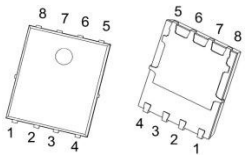
40V N-Channel Advanced Mode Power MOSFET

Product Summary

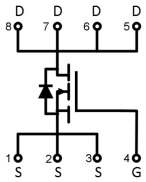
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	1.1mΩ@10V	160A



PDFNWB5×6-8L

Features

- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired



Circuit diagram

Applications

- DC/DC Converter
- Load Switching, Quick/Wireless Charging, Motor Driving

G011N04B : Device Code
YY : Year Code
WW : Week Code

Marking (Top View)

Order information

Device	Package	Shipping
AN011N04BSL0	PDFNWB5×6-8L	5000/Tape&Reel

Absolute maximum ratings

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	40	V
Drain Current	T_C = 25℃	I_D	160	A
	T_C = 100℃		96	A
Drain Current - Pulsed[1]		I_{DM}	640	A
Gate-Source Voltage		V_{GSS}	±20	V
Single Pulsed Avalanche Energy[2]		E_{AS}	282	mJ
Power Dissipation	T_C = 25℃	P_D	145	W
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	0.83	℃/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	℃
Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds		TL	300	℃

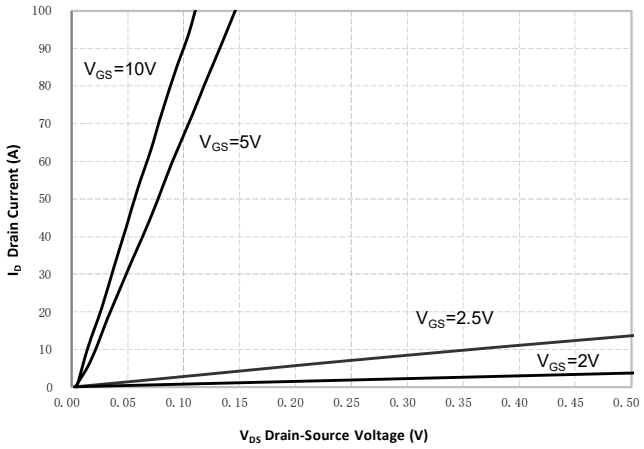
Electrical characteristics (T_A = 25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain - Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D= 250μA	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 40V, V_{GS}= 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}= 0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= 250μA	1		2.5	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS}= 10V, I_D= 20A		1.1	1.5	mΩ
		V_{GS}= 4.5V, I_D= 20A		1.4	2.0	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}= 40 V, V_{GS}= 0 V, f= 100kHz		4225		pF
Output Capacitance	C_{oss}			810		
Reverse Transfer Capacitance	C_{rss}			50		
Switching Characteristics						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=50A		70		nC
Gate-source Charge	Q_{gs}			15		
Gate-drain Charge	Q_{gd}			13		
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DS}=20V, I_D=30A R_{GEN}=2.2Ω		13		ns
Turn-on Rise Time	t_r			20		
Turn-off Delay Time	$t_{d(off)}$			59		
Turn-off Fall Time	t_f			16		
Source - Drain Diode Characteristics						
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_{SD} = 20A,T_J = 25℃			1.2	V

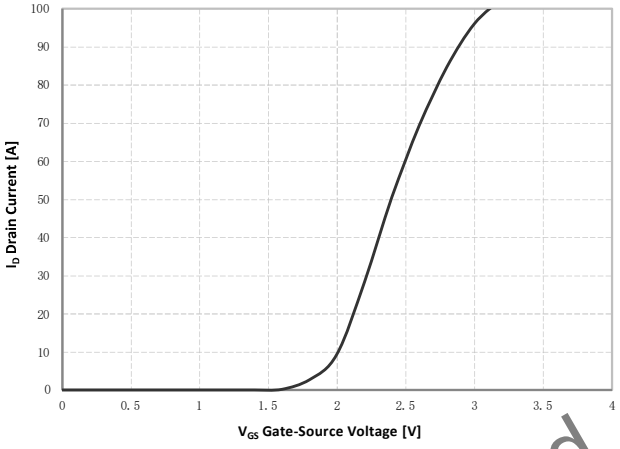
Notes:

1. Drain current limited by maximum junction temperature.
2. E_{AS} condition: T_J =25℃, V_{DD} =50V, V_G =10V, L=0.5mH,

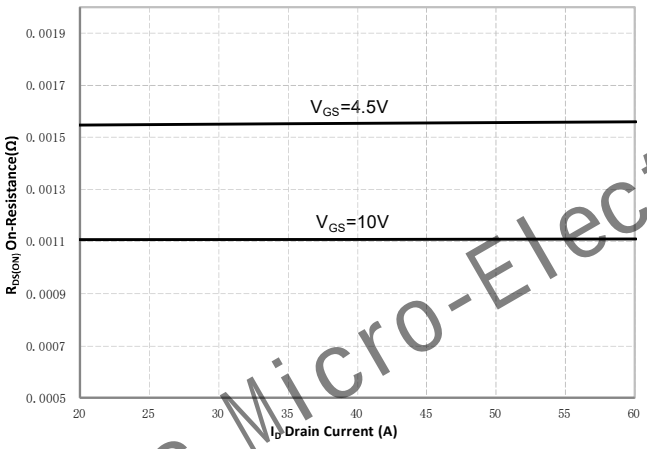
Typical characteristics (T_A = 25 °C, unless otherwise noted)



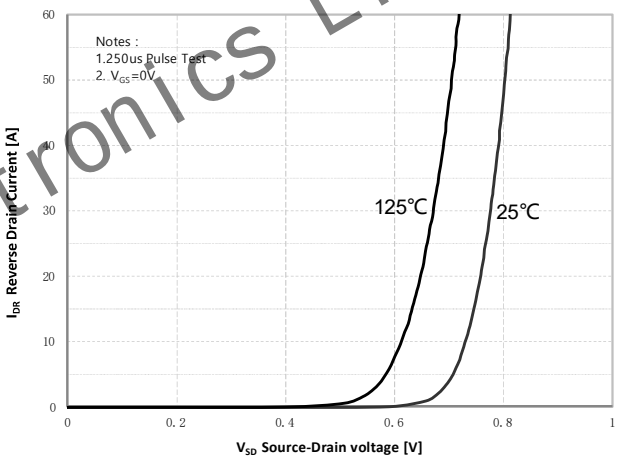
Output Characteristics



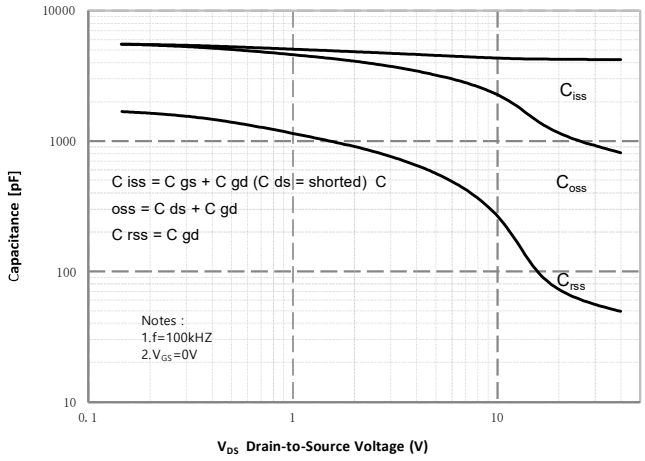
Transfer Characteristics



