

DP6B20KC

DP6B20KC -20V/-0.6A P Channel Small Signal MOSFET

General description

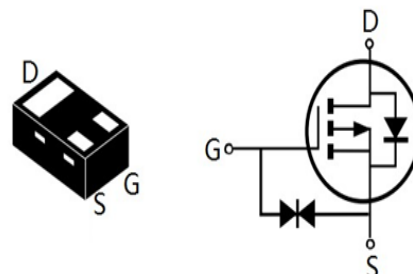
-20V/-0.6A P Channel Small Signal MOSFET

Features:

- Low RDS(on) @VGS=-4.5V
- -3.3V Logic Level Control
- P Channel SOT-883 Package
- ESD Protection
- Pb-Free, RoHS Compliant

Applications

- High-side Load Switch• Switching Circuits
- High Speed line Driver
- Relay Driver



SOT-883

Device Marking:

V _{(BR)DSS}	R _{DS(ON)} Typ	I _D Max
-20V	510mΩ @ 4.5V	-0.6A
	570mΩ @ 3.3V	

Device Type	Marking
DP6B20KC	39

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

Symbol	Parameter	Rating	Unit	
Common Ratings (T_A=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	-2.4	A
I _D	Continuous Drain Current	T _A =25°C	-0.6	A
		T _A =70°C	-0.48	
P _D	Maximum Power Dissipation	T _A =25°C	0.3	W
		T _A =70°C	0.24	
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	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±8V, V _{DS} =0V	--	--	±10	μA
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	--	510	650	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance ^②	V _{GS} =-3.3V, I _D =-0.3A	--	570	700	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance ^②	V _{GS} =-2.5V, I _D =-0.1A	--	600	800	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	--	39	--	pF
C _{oss}	Output Capacitance		--	6.4	--	pF
C _{rss}	Reverse Transfer Capacitance		--	4.2	--	pF
Q _g	Total Gate Charge	V _{DS} =-10V I _D =-0.5A, V _{GS} =-4.5V	--	1.1	--	nC
Q _{gs}	Gate Source Charge		--	0.1	--	nC
Q _{gd}	Gate Drain Charge		--	0.3	--	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	--	16	--	ns
t _r	Turn on Rise Time		--	32	--	ns
t _{d(off)}	Turn Off Delay Time		-	85	--	ns
t _f	Turn Off Fall Time		--	68	--	ns
Source Drain Diode Characteristics						
I _{SD}	Source drain current(Body Diode)	T _A =25°C	--	--	-0.3	A
V _{SD}	Forward on voltage ^②	T _J =25°C, I _{SD} =-0.3A, V _{GS} =0V	--	-0.89	-1.2	V

Notes:

