DESCRIPTION

The MXB03N08D uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

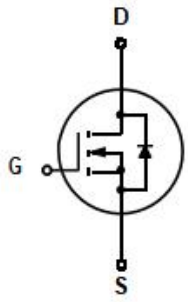
GENERAL FEATURES

- V_{DS}=80V, I_D=200A
  $R_{DS(ON)}$(Typ.)=3.0mΩ @ V_{GS}=10V
- Advanced trench cell design
- Surface-mounted package
- Trench MOS

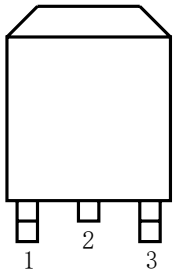
APPLICATION

- BMS appliances
- High power inverter system
- Power appliances

PINOUT



Schematic diagram



Top View TO-263

Pin	Description
1	Gate(G)
2	Drain(D)
3	Source(S)

ORDERING INFORMATION

Part Number	StorageTemperature	Package	Devices Per Reel
MXB03N08D	-55°C to 150°C	TO-263	800

ABSOLUTE MAXIMUM RATINGS(T_C=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	80	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous(V_{GS}=10V)(Note1)(Note3)	I_D	200	A
Pulsed Source Current(Note1)(Note2)(Note3)	I_{DM}	800	A
Diode Forward Current	I_S	200	A
Single Pulsed Avalanche Energy(Note1)	E_{AS}	1600	mJ
Total Power Dissipation(Note1)	P_{tot}	270	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Thermal Resistance, Junction-to-Case(Note1)	$R_{\theta JC}$	0.41	°C/W

Note 1. Surface Mounted on 1 in^2 pad area, t ≤ 10 sec
Note 2. Pulse width ≤ 10 μs, duty cycle≤ 1%
Note 3. Limited by bonding wire

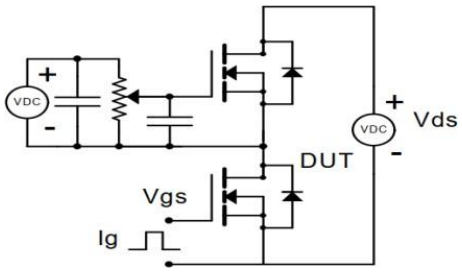
ELECTRICAL CHARACTERISTICS(T_A=25°C unless otherwise noted)

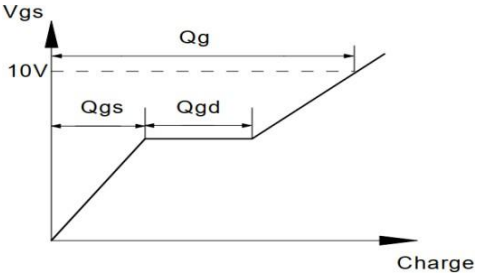
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_{DS}=250μA	80	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=64V, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_{DS}=250μA	1.5	2.0	2.5	V
Drain-Source On-State Resistance(Note1)	$R_{DS(ON)}$	V_{GS}=10V, I_{DS}=50A	-	3.0	3.5	mΩ
Dynamic Characteristics(Note2)						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, F=1.0MHz	-	13200	-	pF
Output Capacitance	C_{oss}		-	950	-	pF
Reverse Transfer Capacitance	C_{rss}		-	810	-	pF
Switching Characteristics(Note2)						
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=40V, I_{DS}=40A, V_{GEN}=10V, R_G=4.5Ω, R_L=1Ω,	-	26	-	nS
Turn-on Rise Time	t_r		-	20	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	nS
Turn-Off Fall Time	t_f		-	18	-	nS
Total Gate Charge	Q_g	V_{DS}=64V, I_{DS}=80A, V_{GS}=10V	-	257	-	nC
Gate-Source Charge	Q_{gs}		-	76	-	nC
Gate-Drain Charge	Q_{gd}		-	80	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage(Note1)	V_{SD}	V_{GS}=0V, I_{SD}=30A	-	-	1.2	V
Reverse Recovery Time	t_{rr}	I_{SD}=30A, dI/dt=100A/μs	-	65	-	nS
Reverse Recovery Charge	Q_{rr}		-	83	-	nC

