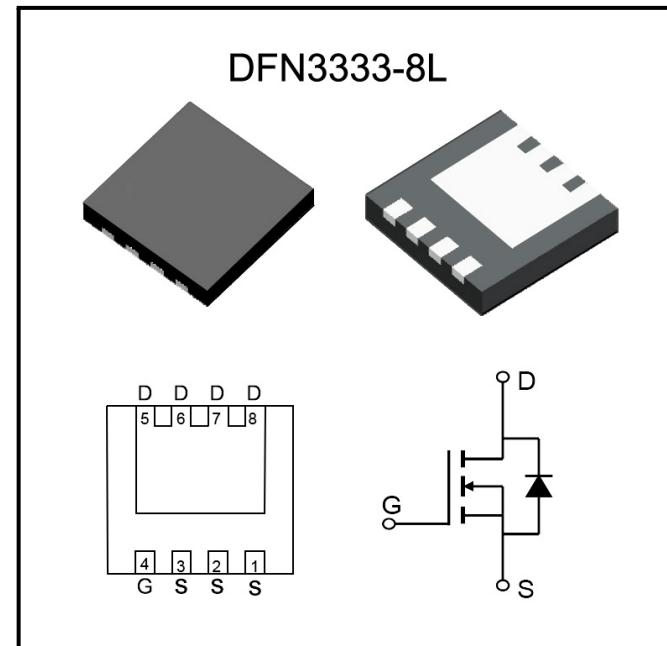


Features

- $V_{DS}=100V, I_D=38A$ @ $V_{GS}=10V$
- Typ. $R_{DS(ON)} = 7.0m\Omega$ (Typ.) @ $V_{GS}=10V$
- Typ. $R_{DS(ON)} = 9.0m\Omega$ (Typ.) @ $V_{GS}=4.5V$
- Ultra-low $R_{DS(on)}$
- Low Gate Charge
- Pb-free Lead Plating
- Halogen-free and RoHS-compliant

Package



Applications

- Power Management in Computing, CE, IE 4.0, Communications
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Load Switching, Quick/Wireless Charging, Motor Driving

Ordering Information

Device	Package	Pins	Marking	MSL	T_j (°C)	Media	Quantity (pcs)
BMQ100N38	DFN3333-8L	8	BN1008A	1	-55 to 150	13" Reel	5000

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate - Source Voltage	± 20	
I_D	Drain Current ¹	$T_C=25^\circ C$	A
		$T_C=100^\circ C$	
I_{DM}	Drain Current-Pulse ²	132	A
I_{AS}	Avalanche Current ³	29	A
E_{AS}	Avalanche Energy ³	122	mJ
P_D	Power Dissipation ⁴	$T_C=25^\circ C$	W
		$T_C=100^\circ C$	
T_J, T_{stg}	Junction Storage Temperature Range	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Units
Thermal Resistance from Junction to Case	$R_{\Theta JC}$	4.5	5.4	°C/W
Thermal Resistance From Junction to Ambient (Note3)	$R_{\Theta JA}$	60	75	

BORN INTERTECHNOLOGY, INC. ALL

RIGHTS RESERVED

Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information. Revision: 2024-Mar-4-A



Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250uA	100	—	—	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V, T _j =25°C	—	—	1	uA
		V _{GS} =0V, T _j =55°C	—	—	5	
Gate- Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	—	—	±100	nA
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D =250uA	1.2	1.8	2.5	V
Static Drain-source On Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	—	7.0	9.0	mΩ
		V _{GS} =4.5V, I _D =15A	—	9.0	11.5	
Forward Transconductance	g _{FS}	V _{DS} = 5V,I _D = 20A	—	82	—	S
Diode Forward Voltage	V _{SD}	I _S = 1A, V _{GS} = 0V	—	0.70	1.0	V
Diode Continuous Current	I _S	T _C =25°C	—	—	23	A
DYNAMIC PARAMETERS ⁵						
Input capacitance	C _{iss}	V _{DS} = 50V, V _{GS} =0V, f = 1MHz	—	2200	—	PF
Output capacitance	C _{oss}		—	445	—	
Reverse transfer capacitance	C _{rss}		—	8	—	
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	—	2	—	Ω
SWITCHING PARAMETERS ⁵						
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =0 to 10V, I _D =20A	—	34	—	nC
Total Gate Charge	Q _g		—	17	—	
Gate to Source Charge	Q _{gs}		—	5.5	—	
Gate to Drain Charge	Q _{gd}		—	5.7	—	
Turn-on delay time	T _{d(on)}	V _{DS} =50V, V _{GS} =10V, R _G =6Ω, R _L = 2.5Ω	—	13	—	nS
Turn-on Rise time	T _r		—	14	—	
Turn -Off Delay Time	T _{d(off)}		—	29	—	
Turn -Off Fall time	T _f		—	17	—	
Reverse Recovery Time	T _{rr}	I _F =15A, di/dt=100A/μs	—	49	—	nS
Reverse Recovery Charge	Q _{rr}		—	43	—	nC

Note:

- (1)Computed continuous current assumes the condition of T_J_Max while the actual continuous current depends on the thermal & electro-mechanical application board design.
- (2)This single-pulse measurement was taken under T_J_Max= 150°C=150°C.
- (3) This single-pulse measurement was taken under the following condition [L = 100μH, V_{GS}=10V, V_{DS} = 100V] while its value is limited by T_J_Max= 150°C.
- (4)The power dissipation PD is based on T_J_Max=150°C.
- (5)This value is guaranteed by design hence it is not included in the production test.

BORN INTERTECHNOLOGY, INC. ALL

RIGHTS RESERVED

Specifications are subject to change without notice.

 Please refer to <http://www.born-tw.com> for current information. Revision: 2024-Mar-4-A


