

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

Characteristic	Symbol	Value	Unit		
Drain-Source Voltage	V _{DSS}	75	V		
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 7) V _{GS} = 10V	Steady State	$T_A = +25^{\circ}C$ $T_A = +70^{\circ}C$	I _D	7.8 6.2	А
Continuous Drain Current (Note 8) V _{GS} = 10V	Steady State	$T_C = +25$ °C $T_C = +70$ °C	I _D	23 18	А
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	56	Α		
Maximum Continuous Body Diode Forward Current (I _S	2.1	Α		
Pulsed Body Diode Forward Current (10µs Pulse, Du	I _{SM}	50	Α		
Avalanche Current, L = 0.1mH (Note 9)			I _{AS}	28.8	Α
Avalanche Energy, L = 0.1mH (Note 9)			E _{AS}	42.2	mJ

Thermal Characteristics ($@T_A = +25^{\circ}C$, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)		P_{D}	0.9	W
Thermal Desigtance, Junction to Ambient (Note 6)	Steady State)	125	- °C/W
Thermal Resistance, Junction to Ambient (Note 6)	t<10s	$R_{ hetaJA}$	67	
Total Power Dissipation (Note 7)		P _D	2	W
Thermal Decistance, Junction to Ambient (Note 7)	Steady State	D.	62	
Thermal Resistance, Junction to Ambient (Note 7)	t<10s	$R_{ heta JA}$	34	°C/W
Thermal Resistance, Junction to Case (Note 8)		$R_{\theta JC}$	6.9	
Operating and Storage Temperature Range		T _{J,} T _{STG}	-55 to +150	°C

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

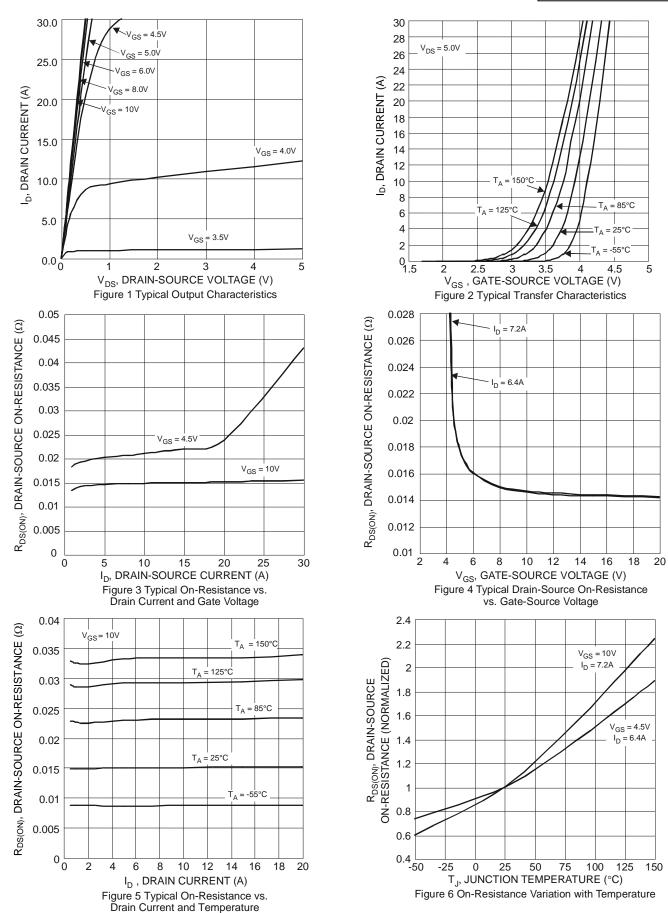
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 10)	Symbol	IAIIII	тур	IVIAA	Onic	rest condition	
Drain-Source Breakdown Voltage	BV _{DSS}	75	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current (T _J = +25°C)	I _{DSS}	_	_	1	μA	$V_{DS} = 75V$, $V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	V _{GS} = ±20V, V _{DS} = 0V	
ON CHARACTERISTICS (Note 10)		I		l .		1 00 1 7 52	
Gate Threshold Voltage	V _{GS(TH)}	1	_	3	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
Static Drain Source On Registance		_	14.6	22	mΩ	V _{GS} = 10V, I _D = 7.2A	
Static Drain-Source On-Resistance	R _{DS(ON)}	_	20.5	28		$V_{GS} = 4.5V, I_D = 6.4A$	
Diode Forward Voltage	V _{SD}	_	0.72	_	V	V _{GS} = 0V, I _S = 3.2A	
DYNAMIC CHARACTERISTICS (Note 11)							
Input Capacitance	C _{iss}	_	2737	_	рF	V 05V V 0V	
Output Capacitance	Coss	_	126	_	рF	$V_{DS} = 35V, V_{GS} = 0V,$ -f = 1MHz	
Reverse Transfer Capacitance	C _{rss}	_	96.1	_	рF		
Gate Resistance	Rg	_	0.89	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = 4.5V)	Qg	_	26.4	_	nC		
Total Gate Charge (V _{GS} = 10V)	Qg	_	56.5	_	nC	7., 20./ 1 7.24	
Gate-Source Charge	Q _{gs}	_	12	_	nC	$V_{DS} = 38V, I_{D} = 7.2A$	
Gate-Drain Charge	Q _{gd}	_	11.8	_	nC	1	
Turn-On Delay Time	t _{D(ON)}	_	6.1	_	ns		
Turn-On Rise Time	t _R	_	5.7	_	ns	$V_{GS} = 10V, V_{DS} = 38V,$	
Turn-Off Delay Time	t _{D(OFF)}	_	19.6	_	ns	$R_g = 1\Omega, I_D = 5.7A$	
Turn-Off Fall Time	t _F	_	3.9	_	ns	1	
Body Diode Reverse Recovery Time	t _{RR}	_	26.2	_	ns	I _F = 5.7A, di/dt = 100A/μs	
Body Diode Reverse Recovery Charge	Q_{RR}	_	25.2	_	nC		