Note 1. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
Note 2. Guaranteed by design, not subject to prduction testing

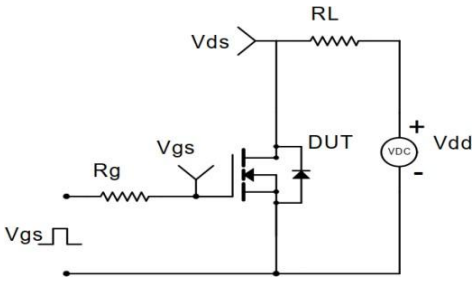
TEST CIRCUIT AND WAVEFORM

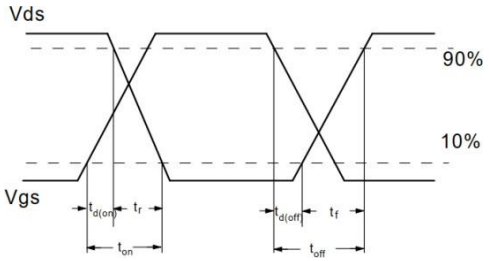
1、Gate Charge Test



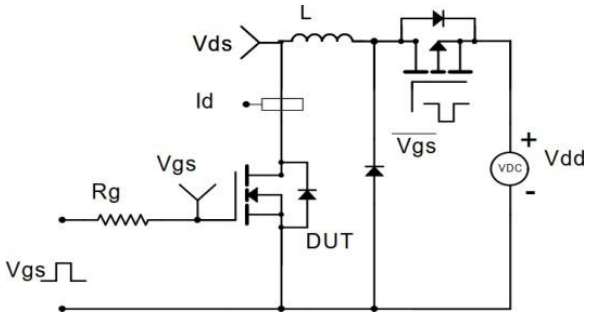


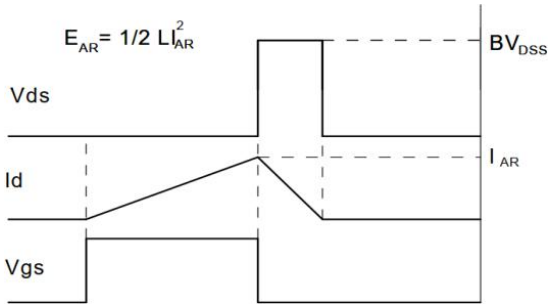
2、Resistive Switching Test



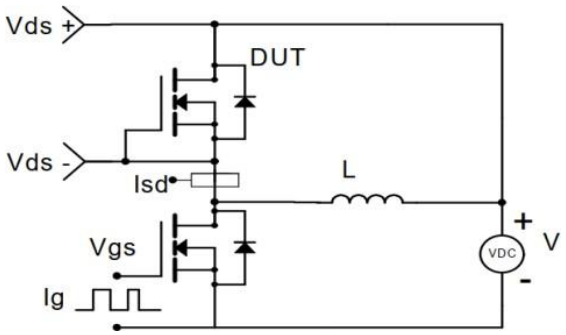


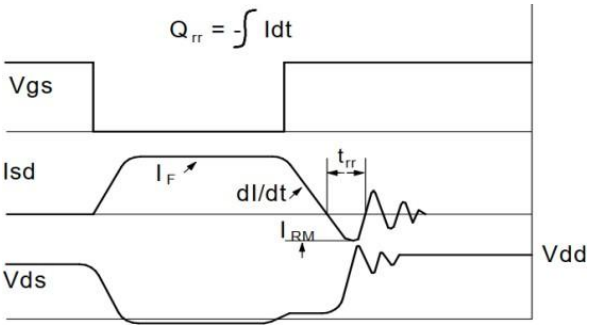
3、 Unclamped Inductive Switching (UIS) Test





