

**Product Summary**

BV <sub>DSS</sub>	R <sub>DS(ON)</sub> Max	I <sub>D</sub> Max T <sub>A</sub> = +25°C
30V	11mΩ @ V <sub>GS</sub> = 10V	10.5A
	15mΩ @ V <sub>GS</sub> = 4.5V	9.2A

**Description and Applications**

This MOSFET has been designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- Backlighting
- Power-management functions
- DC-DC converters

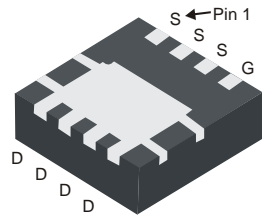
**Features and Benefits**

- Low R<sub>DS(ON)</sub> – Ensures On-State Losses Are Minimized
- Small Form Factor Thermally Efficient Package Enables Higher Density End Products
- Occupies Just 33% of The Board Area Occupied by SO-8 Enabling Smaller End Product
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **An automotive-compliant part is available under separate datasheet (DMG7430LFGQ)**

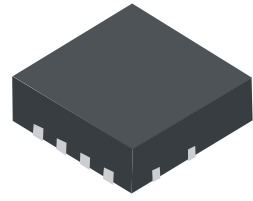
**Mechanical Data**

- Package: PowerDI<sup>®</sup>3333-8
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See Diagram
- Terminals: Finish — NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E4)
- Weight: 0.034 grams (Approximate)

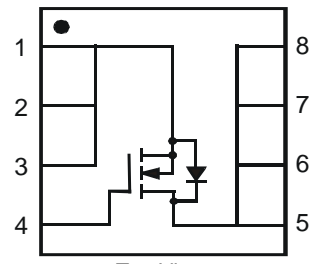
**PowerDI3333-8**



Bottom View



Top View



Top View  
Internal Schematic

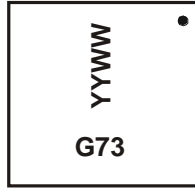
**Ordering Information** (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMG7430LFG-7	PowerDI3333-8	2000	Tape & Reel
DMG7430LFG-13	PowerDI3333-8	3000	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

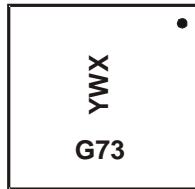
## Marking Information

Site1



G73 = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 23 = 2023)  
 WW = Week Code (01 to 53)

Site 2



G73 = Product Type Marking Code  
 YWX = Date Code Marking  
 Y = Year (ex: 3 = 2023)  
 W = Week (ex: A = Week 27; Z Represents Week 52 And 53)  
 X = Internal Code (ex: U = Monday)

Date Code Key

Year	2011	...	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	1	...	3	4	5	6	7	8	9	0	1	2

Week	1-26	27-52	53
Code	A-Z	a-z	z

Internal Code	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Code	T	U	V	W	X	Y	Z

## 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 6) V <sub>GS</sub> = 10V	Steady State T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	I <sub>D</sub>	10.5 8.5	A
	t < 10s T <sub>A</sub> = +25°C T <sub>A</sub> = +70°C	I <sub>D</sub>	14 11	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I <sub>DM</sub>	90	A
Maximum Continuous Body Diode Forward Current (Note 6)		I <sub>S</sub>	3.0	A
Avalanche Current (Note 7) L = 0.1mH		I <sub>AR</sub>	22	A
Repetitive Avalanche Energy (Note 7) L = 0.1mH		E <sub>AR</sub>	24	mJ

## Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	Steady State	P <sub>D</sub>	0.9	W
	t < 10s		1.5	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R <sub>θJA</sub>	142	°C/W
	t < 10s		78	
Total Power Dissipation (Note 6)	Steady State	P <sub>D</sub>	2.2	W
	t < 10s		3.5	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R <sub>θJA</sub>	59	°C/W
	t < 10s		33	
Thermal Resistance, Junction to Case (Note 6)		R <sub>θJC</sub>	11	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.  
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.  
 7. I<sub>AR</sub> and E<sub>AR</sub> ratings are based on low frequency and duty cycles to keep T<sub>J</sub> = +25°C.