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

Typical Characteristics

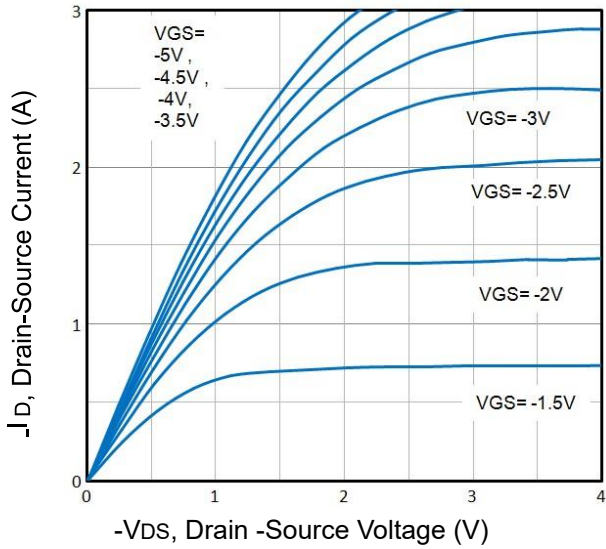


Fig1. Typical Output Characteristics

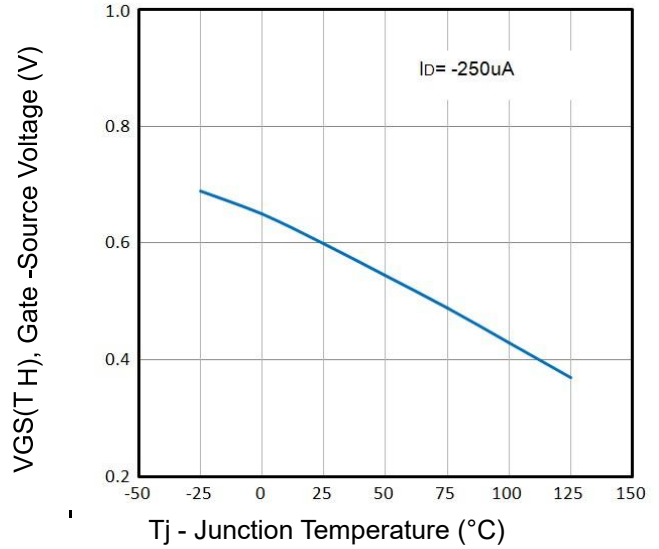


Fig2. Normalized Threshold Voltage Vs. Temperature

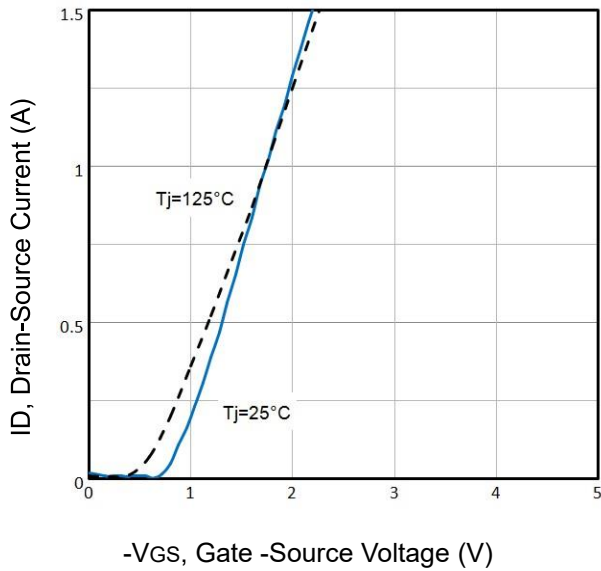


Fig3. Typical Transfer Characteristics

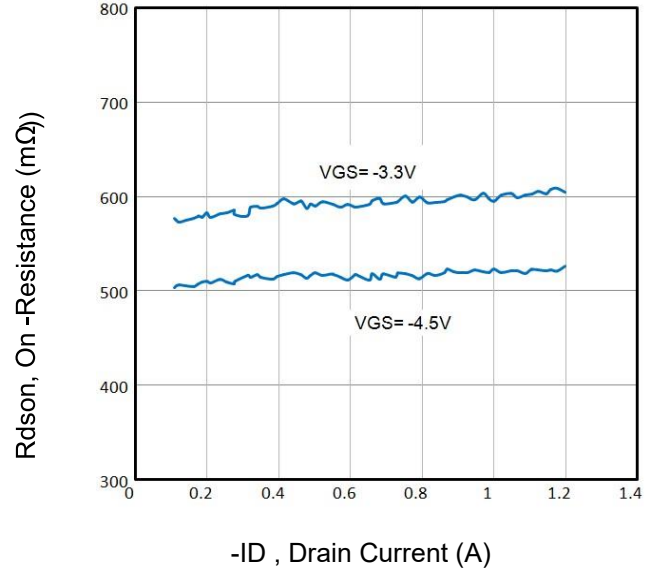


Fig4. On-Resistance vs. Drain Current and Gate

