Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	65	V
Gate-Source Voltage		V_{GSS}	±16	V
Continuous Drain Current (Note 6) V_{GS} = 10V	T_C = +25°C T_C = +70°C	I_D	25.3 20.3	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I_{DM}	100	A
Maximum Continuous Body Diode Forward Current (Note 6)		I_S	25	A
Pulsed Body Diode Forward Current (10µs Pulse, Duty Cycle = 1%)		I_{SM}	100	A
Avalanche Current, L = 0.1mH		I_{AS}	19	A
Avalanche Energy, L = 0.1mH		E_{AS}	18	mJ

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	0.98	W
Thermal Resistance, Junction to Ambient (Note 5)		$R_{\theta JA}$	127.9	°C/W
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	2.34	W
Thermal Resistance, Junction to Ambient (Note 6)		$R_{\theta JA}$	53.5	°C/W
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	5.9	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	65	—	—	V	V_{GS} = 0V, I_D = 10mA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	µA	V_{DS} = 48V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	µA	V_{GS} = ±12.8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	1	—	2.3	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	17.5	22	mΩ	V_{GS} = 10V, I_D = 6A
		—	22.3	29		V_{GS} = 4.5V, I_D = 4A
Diode Forward Voltage	V_{SD}	—	0.7	1	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	891	—	pF	V_{DS} = 30V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	—	223	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	29	—	pF	
Gate Resistance	R_g	—	1.57	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	7.5	—	nC	V_{DS} = 30V, I_D = 6A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	15.3	—	nC	
Gate-Source Charge	Q_{gs}	—	1.8	—	nC	
Gate-Drain Charge	Q_{gd}	—	3.1	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.0	—	ns	V_{GS} = 10V, V_{DS} = 30V, R_g = 3.3Ω, I_D = 6A
Turn-On Rise Time	t_R	—	5.9	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	11.7	—	ns	
Turn-Off Fall Time	t_F	—	3.3	—	ns	
Body Diode Reverse Recovery Time	t_{RR}	—	21.1	—	ns	I_F = 6A, di/dt = 100A/µs
Body Diode Reverse Recovery Charge	Q_{RR}	—	11.9	—	nC	

Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PCB, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

