

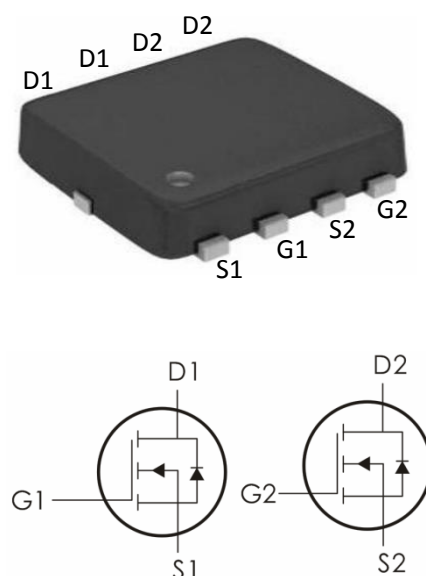
Description:

This Dual N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=20V, I_D=45A, R_{DS(on)}<6.5m\Omega @V_{GS}=4.5V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
ZB006DNG	B006DN	DFN3*3-8D	5000 pcs/Reel

Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
I_D	Continuous Drain Current-Continuous- $T_C=25^\circ\text{C}$	45	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	28	
I_{DM}	Drain Current – Pulsed ^{note1}	175	A
E_{AS}	Single Pulse Avalanche Energy ^{note2}	35	mJ
P_D	Power Dissipation - $T_C=25^\circ\text{C}$	29	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	5.17	$^\circ\text{C/W}$

Electrical Characteristics: ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	20	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =20V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 12V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	0.4	0.7	1	V
R _{DS(ON)}	Drain-Source On Resistance ^{note3}	V _{GS} =4.5V, I _D =25A	---	4.8	6.5	m Ω
		V _{GS} =2.5V, I _D =15A	---	6.8	10	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	---	1800	---	pF
C _{OSS}	Output Capacitance		---	280	---	
C _{RSS}	Reverse Transfer Capacitance		---	265	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =10V , V _{GS} =4.5V , R _{GEN} =3 Ω , I _D =25A	---	15	---	ns
t _r	Rise Time		---	37	---	ns
t _{d(off)}	Turn-Off Delay Time		---	52	---	ns
t _f	Fall Time		---	21	---	ns
Q _g	Total Gate Charge	V _{DS} =10V , V _{GS} =4.5V , I _D =25A	---	23	---	nC
Q _{gs}	Gate-Source Charge		---	4.5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	7.3	---	nC
Drain-Source Diode Characteristics						
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	45	A
I _{SM}	Pulsed Source Current		---	---	175	A

V_{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =30A	---	---	1.2	V
t_{rr}	Reverse Recovery Time	I _F =25A, dI/dt=100A/μs	---	25	---	ns
Q_{rr}	Reverse Recovery Charge		---	21	---	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J=25°C, V_{DD}=10V, V_G=4.5V, L=0.5mH, R_G=25Ω, I_{AS}=13.8A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics: (T_C=25°C unless otherwise noted)

