

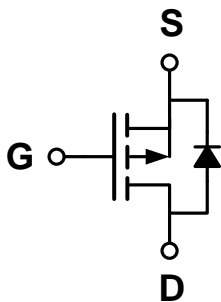
DESCRIPTION

The LXP1220B uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and high density cell Design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications

APPLICATION

- PWM applications
- Load switch

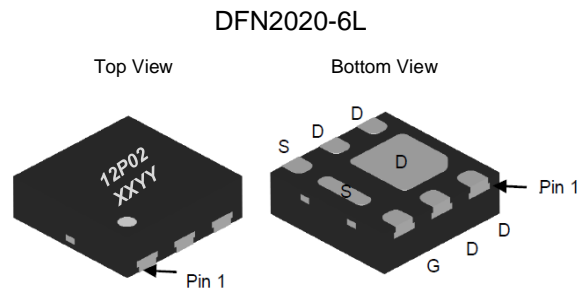
SCHEMATIC DIAGRAM



GENERAL FEATURES

- $V_{DS} = -20V$, $I_D = -12A$
 $R_{DS(ON)}(Typ.) = 20m\Omega @ V_{GS} = -2.5V$
 $R_{DS(ON)}(Typ.) = 15m\Omega @ V_{GS} = -4.5V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package

PIN ASSIGNMENT



Note: XXYY—Date code

ORDERING INFORMATION

Part Number	Storage Temperature	Package	Marking	Devices Per Reel
LXP1220B	-55°C to +150°C	DFN2020-6L	12P02 XXYY	3000

ABSOLUTE MAXIMUM RATINGS

($T_A = 25^\circ C$ unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	-20	V
Gate-source voltage		V_{GS}	± 12	V
Drain current-continuous	$T_C = 25^\circ C$	I_D	-12 ^a	A
	$T_C = 70^\circ C$		-8.4 ^a	
	$T_A = 25^\circ C$		-12 ^{a,b,c}	
	$T_A = 70^\circ C$		-7 ^{b,c}	
Drain-source Diode forward current	$T_C = 25^\circ C$	I_S	-12 ^a	A
	$T_A = 25^\circ C$		-2.9 ^{b,c}	
Maximum power dissipation	$T_C = 25^\circ C$	P_D	18	W
	$T_C = 70^\circ C$		12	
	$T_A = 25^\circ C$		3.5 ^{b,c}	
	$T_A = 70^\circ C$		2.2 ^{b,c}	
Operating junction Temperature range		T_J	-55~150	°C



THERMAL CHARACTERISTICS

Parameter	Symbol	Typ.	Max.	Unit	
Maximum junction-to-ambient ^{b,d}	$t \leq 5 \text{ s}$	R_{thJA}	28	36	°C
Maximum junction-to-case (drain)	Steady state	R_{thJC}	5.3	6.5	

Notes:

- a. Package limited; b. Surface mounted on 1" x 1" FR4 board
c. $t = 5 \text{ s}$; d. Maximum under steady state conditions is 80 °C/W

ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
Gate-body leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	± 100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.7	-1.0	V
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-10A$	-	15	20	m Ω
		$V_{GS}=-2.5V, I_D=-5A$	-	20	25	
Forward transconductance	g_{fs}	$V_{DS}=-10V, I_D=-5A$	-	20	-	S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS}=-10V, V_{GS}=0V$ $f=1.0\text{MHz}$	-	1500	-	pF
Output capacitance	C_{oss}		-	233	-	
Reverse transfer capacitance	C_{rss}		-	198	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	$V_{DD}=-10V$ $I_D=-5A$ $V_{GEN}=-4.5V$ $R_L=1.2\text{ohm}$ $R_{GEN}=1\text{ohm}$	-	10	-	ns
Rise time	t_r		-	31	-	
Turn-off delay time	$t_{D(OFF)}$		-	28	-	
Fall time	t_f		-	8	-	
Total gate charge	Q_g	$V_{DS}=-10V, I_D=-6A$ $V_{GS}=-4.5V$	-	15.3	-	nC
Gate-source charge	Q_{gs}		-	2.2	-	
Gate-drain charge	Q_{gd}		-	4.4	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V_{SD}	$V_{GS}=0V, I_S=-1.25A$	-	-0.7	-1.2	V