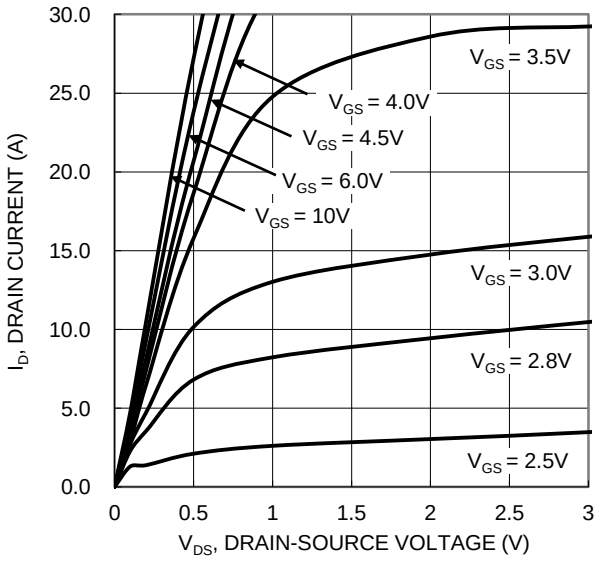

Figure 1. Typical Output Characteristic

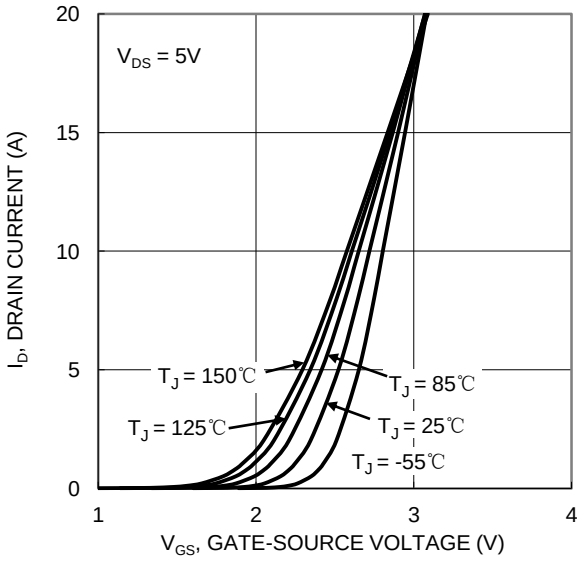

Figure 2. Typical Transfer Characteristic

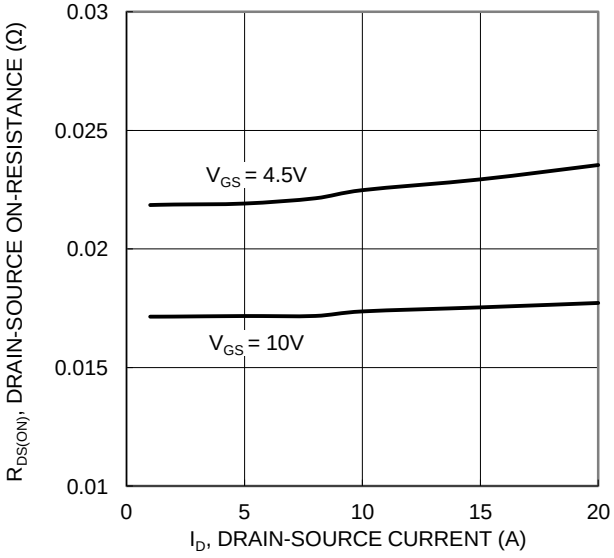

Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

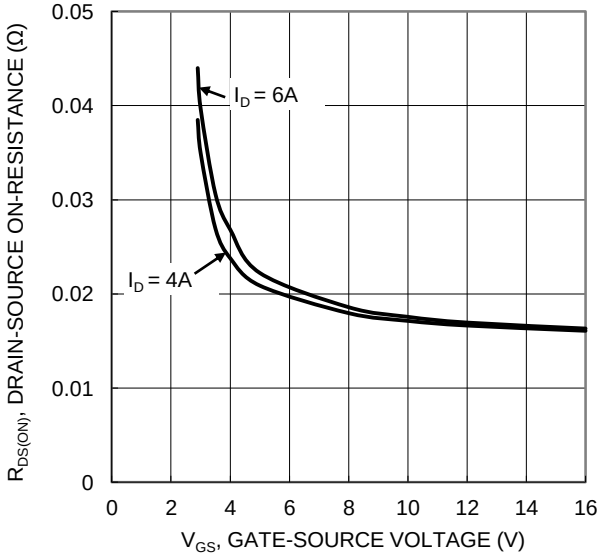

Figure 4. Typical Transfer Characteristic

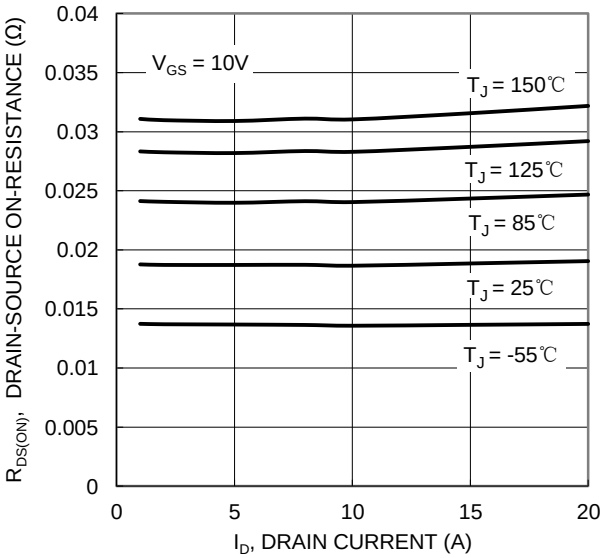

Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

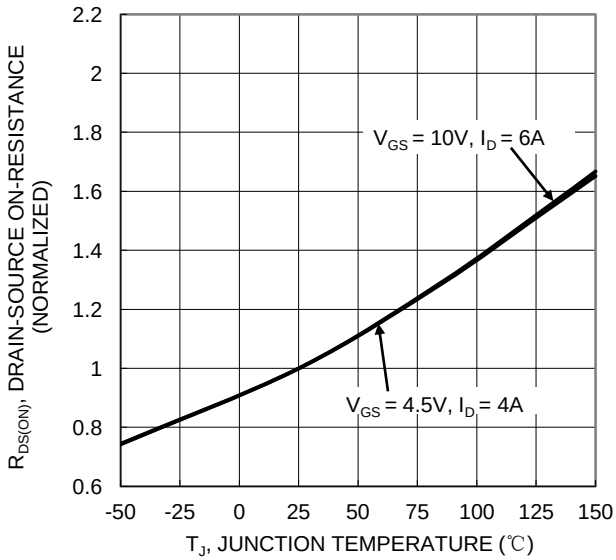