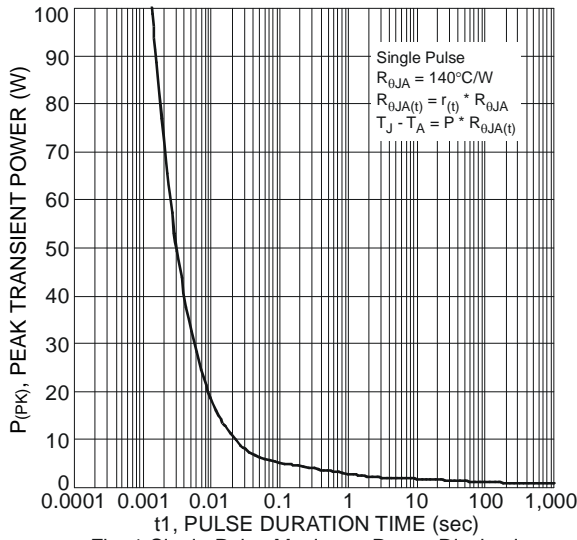


Fig. 1 Single Pulse Maximum Power Dissipation

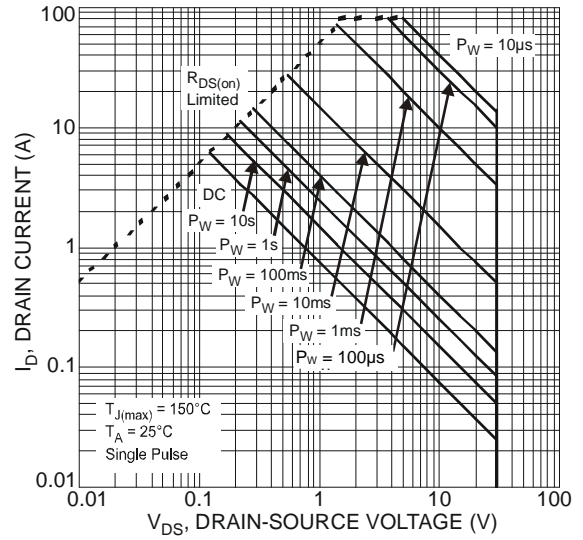


Fig. 2 SOA, Safe Operation Area

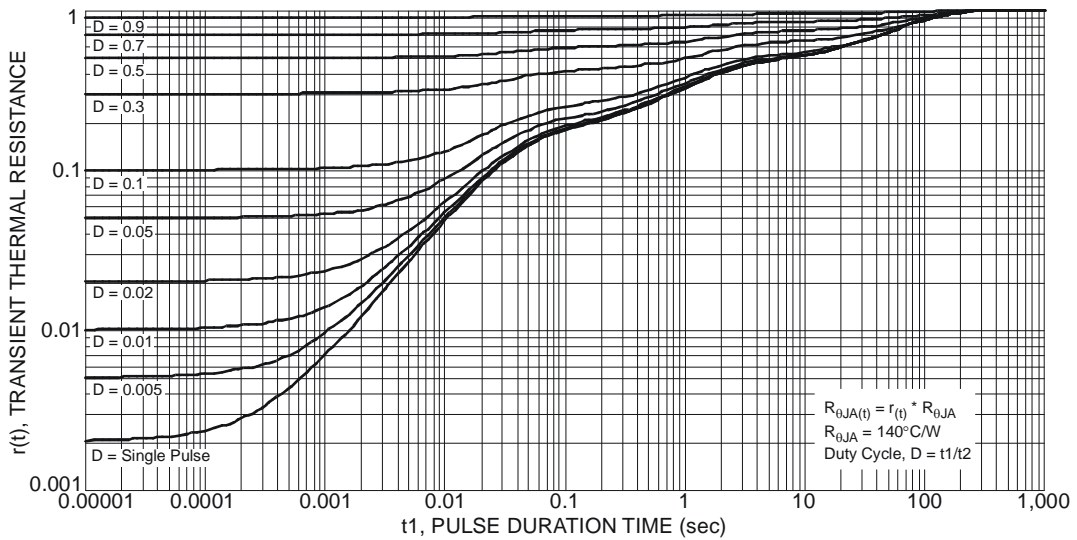


Fig. 3 Transient Thermal Resistance

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</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	I <sub>DSS</sub>	—	—	1	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 8)</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1.4	—	2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	7	11	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A
		—	11	15		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 20A
Forward Transfer Admittance	Y <sub>fs</sub>	—	74	—	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 20A
Diode Forward Voltage	V <sub>SD</sub>	—	0.75	1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>iss</sub>	—	1281	—	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	145	—	pF	
Reverse Transfer Capacitance	C <sub>riss</sub>	—	125	—	pF	
Gate Resistance	R <sub>g</sub>	—	1.2	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	—	12.5	—	nC	V <sub>DS</sub> = 15V, I <sub>D</sub> = 12A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	—	26.7	—	nC	
Gate-Source Charge	Q <sub>gs</sub>	—	3.6	—	nC	
Gate-Drain Charge	Q <sub>gd</sub>	—	4.4	—	nC	
Turn-On Delay Time	t <sub>D(ON)</sub>	—	5.2	—	ns	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>L</sub> = 1.25Ω, R <sub>G</sub> = 3Ω
Turn-On Rise Time	t <sub>R</sub>	—	21.2	—	ns	
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	22.3	—	ns	
Turn-Off Fall Time	t <sub>F</sub>	—	5.1	—	ns	
Reverse Recovery Time	t <sub>RR</sub>	—	8.5	—	ns	
Reverse Recovery Charge	Q <sub>RR</sub>	—	7.0	—	nC	I <sub>F</sub> = 12A, di/dt = 500A/μs

Notes: 8. Short duration pulse test used to minimize self-heating effect.  
9. Guaranteed by design. Not subject to product testing.