Notes:

- a. Pulse test: Pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2 \%$
b. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

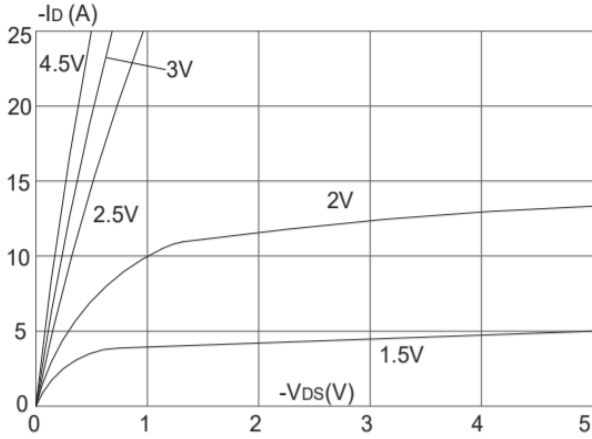


Figure 1: Output Characteristics

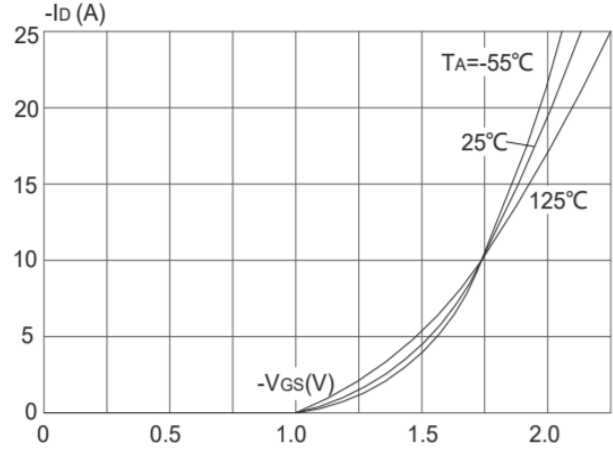


Figure 2: Typical Transfer Characteristics

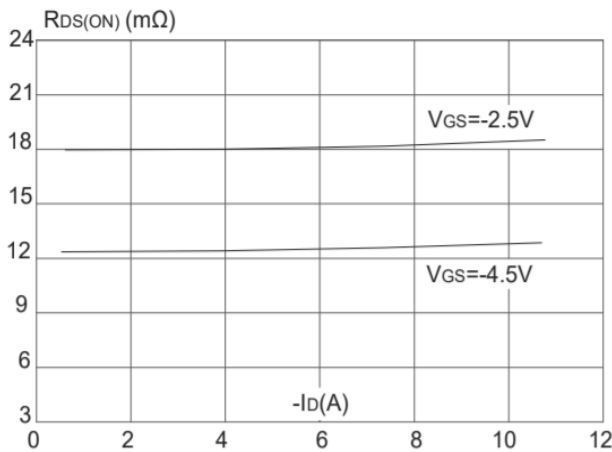


Figure 3: On-resistance vs. Drain Current

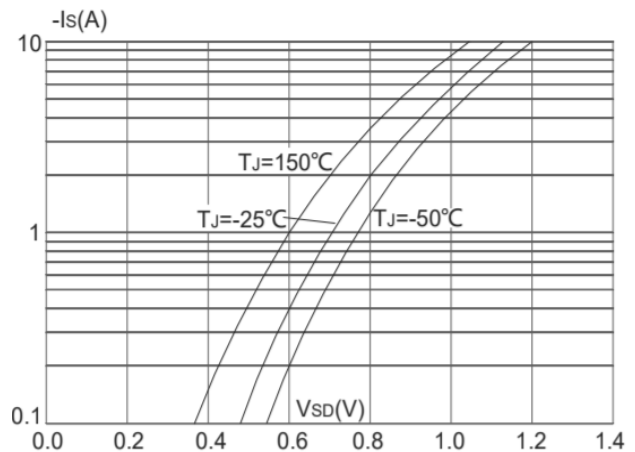


Figure 4: Body Diode Characteristics

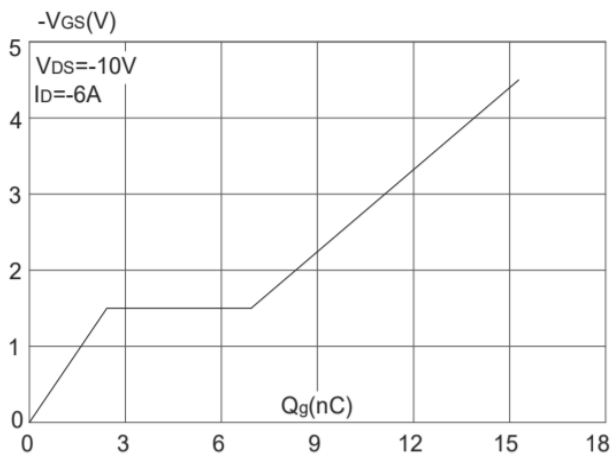


Figure 5: Gate Charge Characteristics

