NJMNB9P0

20V Dual N-Channel MOSFETs

General Description

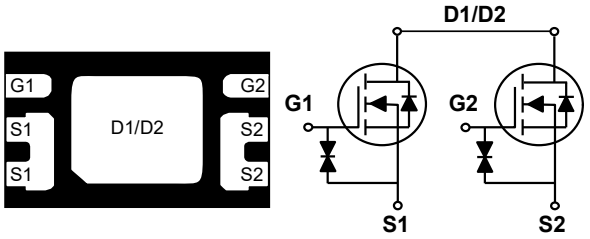
The NJMNB9P0 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the small power switching and load switch applications.

BV_{DSS}	$R_{DS(ON)}$	I_D
20 V	9 mΩ	9.5 A

Features

- $R_{DS(ON)} \leqq 9m\Omega @ V_{GS}=4.5V$
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline

DFN2x3A-6L Pin Configuration



Applications

- Handheld Instruments
- POL Applications
- Battery Protection Applications

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current - Continuous (T_A=25°C)	9.5	A
	Drain Current - Continuous (T_A=70°C)	7.6	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	60	A
P_D	Power Dissipation (T_A=25°C)	1.56	W
T_J	Operating Junction Temperature Range	-55 to 150	°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
Marking Code		NB9P0 , 8204	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	80	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25°C	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=55°C	---	---	5	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±10	uA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance (NOTE 1)	V_{GS}=4.5V , I_D=5A	---	---	9	mΩ
		V_{GS}=4.0V , I_D=5A	---	---	9.5	
		V_{GS}=3.7V , I_D=5A	---	---	10	
		V_{GS}=3.1V , I_D=5A	---	---	11.2	
		V_{GS}=2.5V , I_D=5A	---	---	13.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D=250uA	0.45	---	1.5	V
gfs	Forward Transconductance	V_{DS}=5V , I_D=5.5A	---	38	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=5.5A	---	22	---	nC
Q_{gs}	Gate-Source Charge		---	3.1	---	
Q_{gd}	Gate-Drain Charge		---	8.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=4.5V , I_D=5.5A , R_G=6Ω	---	10	---	nS
T_r	Rise Time		---	39.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	65	---	
T_f	Fall Time		---	30	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , F=1MHz	---	1647	---	pF
C_{oss}	Output Capacitance		---	170	---	
C_{rss}	Reverse Transfer Capacitance		---	148	---	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	9.5	A
I_{SM}	Pulsed Source Current (NOTE 1)		---	---	60	A
V_{SD}	Diode Forward Voltage (NOTE 1)	V_{GS}=0V , I_S=9.5A , T_J=25°C	---	---	1.2	V