Typical Performance Characteristics

Figure 1: $R_{DS(on)}$ vs. V_{GS}

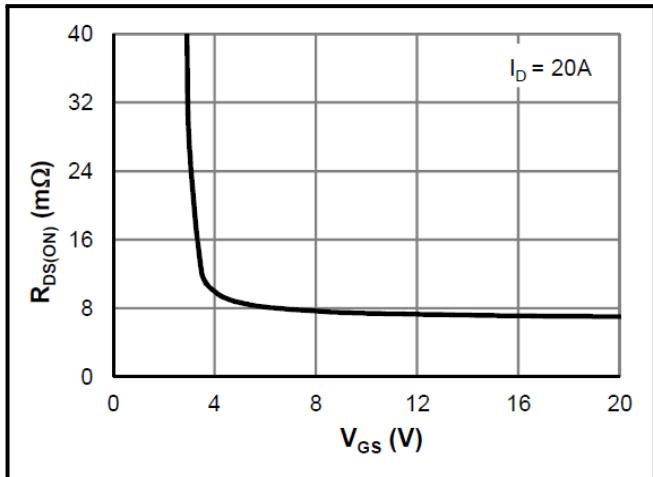


Figure 2: Gate Charge

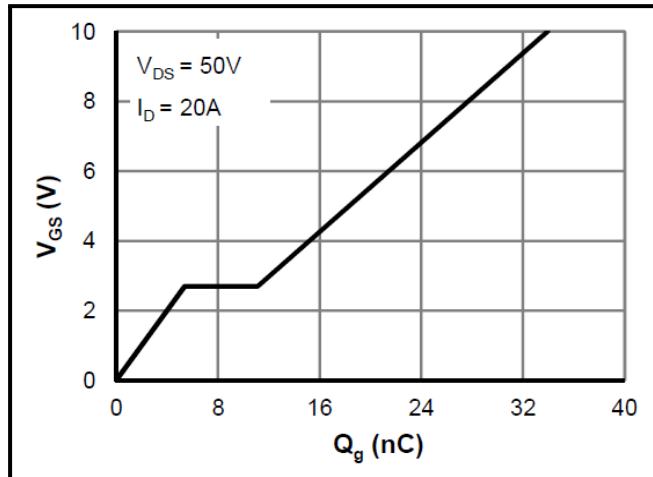


Figure 3: Saturation Characteristics

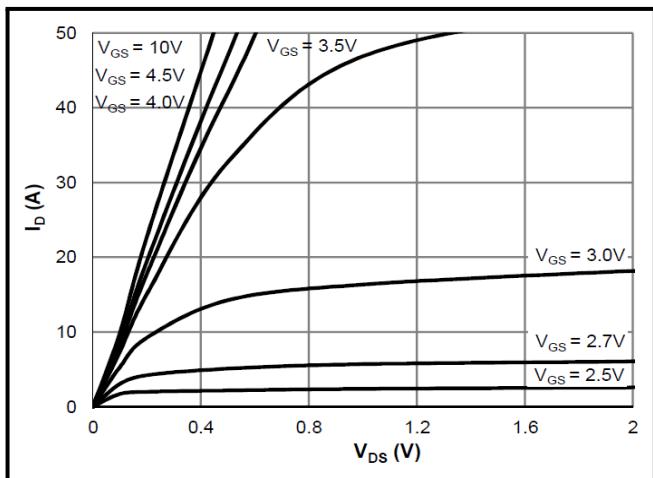


Figure 4: Transfer Characteristics

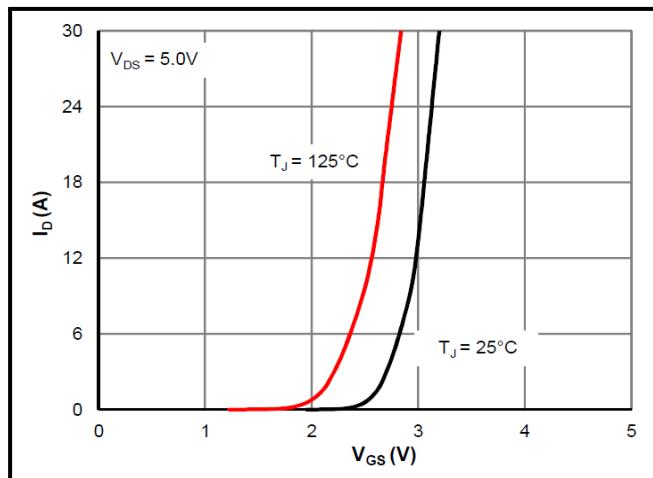


Figure 5: $R_{DS(on)}$ vs. Drain Current

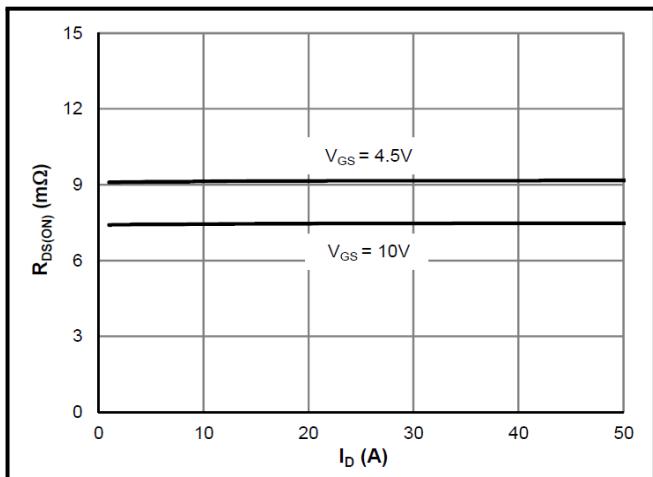
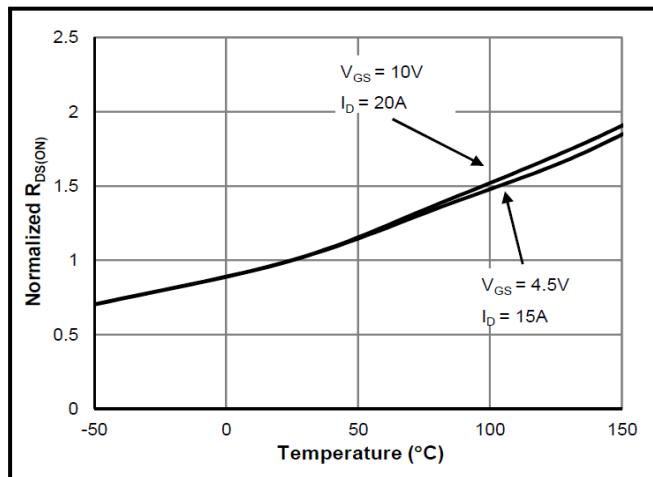