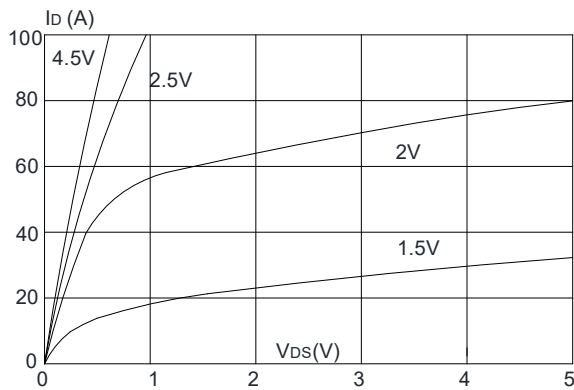


Figure 1: Output Characteristics

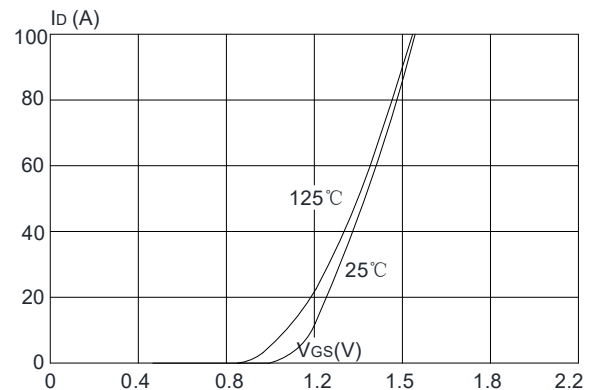


Figure 2: Typical Transfer Characteristics

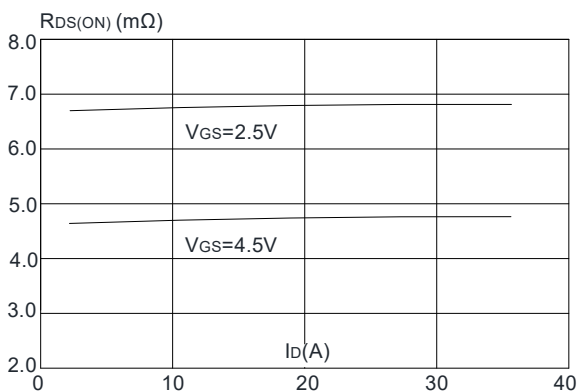


Figure 3: On-resistance vs. Drain Current

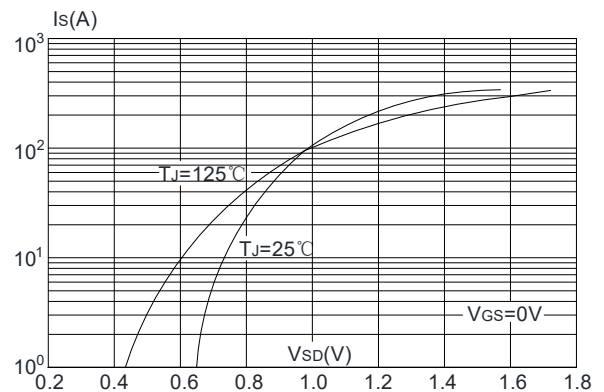


Figure 4: Body Diode Characteristics

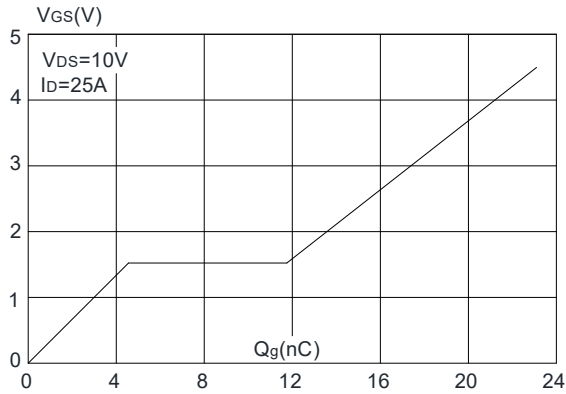


Figure 5: Gate Charge Characteristics

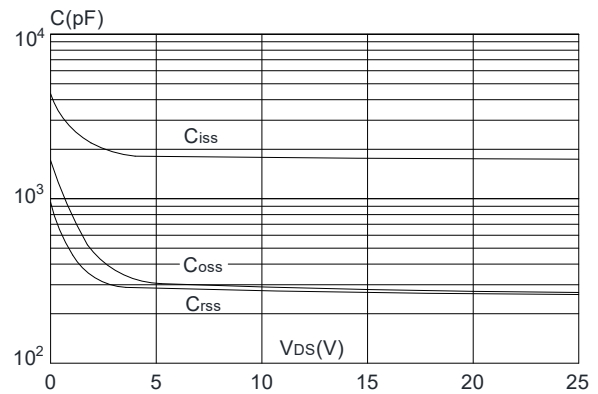


Figure 6: Capacitance Characteristics

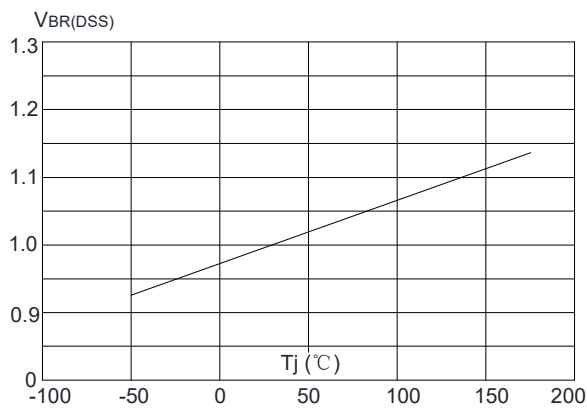


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

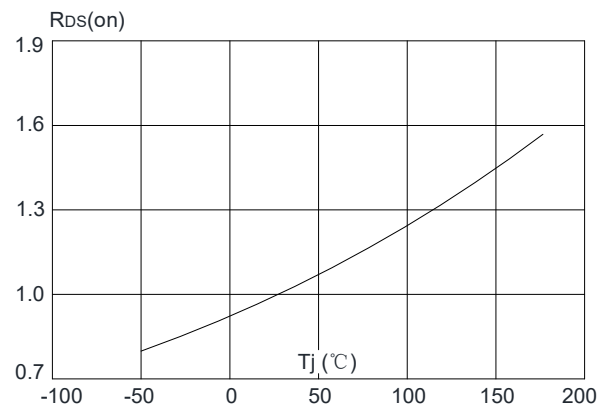


Figure 8: Normalized on Resistance vs. Junction Temperature

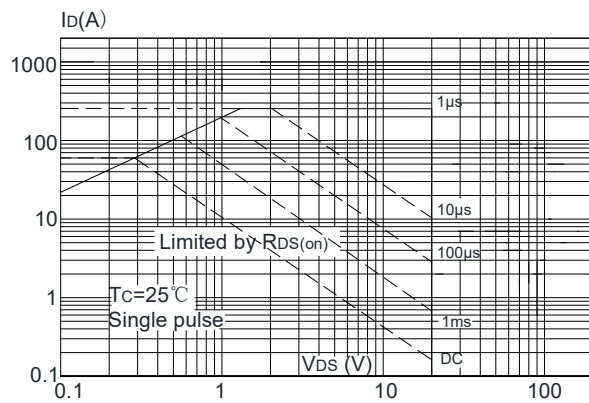