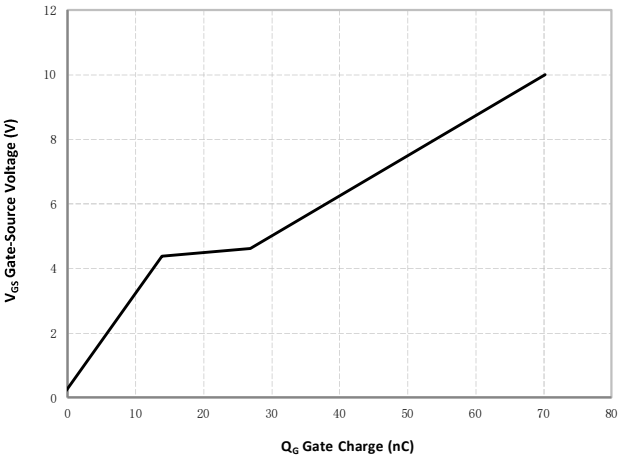
On Resistance vs. Drain Current



Body-Diode Characteristics

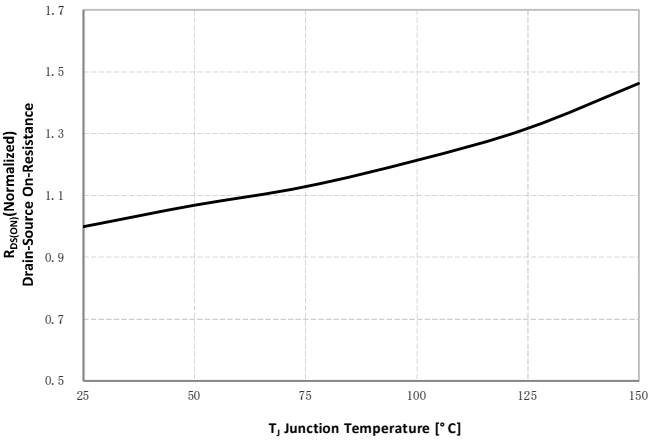


Capacitance Characteristics

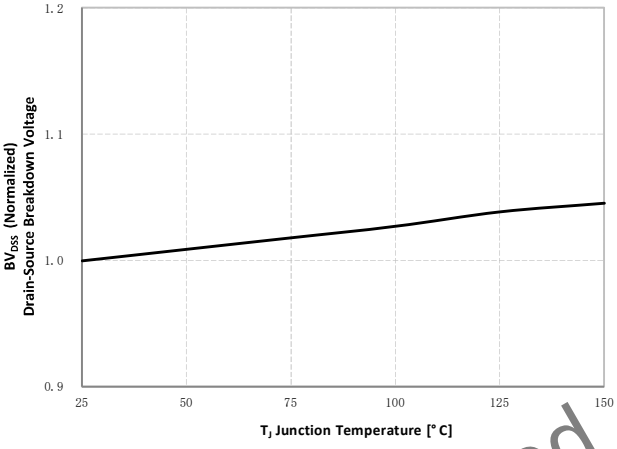


Gate Charge

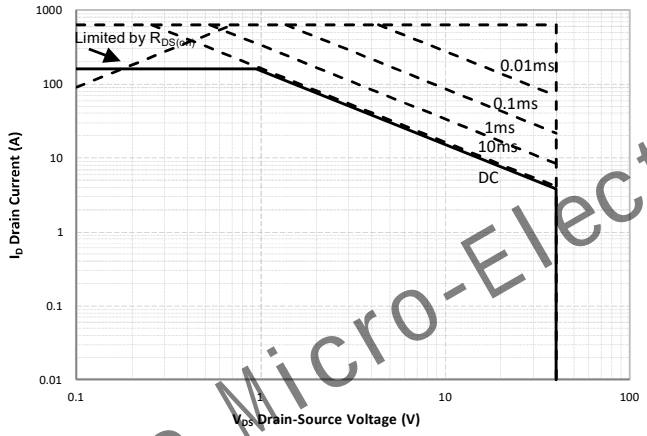
Typical characteristics (T_A = 25 °C, unless otherwise noted)