Figure 6: $R_{DS(on)}$ vs. Junction Temperature



Typical Performance Characteristics

Figure 5: Body-Diode Characteristics

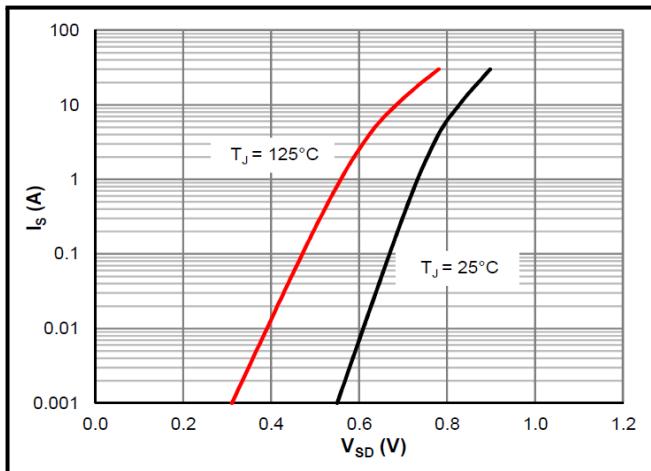


Figure 7: Current De-rating

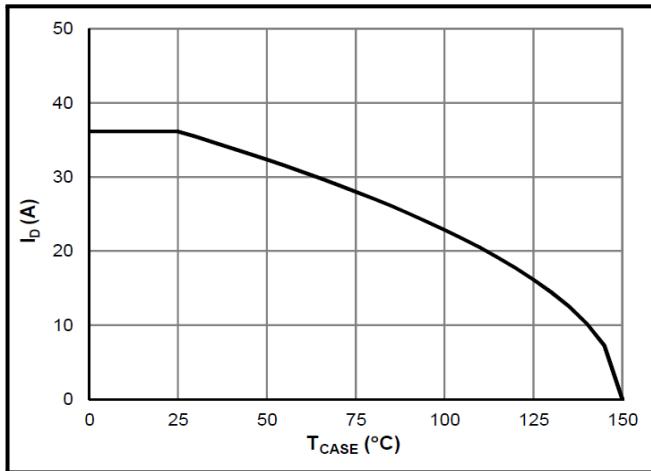
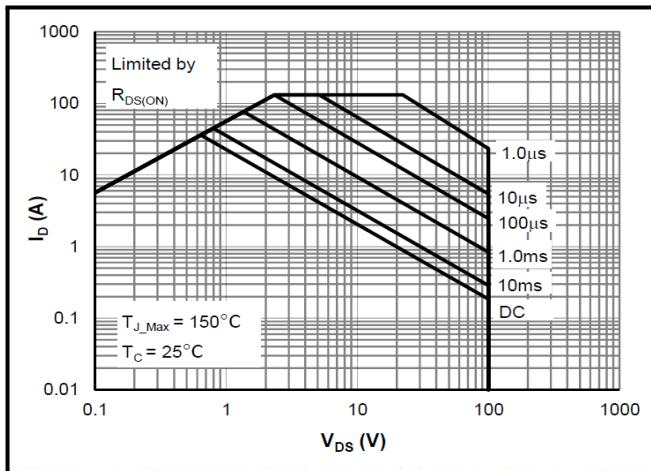


Figure 9: Maximum Forward Biased Safe Operating

Area



**BORN INTERTECHNOLOGY, INC. ALL
RIGHTS RESERVED**

Specifications are subject to change without notice.