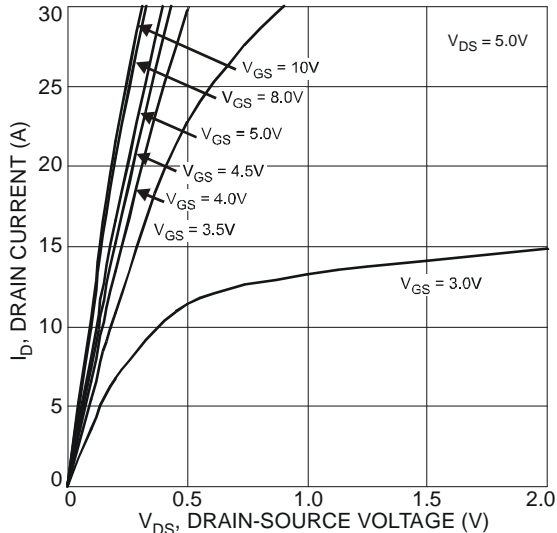


Fig. 4 Typical Output Characteristic

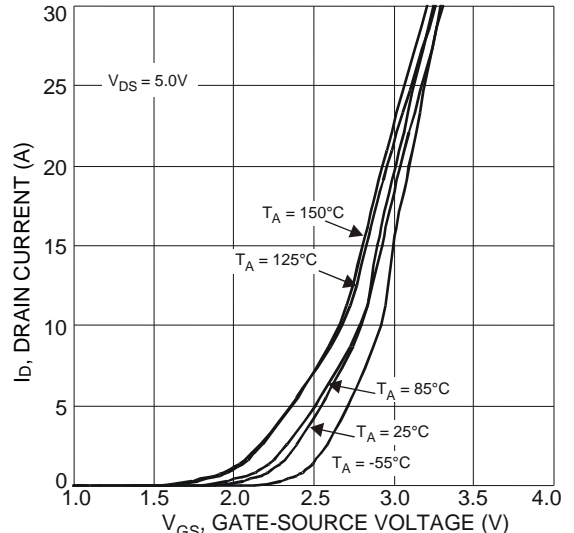


Fig. 5 Typical Transfer Characteristics

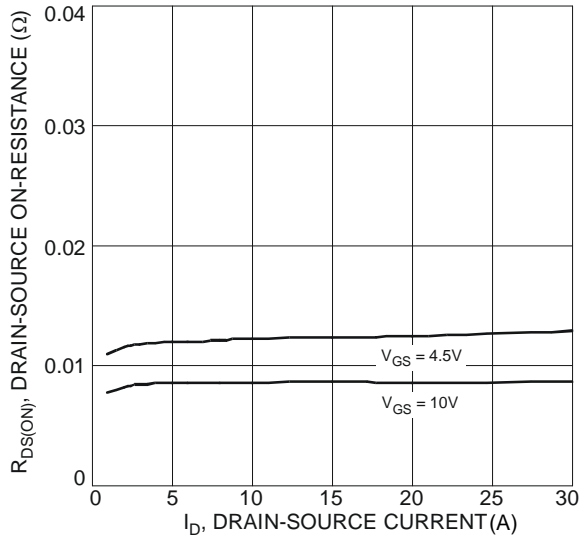


Fig. 6 Typical On-Resistance vs. Drain Current and Gate Voltage

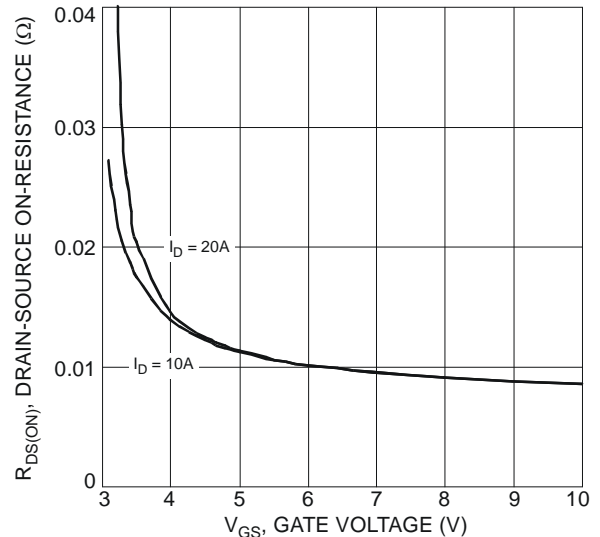


Fig. 7 Typical On-Resistance vs. Gate Voltage

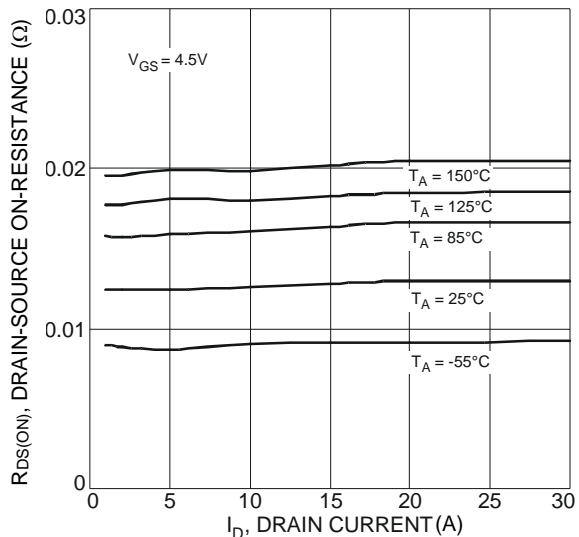