Figure 6. On-Resistance Variation with Junction Temperature

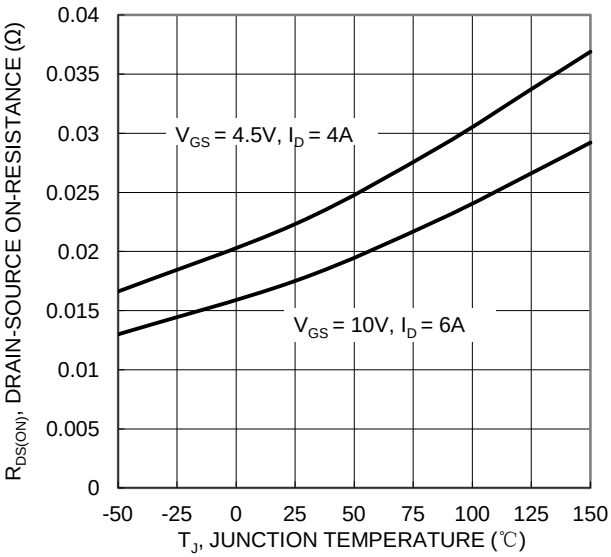

Figure 7. On-Resistance Variation with Junction Temperature

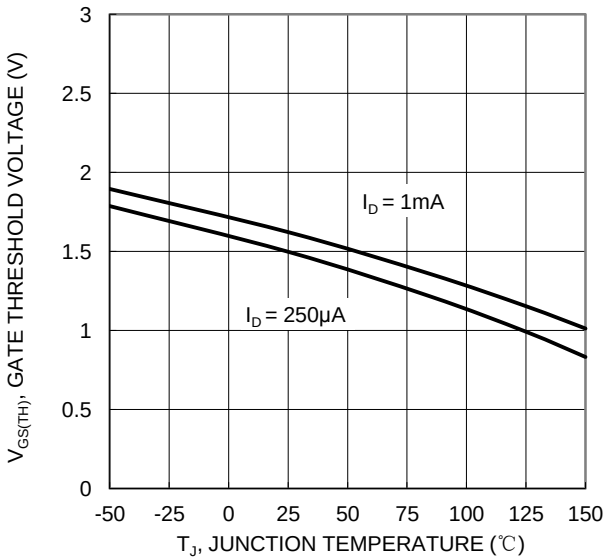

Figure 8. Gate Threshold Variation vs. Junction Temperature

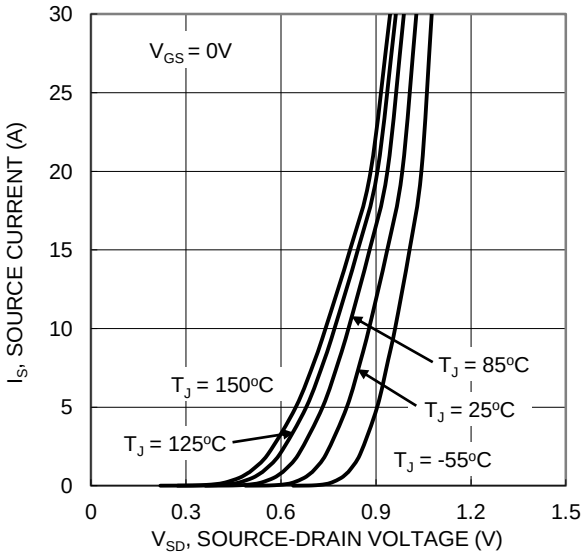

Figure 9. Diode Forward Voltage vs. Current

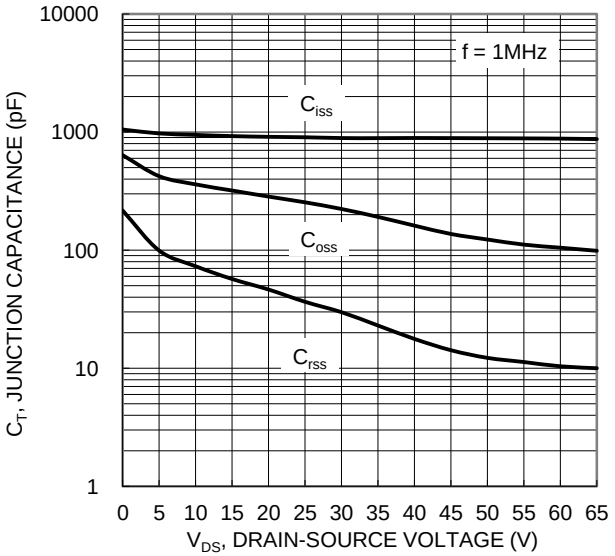

Figure 10. Typical Junction Capacitance

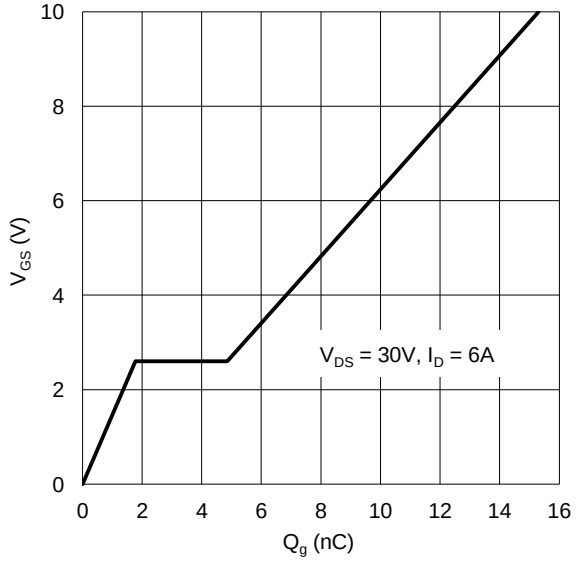