Please refer to <http://www.born-tw.com> for current information. Revision: 2024-Mar-4-A

Figure 6: Capacitance Characteristics

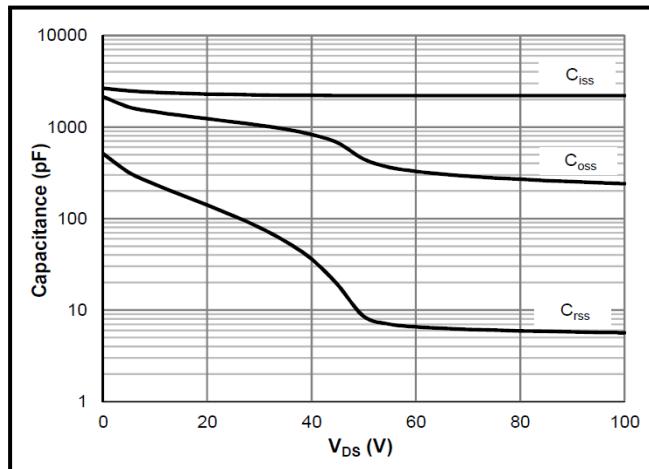


Figure 8: Power De-rating

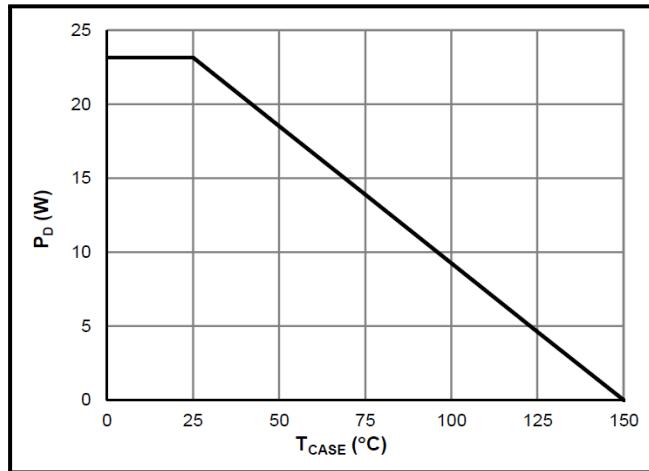
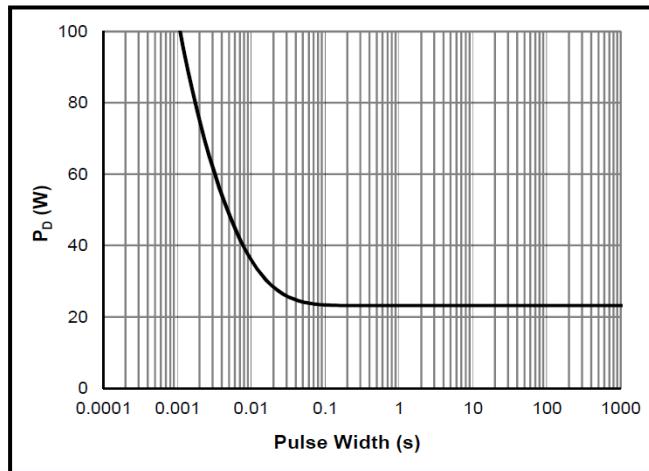