Notes:

- 6. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 7. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
 8. Thermal resistance from junction to soldering point (on the exposed drain pad).
 9. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.
 10. Short duration pulse test used to minimize self-heating effect.
 11. Guaranteed by design. Not subject to product testing.

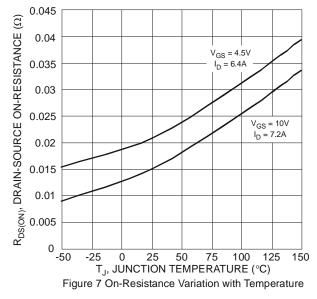


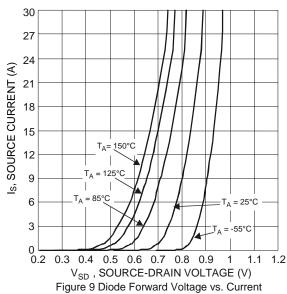


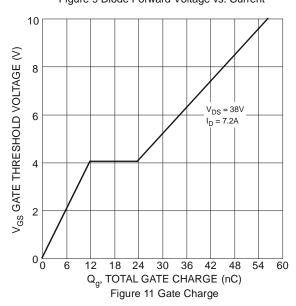












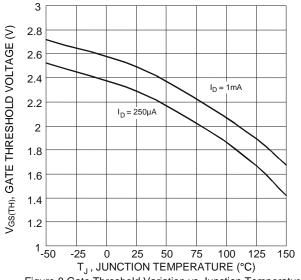
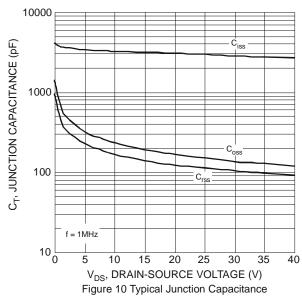
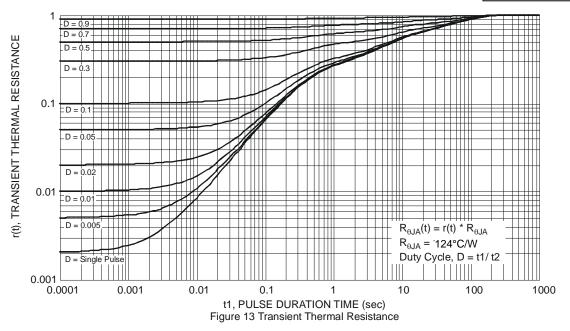


Figure 8 Gate Threshold Variation vs Junction Temperature



100
R_{DS(ON)}
10
10
10
R_{DS(ON)}
11
P_W = 10s
P_W = 10oms
0.01
T_{J(MAX)} = 150°C
T_A = 25°C
V_{GS} = 10V
Single Pulse
0.001
0.1
1
1
0
100
V_{DS}, DRAIN-SOURCE VOLTAGE (V)
Figure 12 SOA, Safe Operation Area

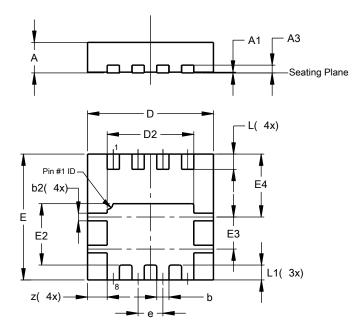




Package Outline Dimensions

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

PowerDI3333-8



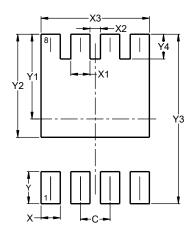
PowerDI3333-8						
Dim	Min	Max	Тур			
Α	0.75	0.85	0.80			
A1	0.00	0.05	0.02			
A3	-	_	0.203			
b	0.27	0.37	0.32			
b2	0.15	0.25	0.20			
D	3.25	3.35	3.30			
D2	2.22	2.32	2.27			
Ш	3.25	3.35	3.30			
E2	1.56	1.66	1.61			
E3	0.79	0.89	0.84			
E4	1.60	1.70	1.65			
e	_	_	0.65			
L	0.35	0.45	0.40			
L1	-	_	0.39			
Z	_	_	0.515			
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)
С	0.650
X	0.420
X1	0.420
X2	0.230
Х3	2.370
Υ	0.700
Y1	1.850
Y2	2.250
Y3	3.700
Y4	0.540

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