

DN8B20KC

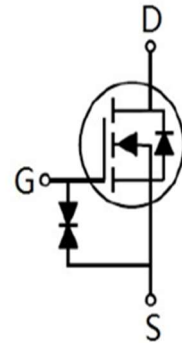
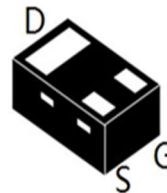
DN8B20KC 20V/0.8A N Channel Small Signal MOSFET

General description

20V/0.8A N Channel Small Signal MOSFET

Features:

- Low RDS(on) @VGS=4.5V
- 2.5V Logic Level Control
- N Channel SOT-883 Package
- ESD Protection
- Pb-Free, RoHS Compliant



Applications

- LED Lighting Application,
- ON/OFF switch
- Networking

SOT-883

V _{(BR)DSS}	R _{DS(ON)} Typ	I _D Max
20V	200mΩ @4.5V	0.8A
	220mΩ @ 3.3V	

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Unit	
Common Ratings (TA=25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage	±8	V	
V _{(BR)DSS}	Drain-Source Breakdown Voltage	20	V	
T _J	Maximum Junction Temperature	150	°C	
T _{STG}	Storage Temperature Range	-50 to 150	°C	
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested①	T _A =25°C	3.2	A
I _D	Continuous Drain Current	T _A =25°C	0.8	A
		T _A =70°C	0.65	
P _D	Maximum Power Dissipation	T _A =25°C	0.3	W
		T _A =70°C	0.2	
R _{JA}	Thermal Resistance Junction-Ambient	400	°C/W	

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _A =25°C)	V _{DS} =20V, V _{GS} =0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T _A =125°C)	V _{DS} =16V, V _{GS} =0V	--	--	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±8V, V _{DS} =0V	--	--	±10	uA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.35	0.6	1.0	V
R _{DS(ON)}	Drain-Source On-State Resistance ^②	V _{GS} =4.5V, I _D =0.5A	--	200	300	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance ^②	V _{GS} =3.3V, I _D =0.3A	--	220	350	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance ^②	V _{GS} =2.5V, I _D =0.2A	--	250	400	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	--	36	--	pF
C _{oss}	Output Capacitance		--	9.3	--	pF
C _{rss}	Reverse Transfer Capacitance		--	6.8	--	pF
Q _g	Total Gate Charge	V _{DS} =10V I _D =0.5A, V _{GS} =4.5V	--	0.8	--	nC
Q _{gs}	Gate Source Charge		--	0.11	--	nC
Q _{gd}	Gate Drain Charge		--	0.18	--	nC
Switching Characteristics						
t _{d(on)}	Turn on Delay Time	V _{DD} =10V, I _D =0.5A, R _G =3.3Ω, V _{GS} =4.5V	--	7	--	ns
t _r	Turn on Rise Time		--	10	--	ns
t _{d(off)}	Turn Off Delay Time		-	35	--	ns
t _f	Turn Off Fall Time		--	14	--	ns
Source Drain Diode Characteristics						
I _{SD}	Source drain current(Body Diode)	T _A =25°C	--	--	0.5	A
V _{SD}	Forward on voltage ^②	T _J =25°C, I _{SD} =0.3A, V _{GS} =0V	--	0.74	1.2	V

Notes:

- ① Pulse width limited by maximum allowable junction temperature
- ② Pulse test ; Pulse width≤300μs, duty cycle≤2%