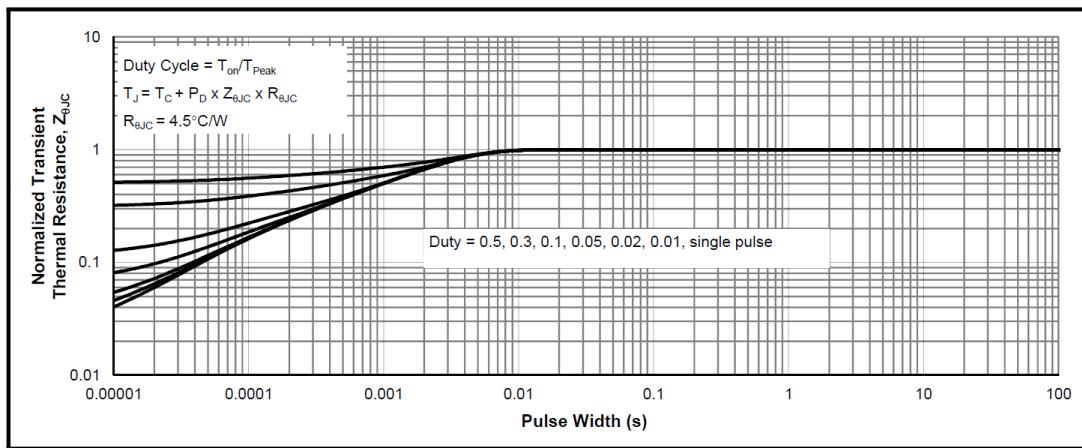
Figure 10: Single Pulse Power Rating, Junction-to-

Case

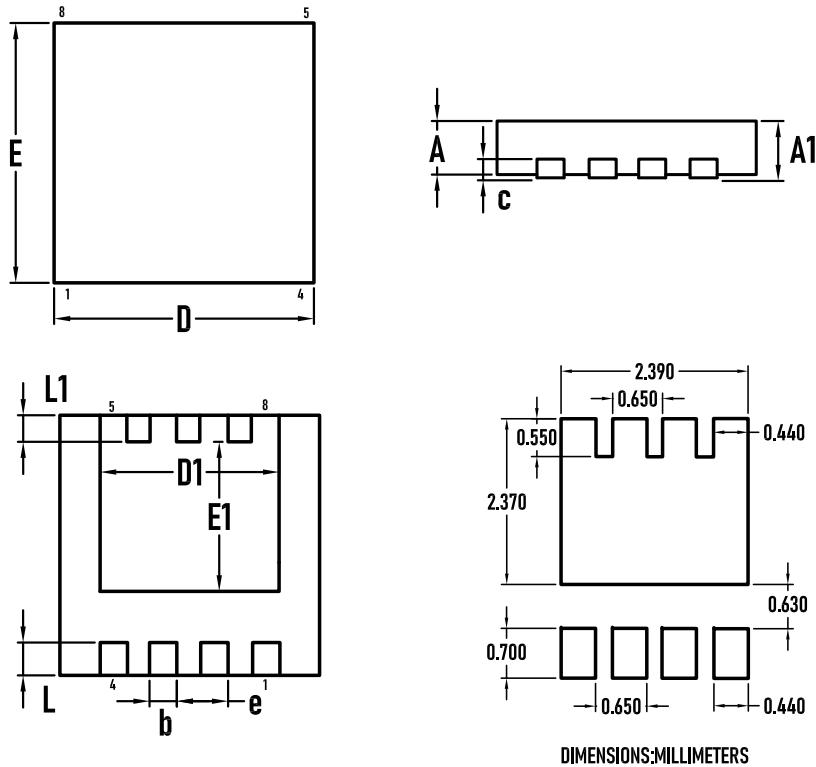


Typical Performance Characteristics

Figure 11: Normalized Maximum Transient Thermal Impedance



Packaging Tap – DFN3333-8L



SYMBOL	MILLIMETER		
	MIN.	Typ.	MAX.
A	0.70	0.75	0.80
A1	–	–	0.05
b	0.29	0.34	0.39
c	–	0.20	–
D	3.20	3.30	3.40
D1	2.19	2.29	2.39
E	3.20	3.30	3.40
E1	1.62	1.72	1.82
L	0.35	0.45	0.55
L1	0.30	0.40	0.50
e	0.65BSC		