4、Diode Recovery Test





TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1. Output Characteristics

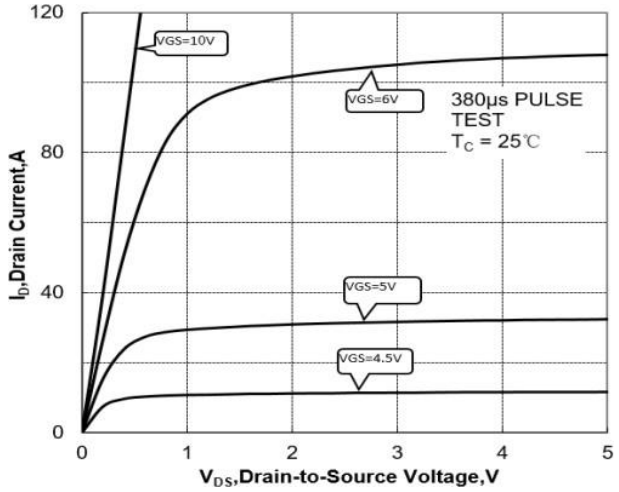


Figure 2. Transfer Characteristics

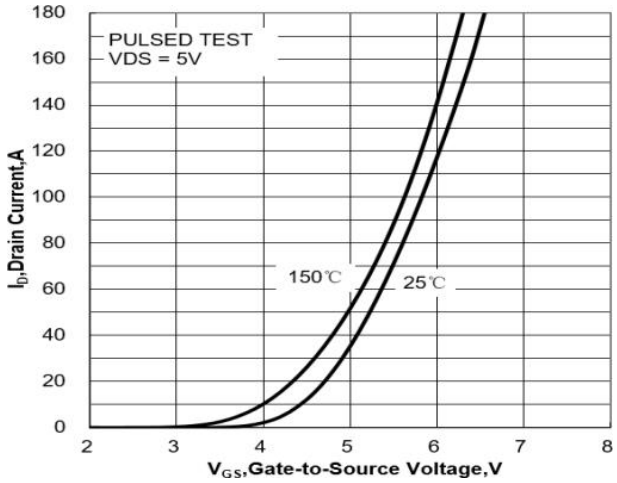


Figure 3. On-Resistance vs. I_D and V_{GS}

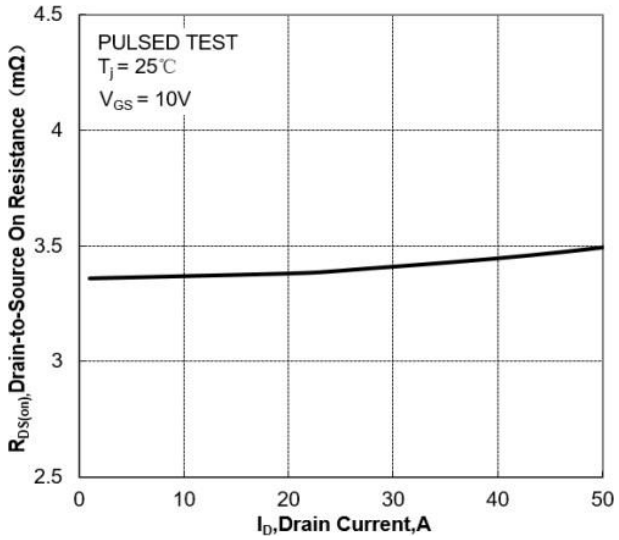