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Typical Characteristics

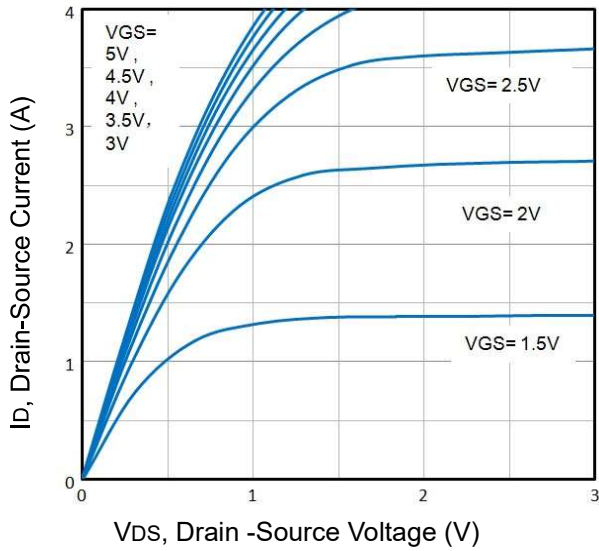


Fig1. Typical Output Characteristics

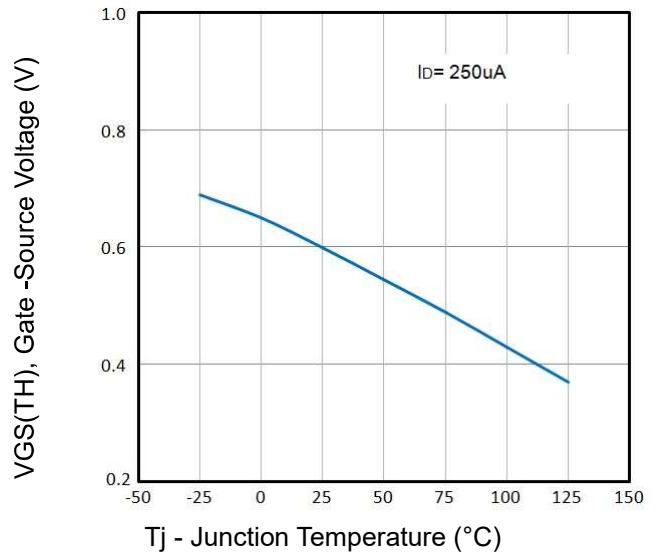


Fig2. Normalized Threshold Voltage Vs. Temperature

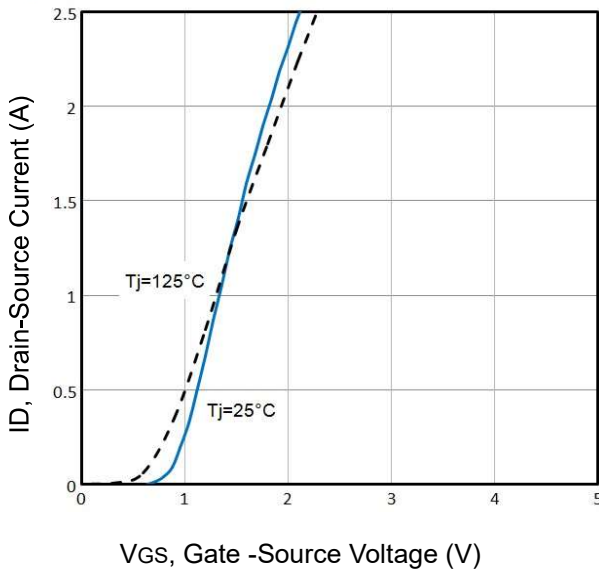