NOTES：

1. The data tested by pulsed , pulse width ≦ 10us , duty cycle ≦ 1%.

Characteristics Curves

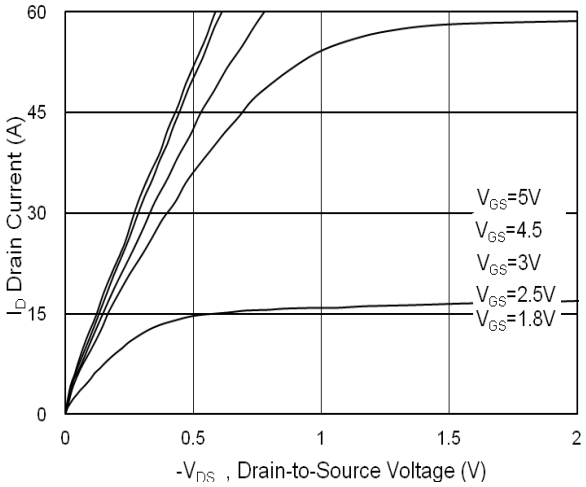


Fig.1 Typical Output Characteristics

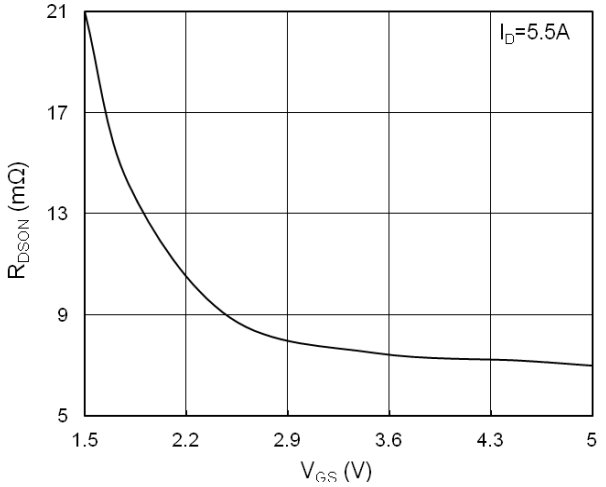


Fig.2 On-Resistance vs. Gate-Source Voltage

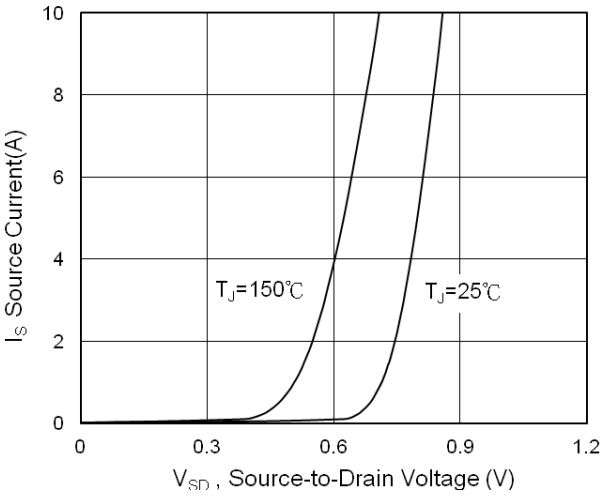


Fig.3 Forward Characteristics Of Reverse diode

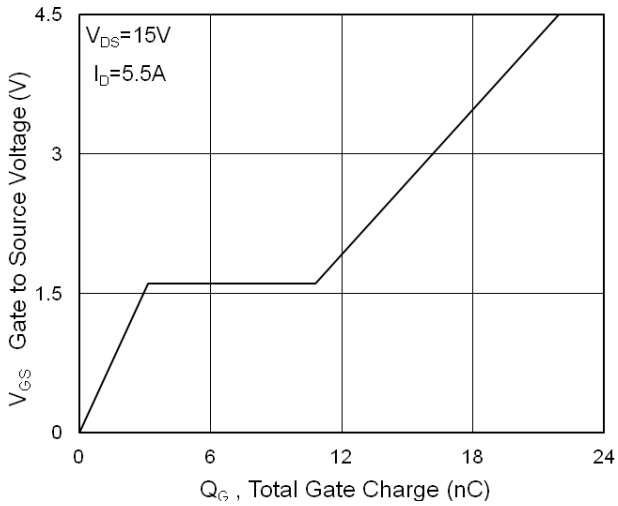


Fig.4 Gate-Charge Characteristics

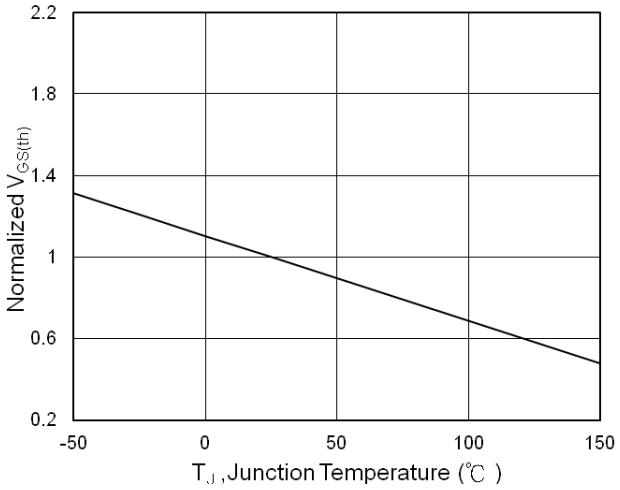