Figure 9: Maximum Safe Operating Area

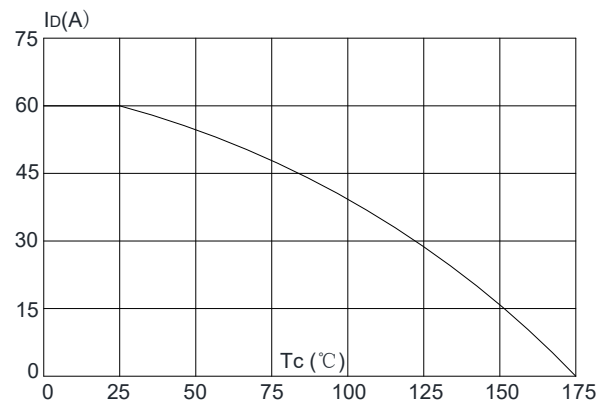


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

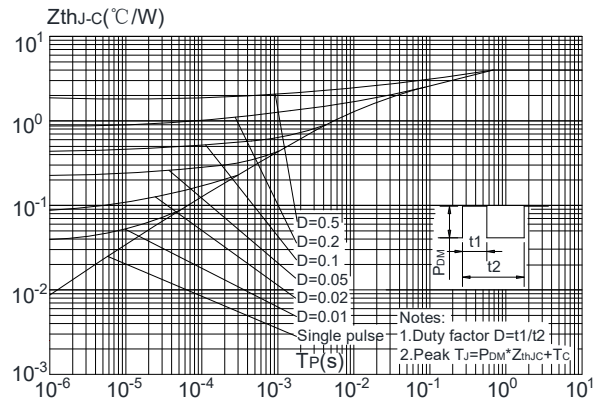
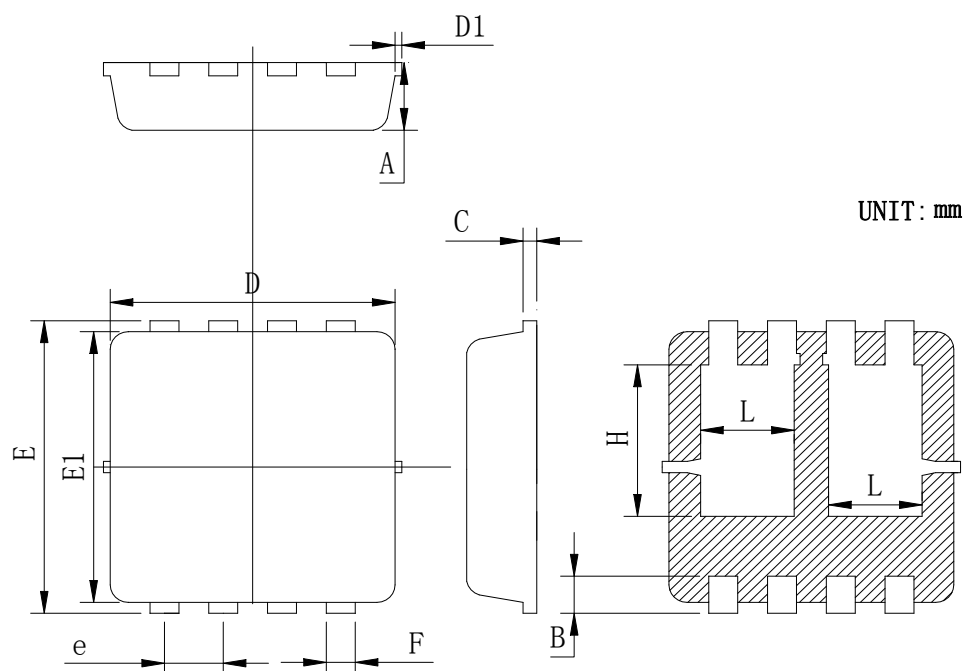


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

DFN3X3-8DPackage Outline Data



Symbol	Min	Typ	Max
A	0.725	0.775	0.825
B	0.28	0.38	0.48
C	0.13	0.15	0.20
D	3.05	3.15	3.25
D1			0.10
E	3.25	3.35	3.45
E1	3.0	3.1	3.2
e	0.60	0.65	0.70
F	0.27	0.32	0.37
H	1.63	1.73	1.83
L	0.93	1.03	1.13

Marking Information:

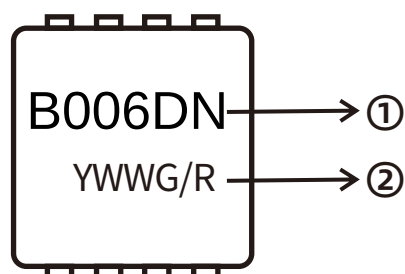
①. Part NO.

②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)



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