Fig. 8 Typical On-Resistance vs. Drain Current and Temperature

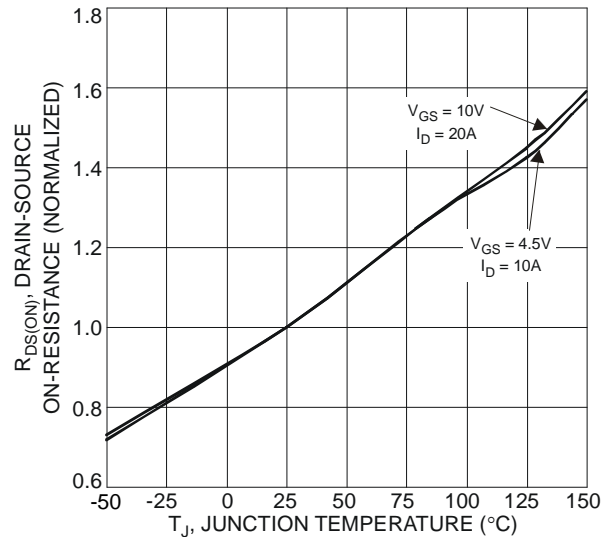


Fig. 9 On-Resistance Variation with Temperature

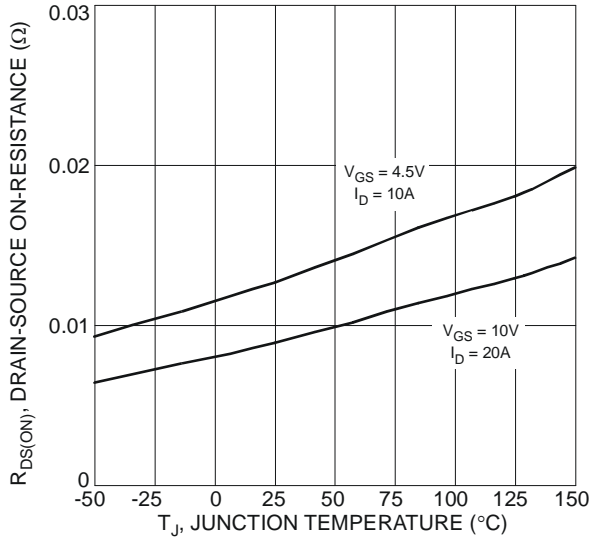


Fig. 10 On-Resistance Variation with Temperature

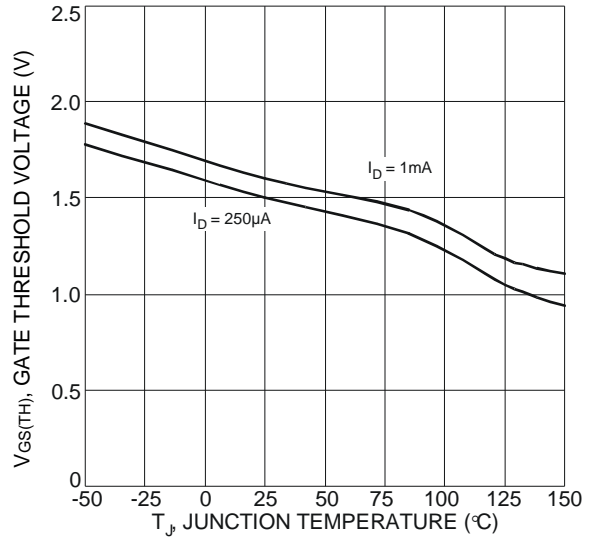


Fig. 11 Gate Threshold Variation vs. Junction Temperature

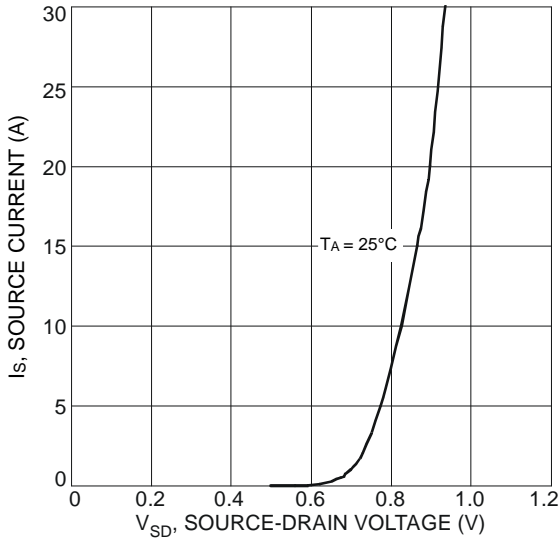


Fig. 12 Diode Forward Voltage vs. Current