Fig.5 $V_{GS(th)}$ vs. T_J

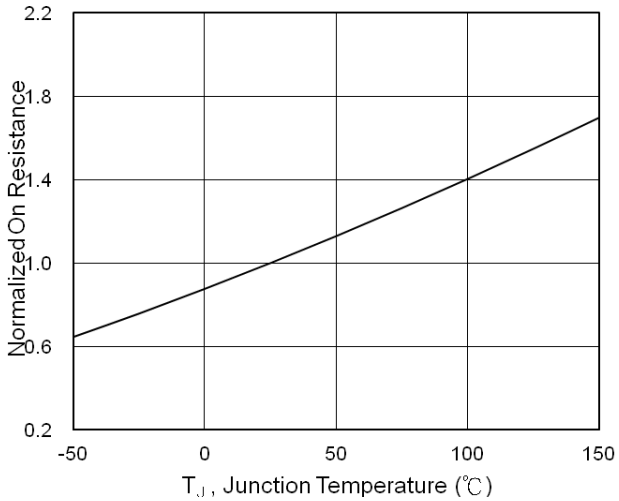


Fig.6 Normalized R_{DSON} vs. T_J

Characteristics Curves

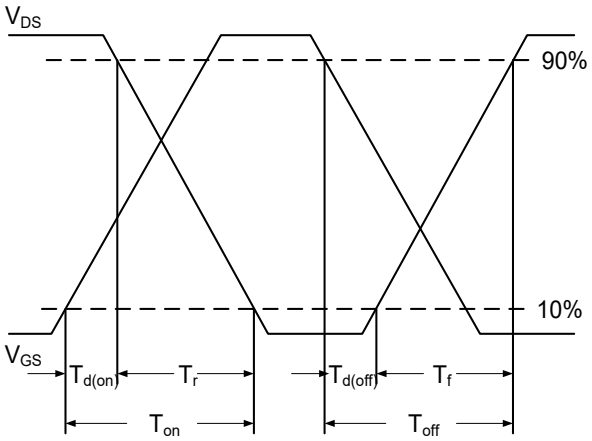


Fig.7 Switching Time Waveform

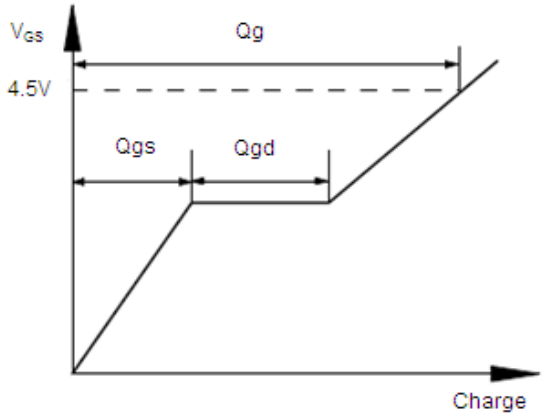
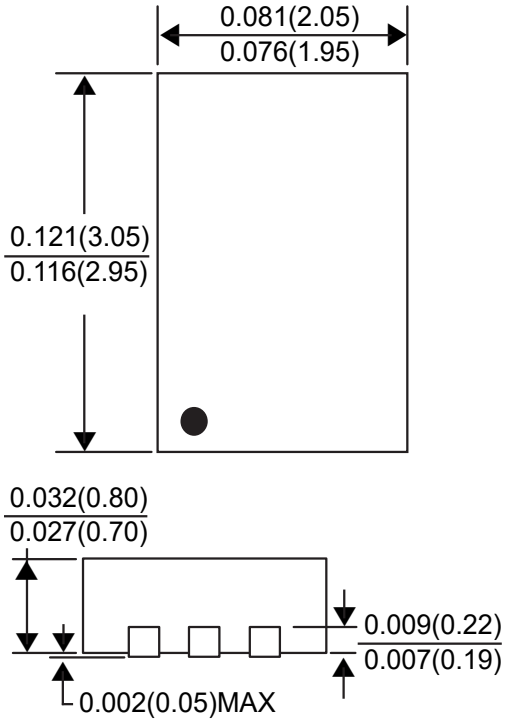
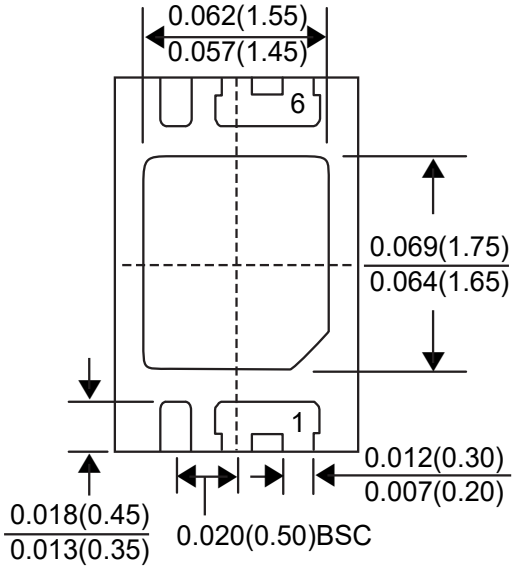


Fig.8 Gate Charge Waveform

Package Outline Dimensions





DFN2x3A-6L

Dimensions in inches and (millimeters)

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