Fig3. Typical Transfer Characteristics

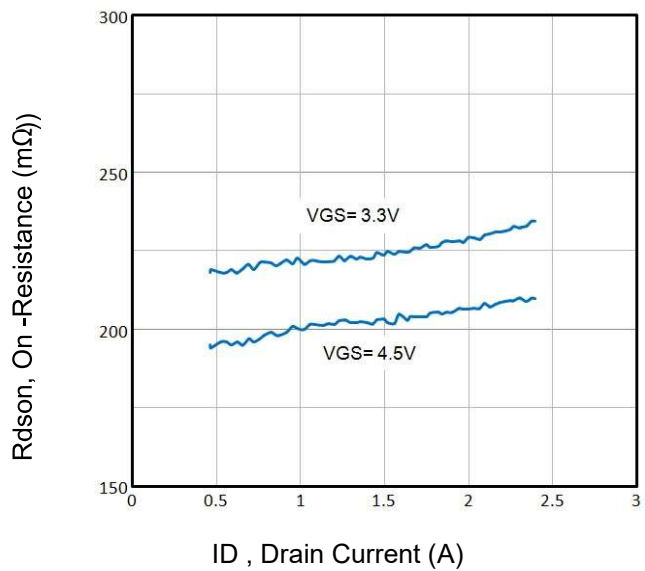


Fig4. On-Resistance vs. Drain Current and Gate

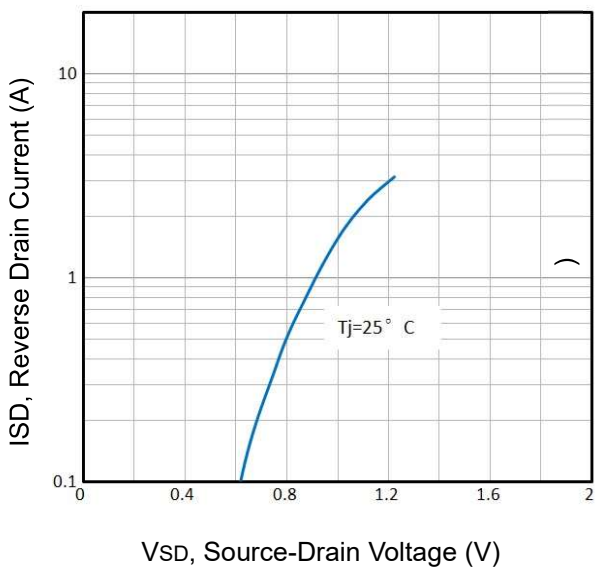


Fig5. Typical Source-Drain Diode Forward Voltage

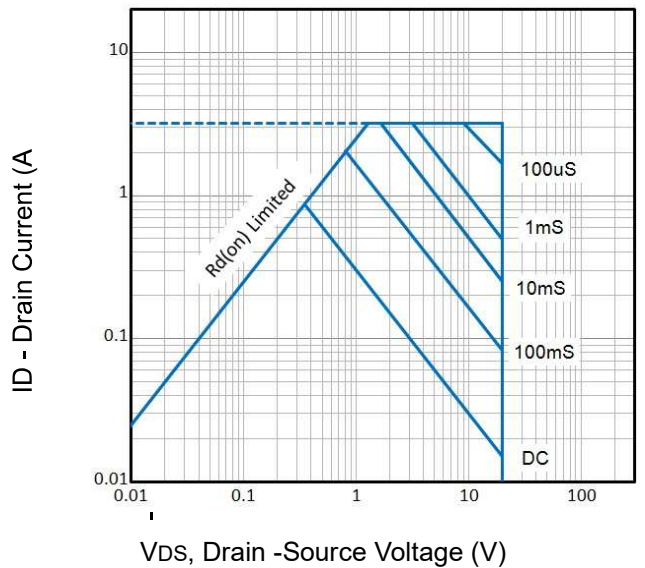
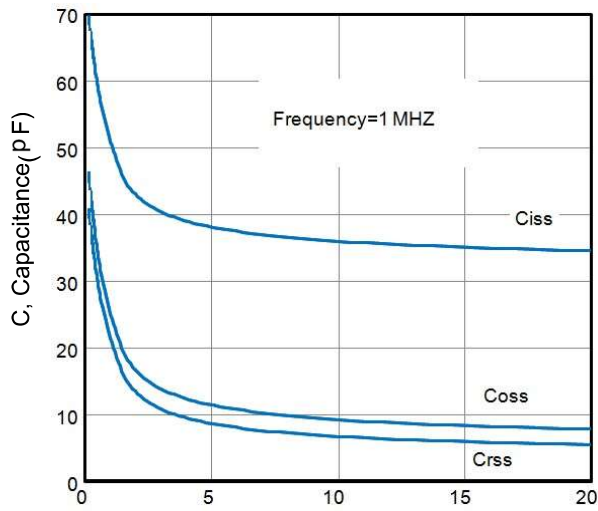