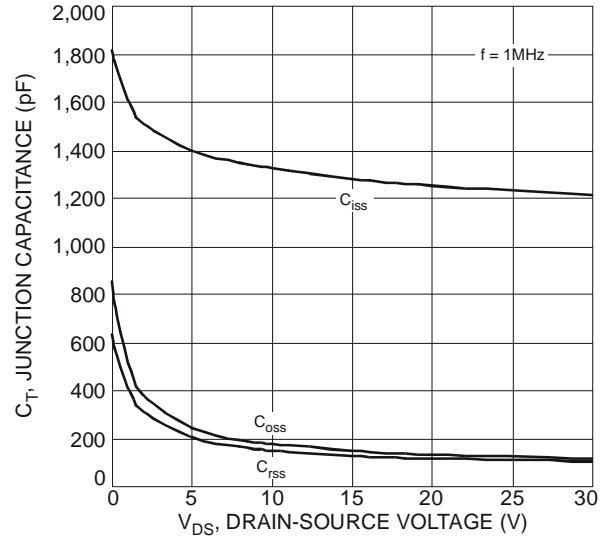


Fig. 13 Typical Junction Capacitance

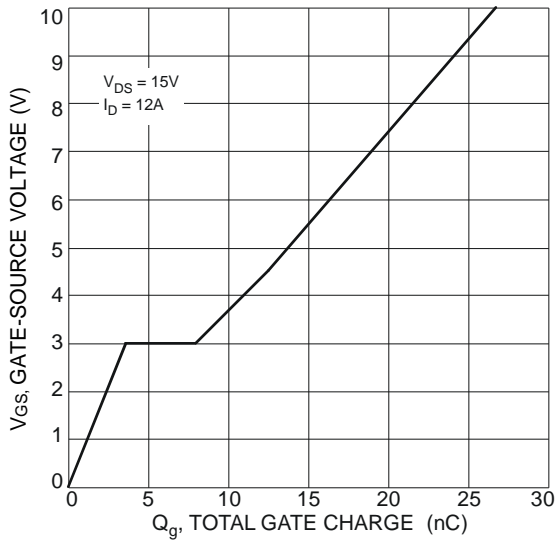
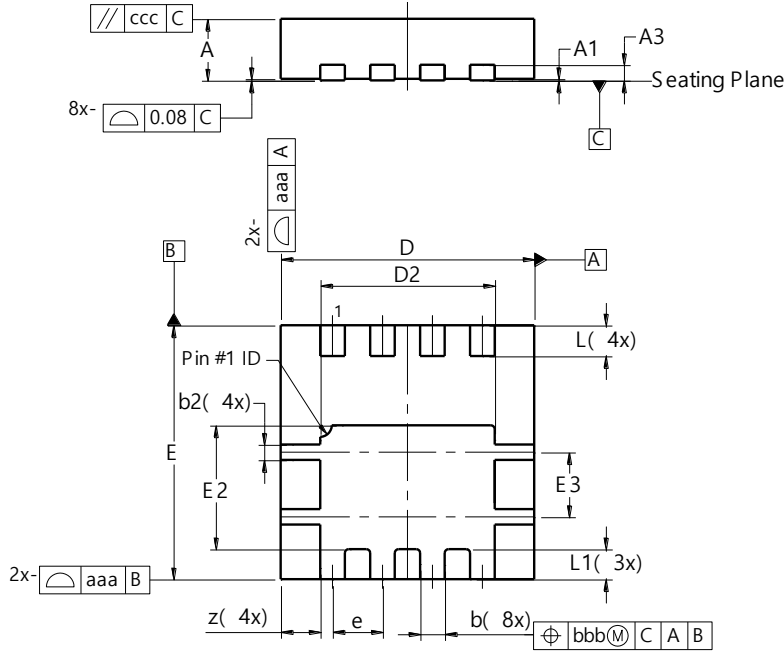


Fig. 14 Gate Charge

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**PowerDI3333-8**

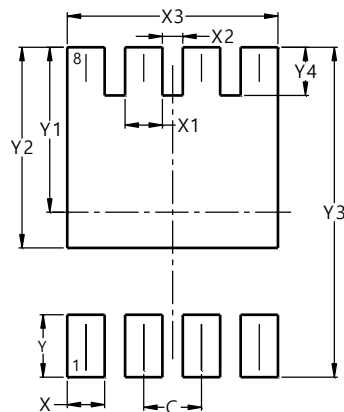


PowerDI3333-8			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	0.02
A3	-	-	0.203
b	0.27	0.37	0.32
b2	-	-	0.20
D	3.25	3.35	3.30
D2	2.22	2.32	2.27
E	3.25	3.35	3.30
E2	1.56	1.66	1.61
E3	0.79	0.89	0.84
e	-	-	0.65
L	0.35	0.45	0.40
L1	-	-	0.39
z	-	-	0.515
aaa	0.25		
bbb	0.10		
ccc	0.10		
All Dimensions in mm			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**PowerDI3333-8**



Dimensions	Value (in mm)
C	0.650
X	0.420
X1	0.420
X2	0.230
X3	2.370
Y	0.700
Y1	1.850
Y2	2.250
Y3	3.700
Y4	0.540

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