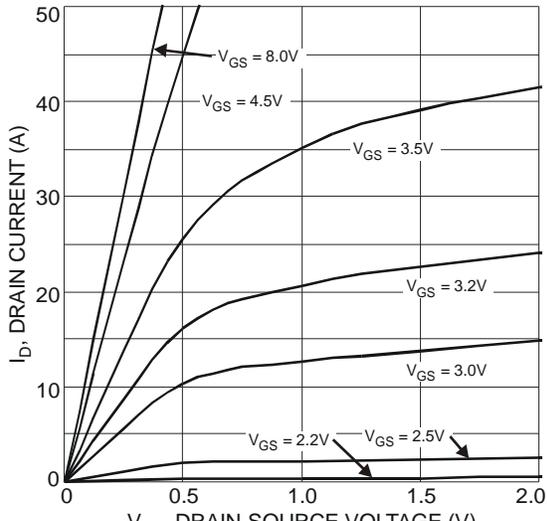


Fig. 1 Typical Output Characteristics

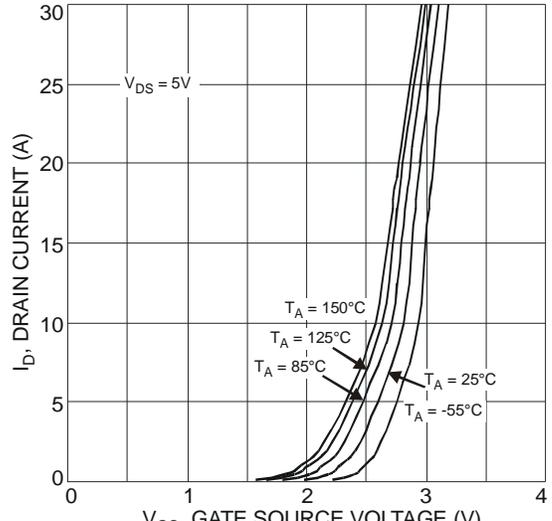


Fig. 2 Typical Transfer Characteristics

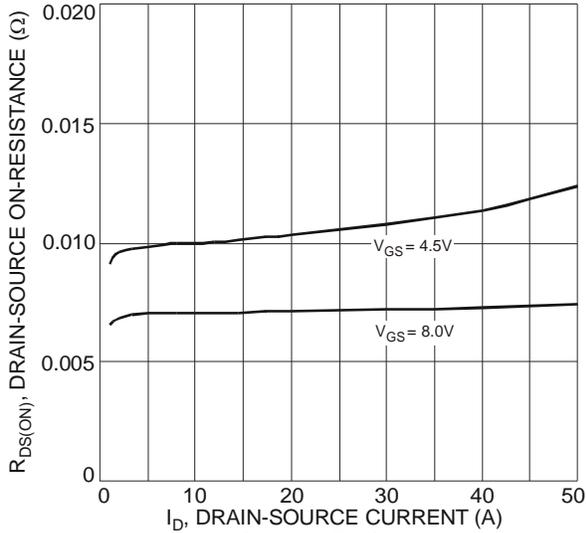


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

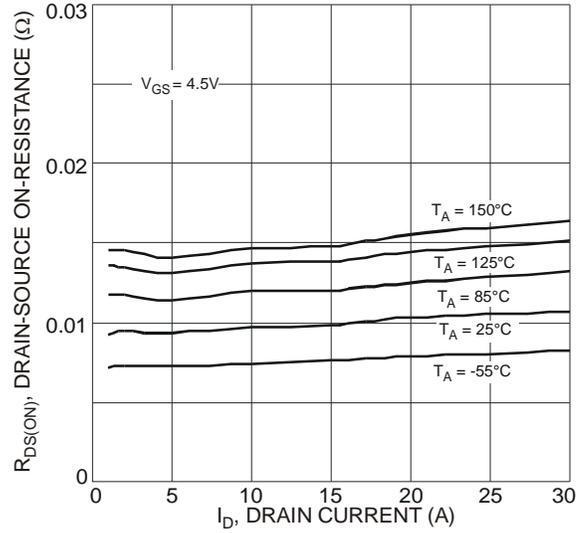


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

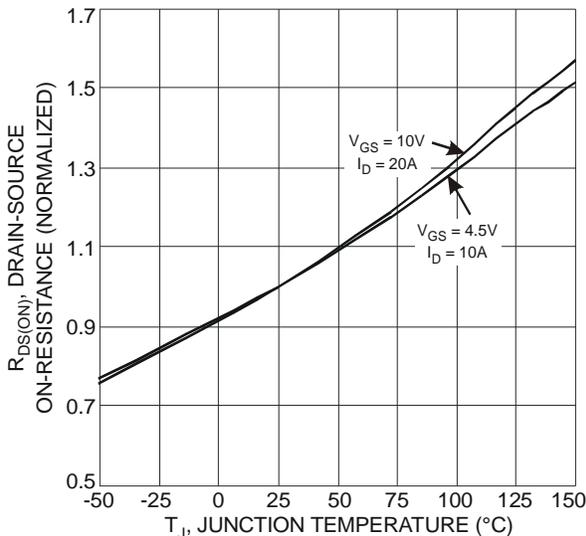


Fig. 5 On-Resistance Variation with Temperature

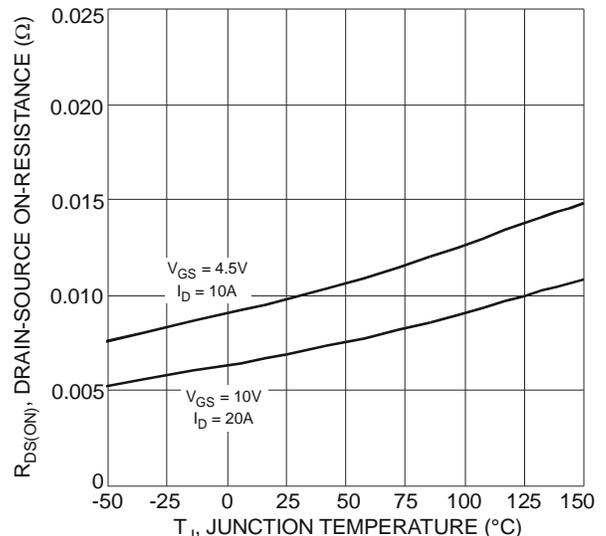