Figure 4. On-Resistance vs. Junction Temperature

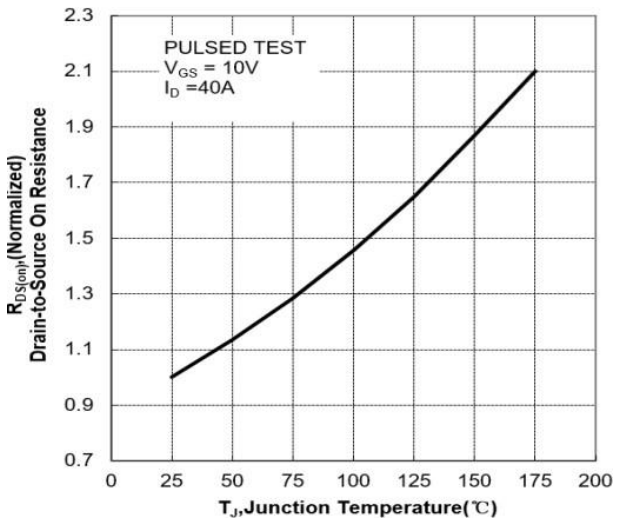


Figure 5. On-Resistance vs. V_{GS}

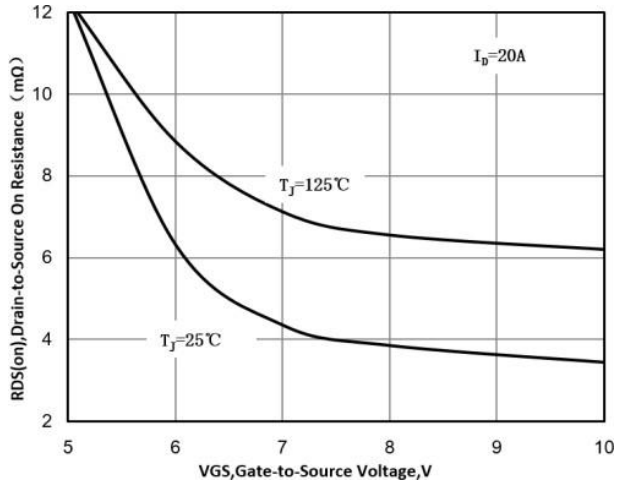
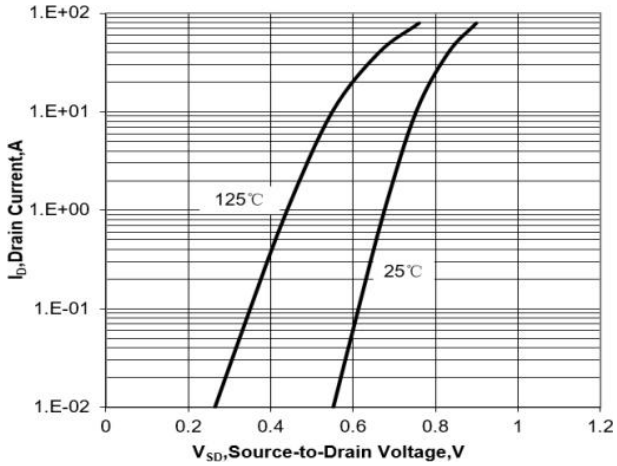


Figure 6. Body Diode Forward Voltage



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 7. Gate-Charge Characteristics