Fig6. Maximum Safe Operating Area

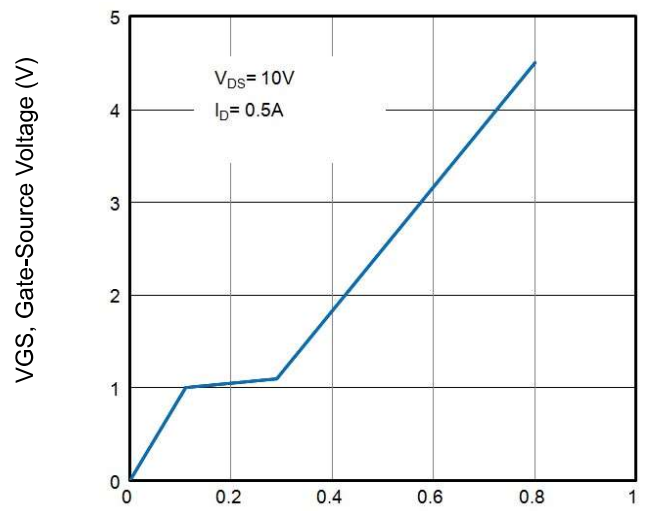


DN8B20KC

Typical Characteristics



VDS, Drain-Source Voltage (V)



Qg, Total Gate Charge (nC)