Figure 11. Gate Charge

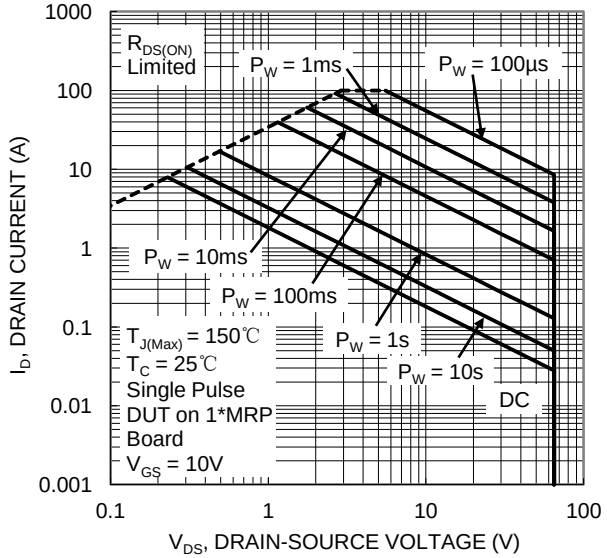

Figure 12. SOA, Safe Operation Area

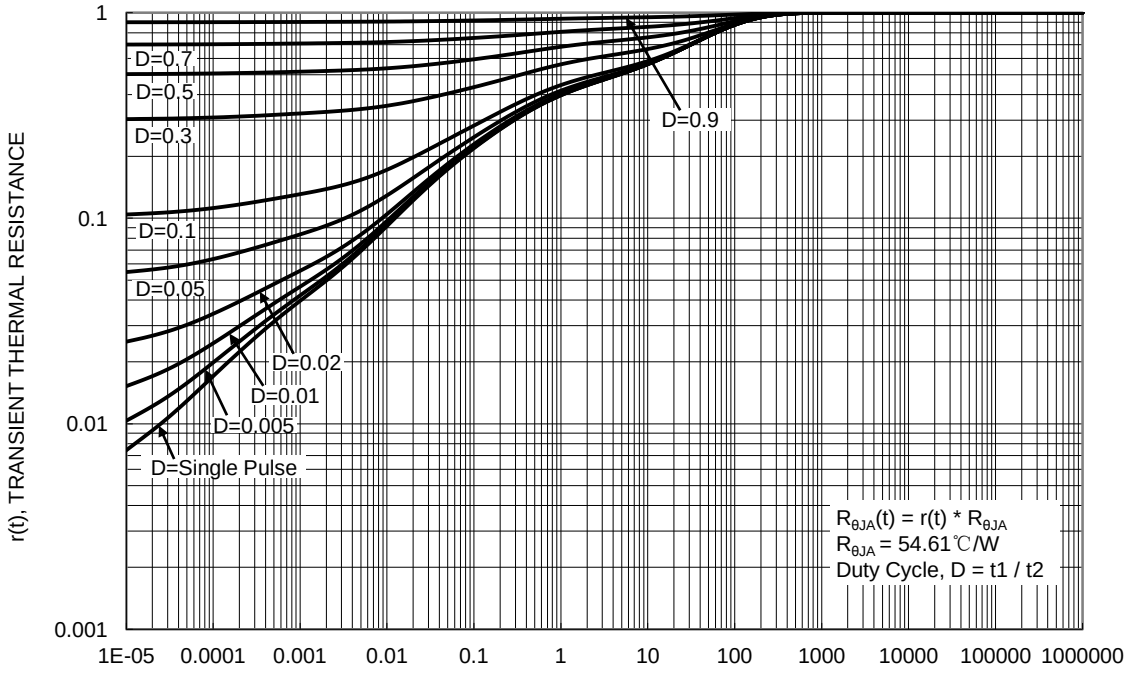

Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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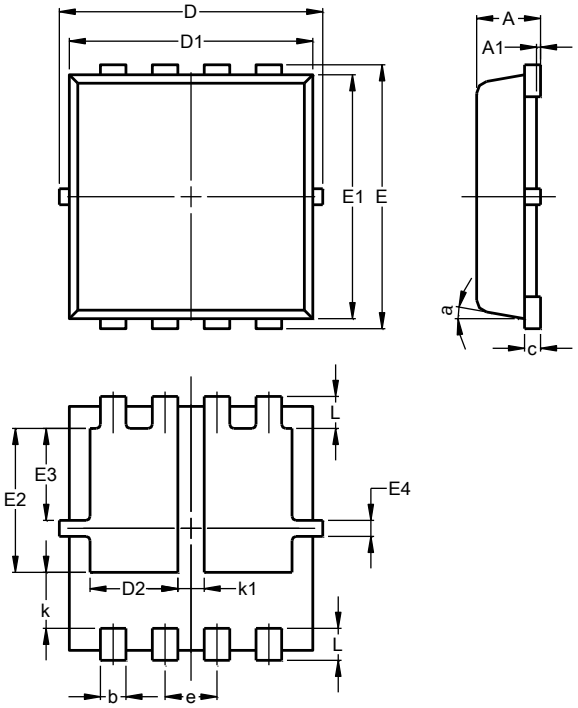
PowerDI3333-8 (Type UXC)

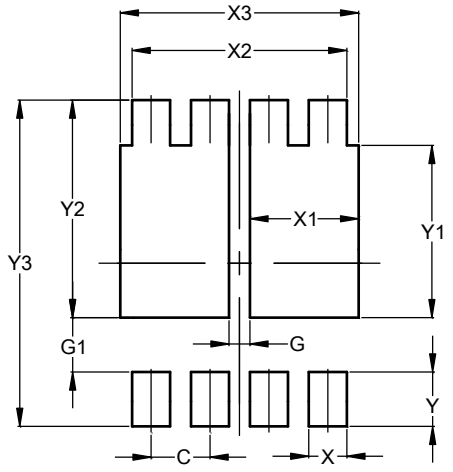


PowerDI3333-8 (Type UXC)			
Dim	**Min**	**Max**	**Typ**
A	0.75	0.85	0.80
A1	0.00	0.05	--
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	0.90	1.30	1.10
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	–	–	0.65
L	0.30	0.50	0.40
k	0.50	0.90	0.70
k1	0.13	0.53	0.33
a	0°	12°	10°
All Dimensions in mm			

Suggested Pad Layout

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

PowerDI3333-8 (Type UXC)



Dimensions	Value (in mm)
C	0.650
G	0.230
G1	0.600
X	0.420
X1	1.200
X2	2.370
X3	2.630
Y	0.600
Y1	1.900
Y2	2.400
Y3	3.600

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