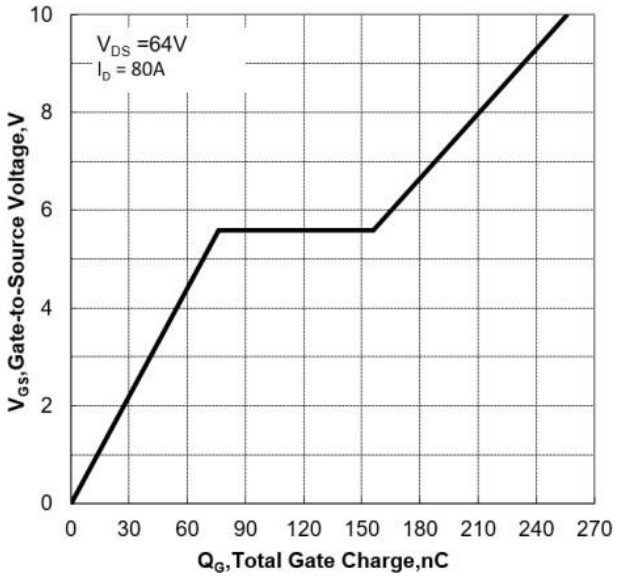


Figure 8. Capacitance Characteristics

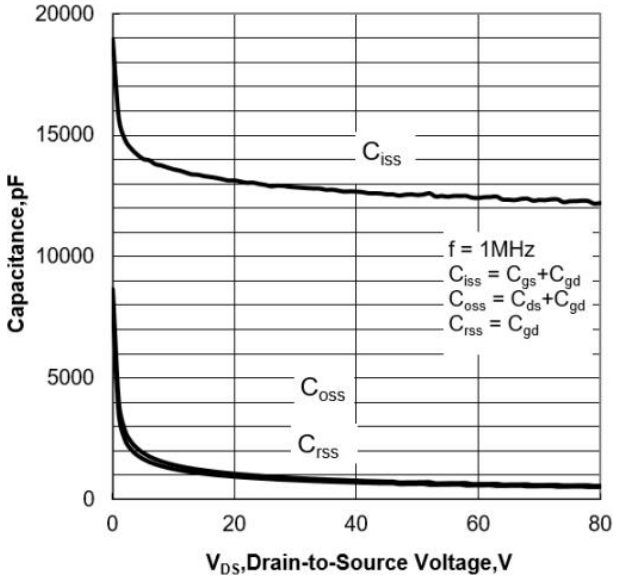


Figure 9. Maximum Forward Biased Safe Operation Area

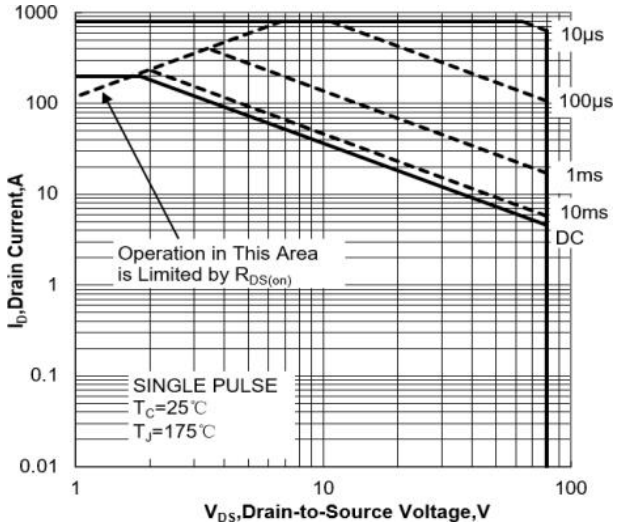


Figure 10. Single Pulse Power Rating Junction-to-Ambient

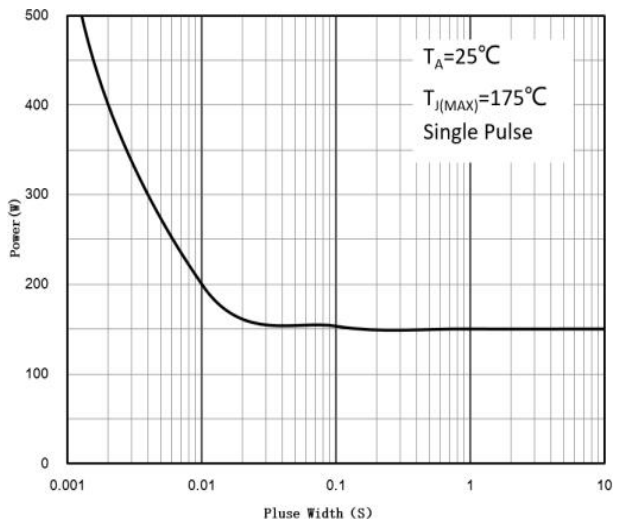
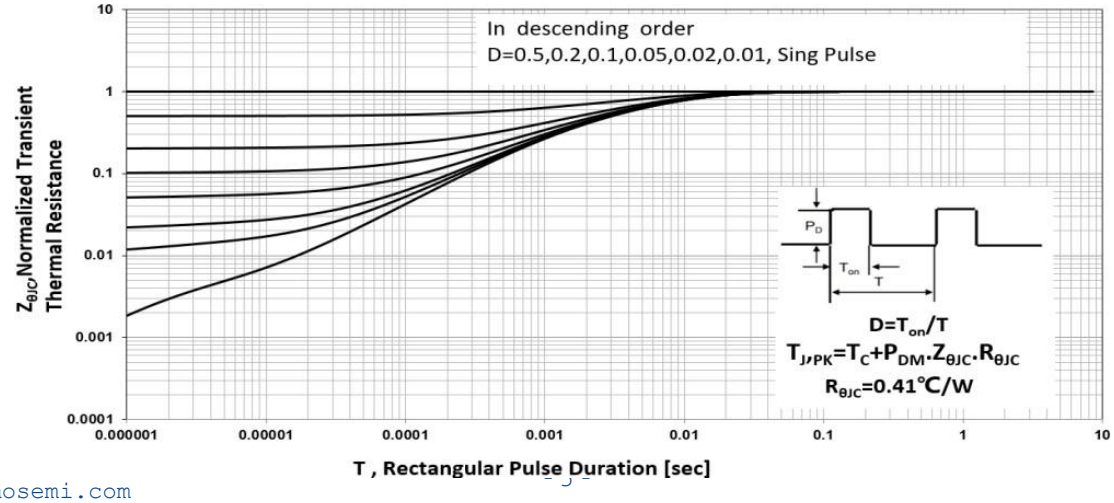