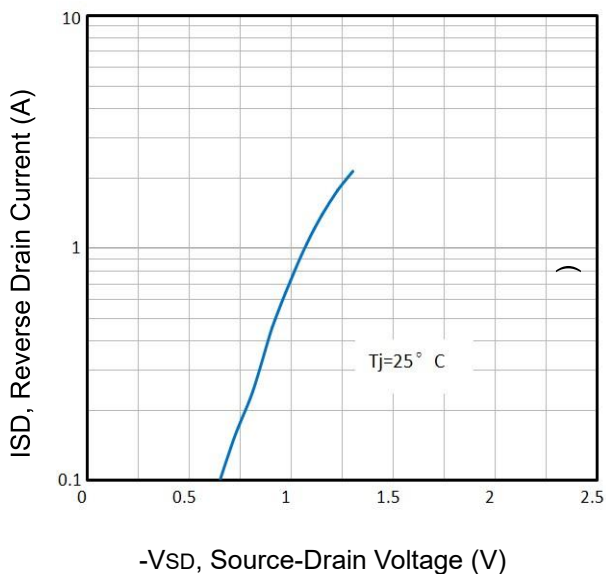


Fig5. Typical Source-Drain Diode Forward Voltage

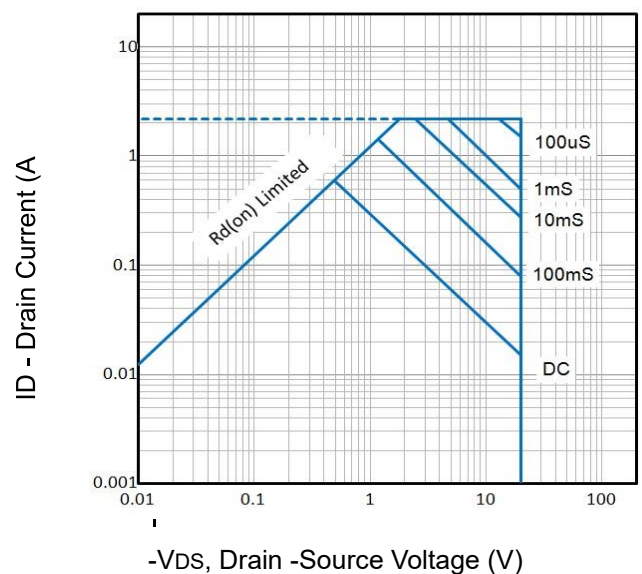


Fig6. Maximum Safe Operating Area

DP6B20KC

Typical Characteristics

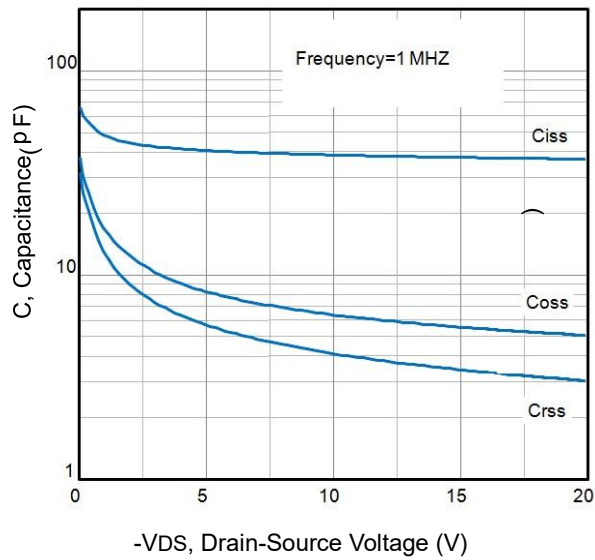


Fig7. Typical Capacitance Vs. Drain-Source Voltage

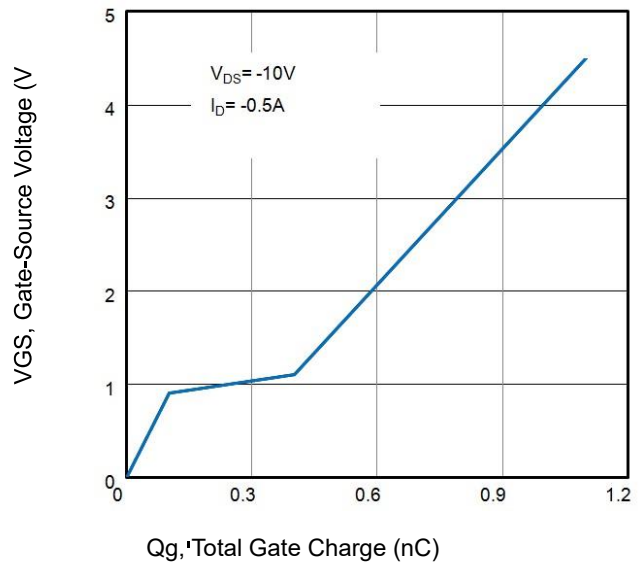


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