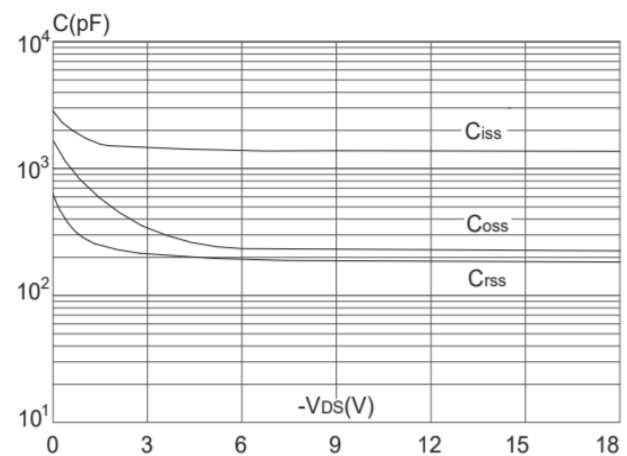
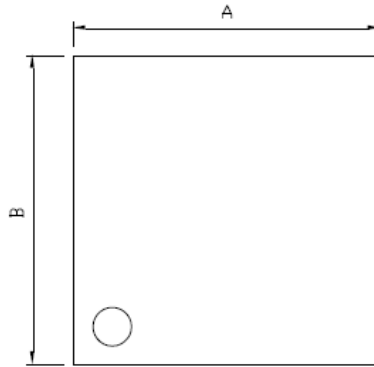
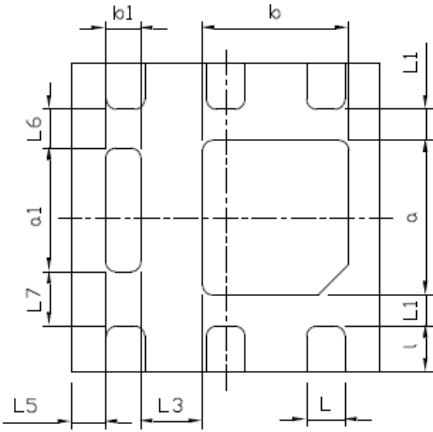


Figure 6: Capacitance Characteristics

PACKAGE INFORMATION

● DFN2020-6L



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	1.95	2.00	2.05
B	1.95	2.00	2.05
C	0.45	0.50	0.55
L	0.25	0.30	0.35
L1	0.10	0.20	0.30
L2	-	0.65	-
L3	0.30	0.40	0.50
L4	-	0.152	-
L5	0.12	0.22	0.32
L6	0.15	0.25	0.35
L7	0.23	0.33	0.43
a	0.90	1.00	1.10
a1	0.72	0.82	0.92
b	0.85	0.95	1.05
b1	0.13	0.23	0.33
l	0.25	0.30	0.35
k	0.00	-	0.05