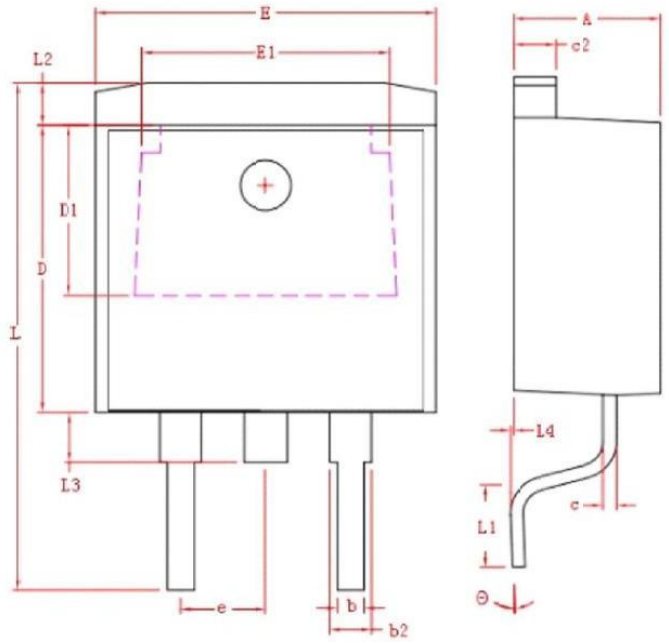


Figure 11. Normalized Maximum Transient Thermal Impedance



PACKAGE INFORMATION

TO263-3L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.40	4.80
b	0.76	1.00
L4	0.00	0.25
C	0.36	0.50
L3	1.50 REF	
L1	2.29	2.79
E	9.80	10.40
E1	7.40 REF	
c2	1.25	1.45
b2	1.17	1.47
D	8.60	9.00
D1	5.10 REF	
e	2.54 REF	
L	14.6	15.8
θ	0° ± 3°	
L2	1.27 REF	