Fig. 6 On-Resistance Variation with Temperature

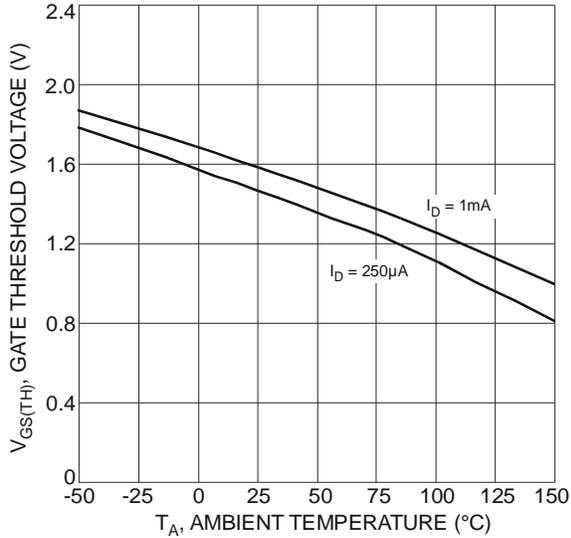


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

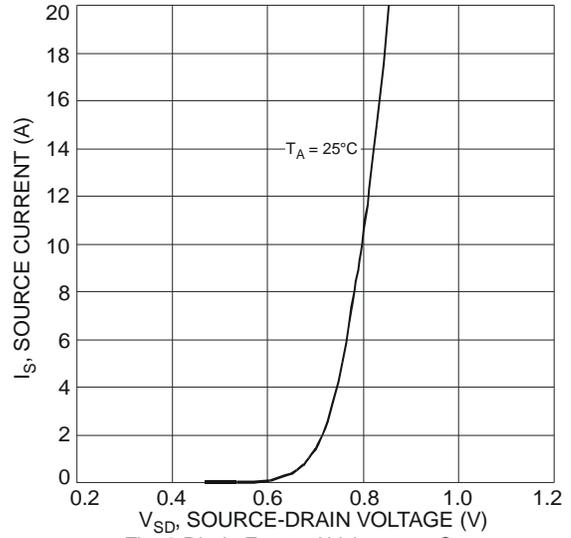


Fig. 8 Diode Forward Voltage vs. Current

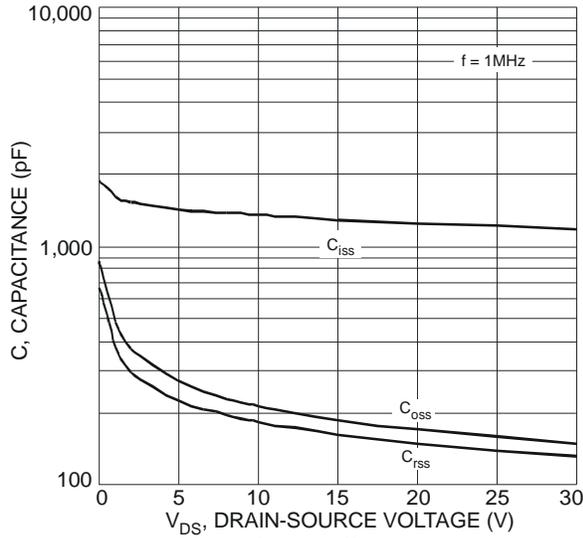


Fig. 9 Typical Capacitance

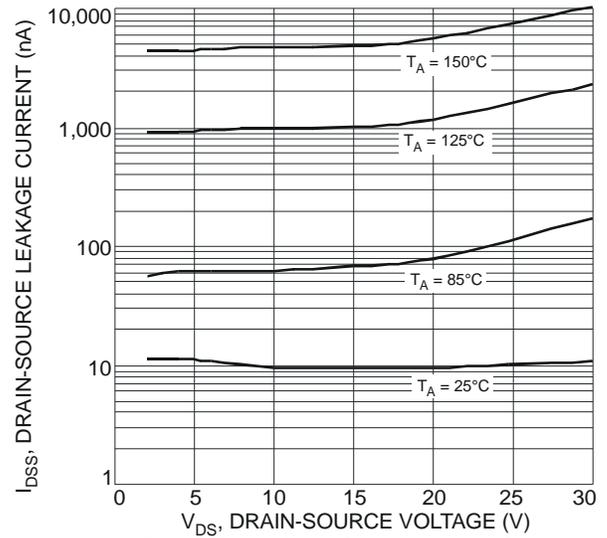


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

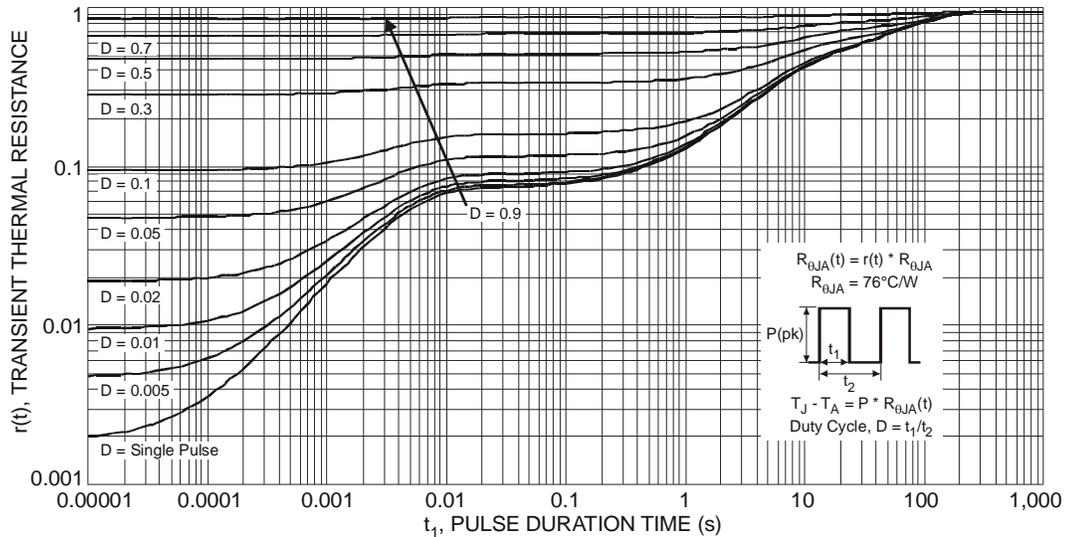
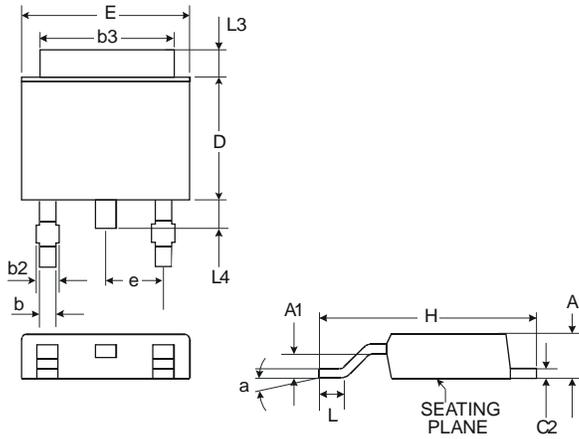


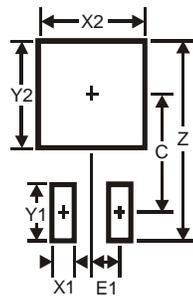
Fig. 11 Transient Thermal Response

**Package Outline Dimensions**



TO252-3L			
Dim	Min	Typ	Max
A	2.19	2.29	2.39
A1	0.97	1.07	1.17
b	0.64	0.76	0.88
b2	0.76	0.95	1.14
b3	5.21	5.33	5.50
C2	0.45	0.51	0.58
D	6.00	6.10	6.20
E	6.45	6.58	6.70
e	2.286 Typ.		
H	9.40	9.91	10.41
L	1.40	1.59	1.78
L3	0.88	1.08	1.27
L4	0.64	0.83	1.02
a	0°	-	10°
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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