Fig7. Typical Capacitance Vs. Drain-Source Voltage

Fig8. Typical Gate Charge Vs. Gate-Source Voltage

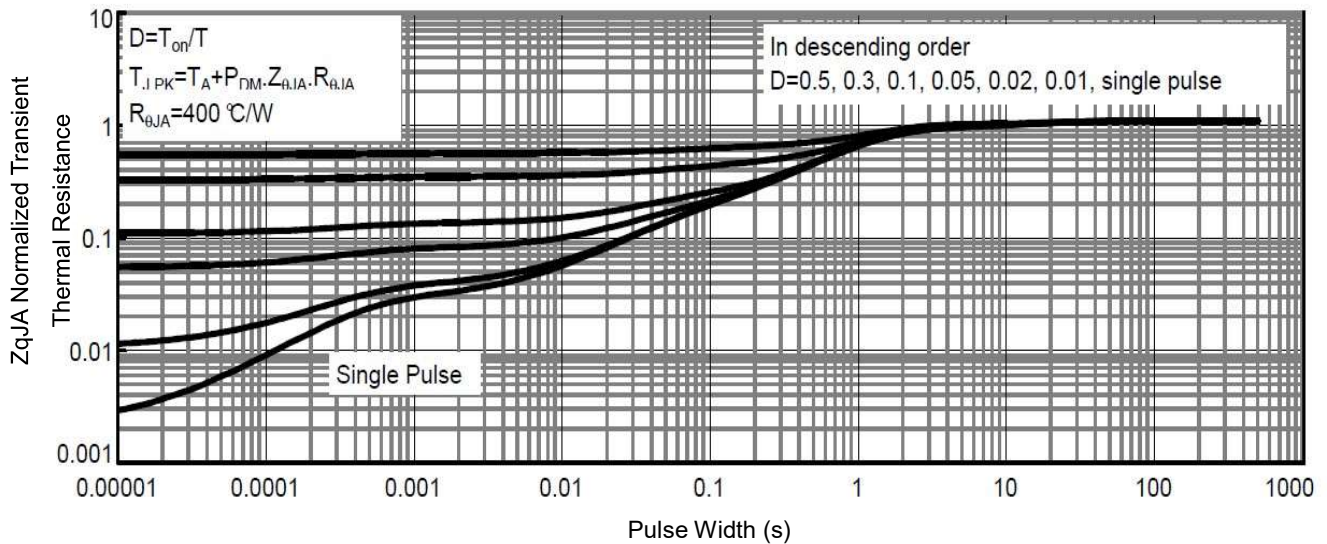


Fig9. Normalized Maximum Transient Thermal Impedance

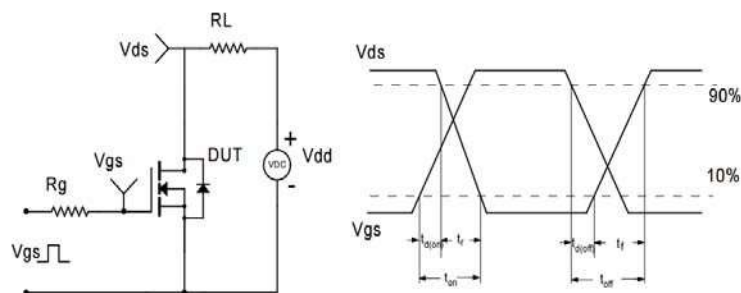
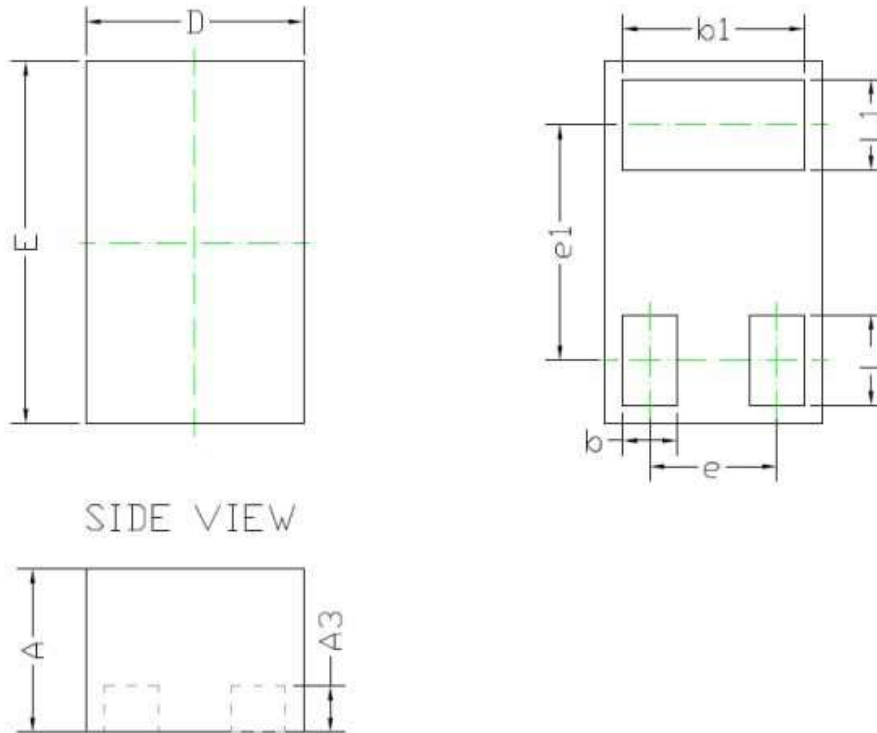


Fig10. Switching Time Test Circuit and waveforms

DN8B20KC

SOT-883 Package outline



SYMBOL	COMMON		
	DIMENSIONS MILLIMETER		
	MIN	NOM.	MAX
A	0.40	0.45	0.50
A3	0.127 BSC		
D	0.55	0.60	0.65
E	0.95	1.00	1.05
e	0.35 BSC		
e1	0.65 BSC		
b	0.13	0.15	0.18
k1	0.45	0.50	0.55
L	0.20	0.25	0.30
L1	0.20	0.25	0.30

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[C3M0021120D](#) [DMN13M9UCA6-7](#) [BSS340NWH6327XTSA1](#) [MCM3400A-TP](#) [DMTH10H4M6SPS-13](#) [IRF40SC240ARMA1](#)
[IPS60R1K0PFD7SAKMA1](#)