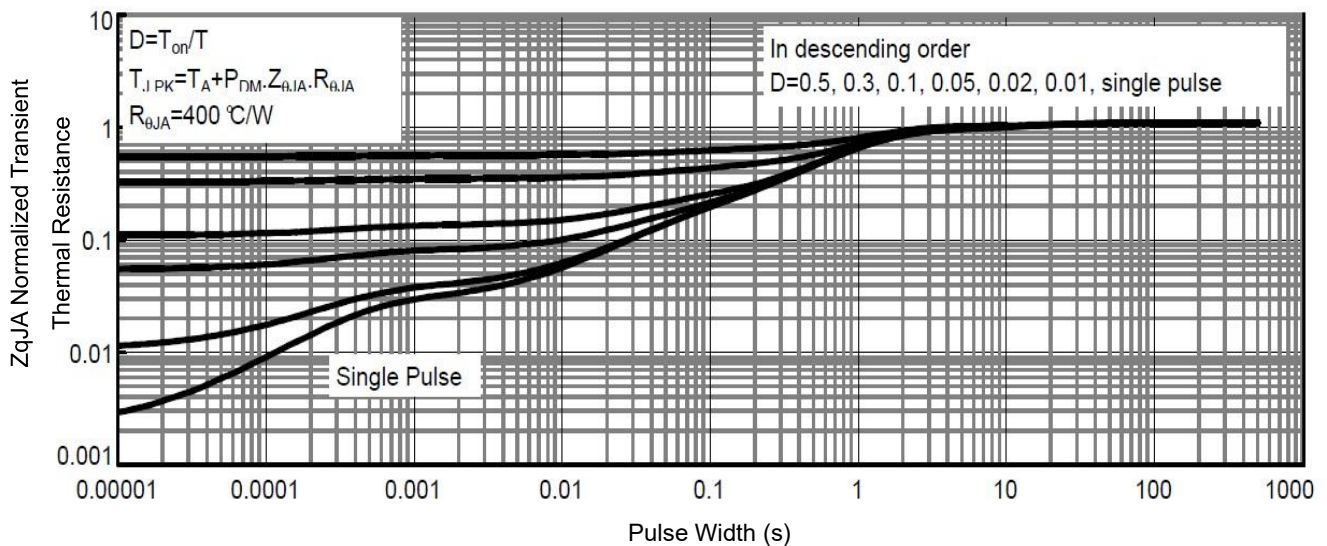


Fig9. Normalized Maximum Transient Thermal Impedance

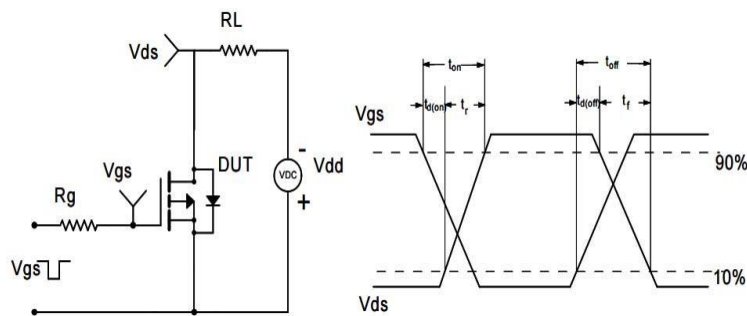
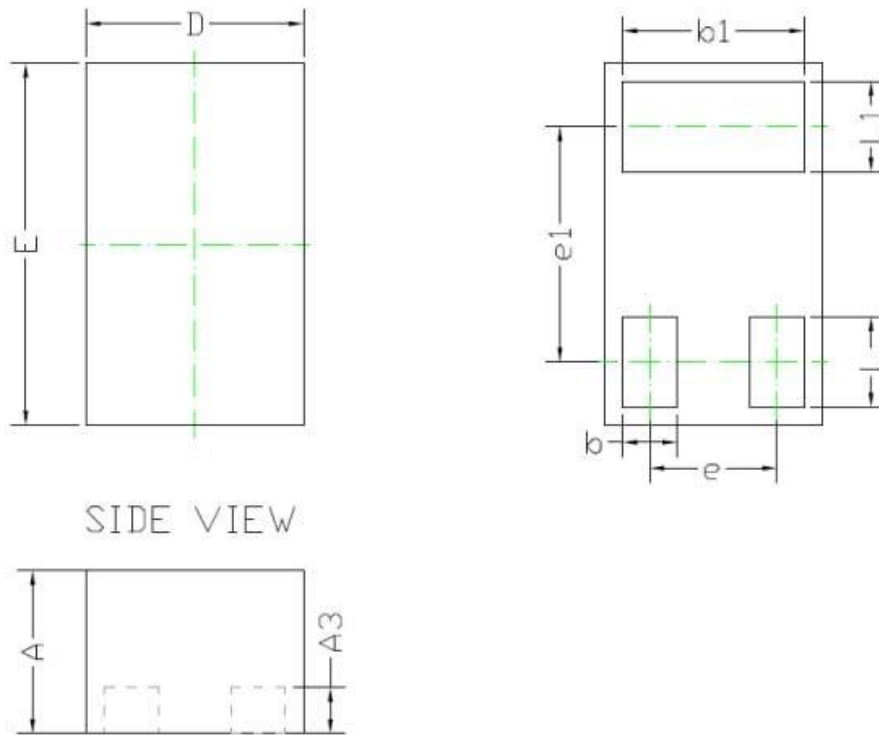


Fig10. Switching Time Test Circuit and waveforms

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
b1	0.45	0.50	0.55
L	0.20	0.25	0.30
L1	0.20	0.25	0.30

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