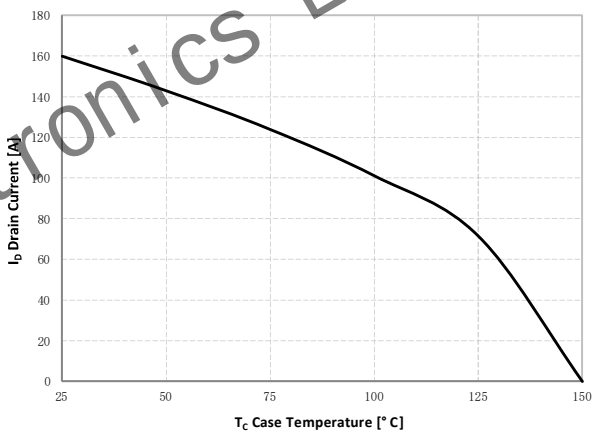
On-Resistance Variation vs Temperature



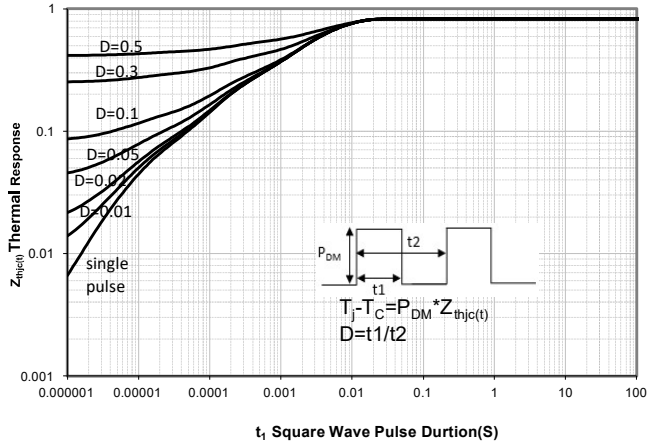
Breakdown Voltage Variation vs Temperature



Maximum Safe Operating Area



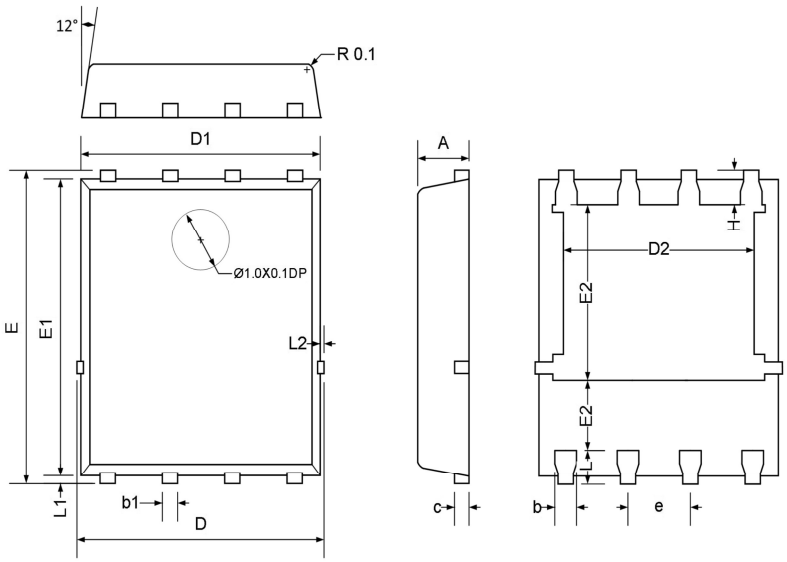
Current De-rating



Transient Thermal Impedance, Junction-Case

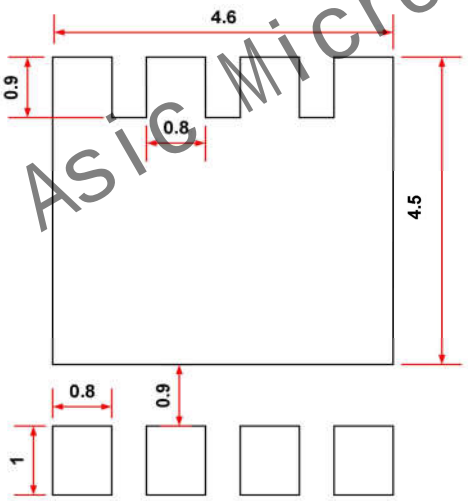
PACKAGE OUTLINE DIMENSIONS

PDFNWB5×6-8L



Symbol	Dimensions in millimeters		
	Min.	Typ.	Max.
A	0.09	1.00	1.05
b	0.35	0.40	0.45
b1	0.25	0.30	0.35
c	0.21	0.25	0.34
D	4.90	5.00	5.10
D1	4.80	4.90	5.00
D2	3.82	3.96	4.11
e	1.17	1.270	1.370
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.18	3.3	3.54
H	0.51	0.61	0.71
K	1.1	—	—
L	0.51	0.61	0.71
L1	0.07	0.125	0.2
L2	—	—	0.10

Recommended PCB Layout (Unit: mm)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.