



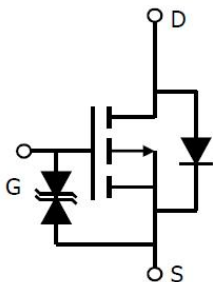
## GENERAL FEATURES

- $V_{DS} = -20V$ ,  $I_D = -4.2A$   
 $R_{DS(ON)}(Typ.) = 50m\Omega @ V_{GS} = -2.5V$   
 $R_{DS(ON)}(Typ.) = 38m\Omega @ V_{GS} = -4.5V$
- High power and current handling capability
- Lead free product is acquired
- Surface mount package
- ESD Rating: >2000V HBM

## APPLICATION

- PWM applications
- Load switch

## SCHEMATIC DIAGRAM



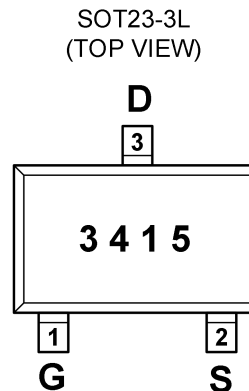
## DESCRIPTION

The LX3415KB 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.

## PACKAGE

- SOT-23-3L

## PIN ASSIGNMENT



## ORDERING INFORMATION

Part Number	Storage Temperature	Package	Marking	Devices Per Reel
LX3415KB	-55°C to +150°C	SOT23-3L	3415	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	$V_{GS}$	$\pm 8$	V
Continuous drain current ( $T_J = 150^\circ C$ ) <sup>a</sup>	$T_A = 25^\circ C$	-4.2	A
	$T_A = 70^\circ C$	-3.7	
Pulsed drain current <sup>b</sup>	$I_{DM}$	-16.8	
Power dissipation <sup>a</sup>	$T_A = 25^\circ C$	1.4	W
	$T_A = 70^\circ C$	0.9	
Operating junction and storage temperature range	$T_J, T_{STG}$	-55—150	°C



## THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Max	Unit	
Maximum junction-to-ambient <sup>a</sup>	≤ 10 s	R <sub>θJA</sub>	70	90	°C/W
	Steady-State		100	125	
Maximum junction-to-foot	Steady-State	R <sub>θJC</sub>	63	80	

### Notes

- a. Surface mounted on 1" x 1" FR4 board  
b. Pulse width limited by maximum junction temperature

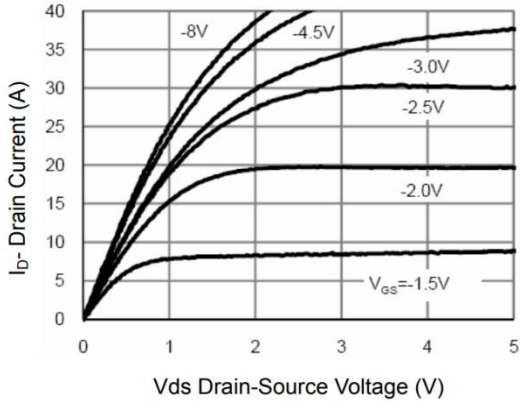
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-20	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V	-	-	-1	μA
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±8V	-	-	±10	μA
<b>ON Characteristics</b>						
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.4	-0.6	-1.0	V
Drain-source on-state resistance <sup>a</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-4.2A	-	38	50	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-3A	-	50	60	
Forward transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-4.2A	8	-	-	S
<b>Dynamic Characteristics <sup>b</sup></b>						
Input capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V f=1.0MHz	-	751	-	pF
Output capacitance	C <sub>OSS</sub>		-	115	-	
Reverse transfer capacitance	C <sub>RSS</sub>		-	80	-	
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>D(ON)</sub>	V <sub>DD</sub> =-10V I <sub>D</sub> =-4.2A V <sub>GEN</sub> =-4.5V R <sub>L</sub> =10ohm R <sub>GEN</sub> =-60ohm	-	13	-	ns
Rise time	t <sub>r</sub>		-	9	-	
Turn-off delay time	t <sub>D(OFF)</sub>		-	19	-	
Fall time	t <sub>f</sub>		-	29	-	
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-4.2A V <sub>GS</sub> =-4.5V	-	9.3	-	nC
Gate-source charge	Q <sub>gs</sub>		-	1	-	
Gate-drain charge	Q <sub>gd</sub>		-	2.2	-	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode forward voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1.25A	-	-0.81	-1.2	V

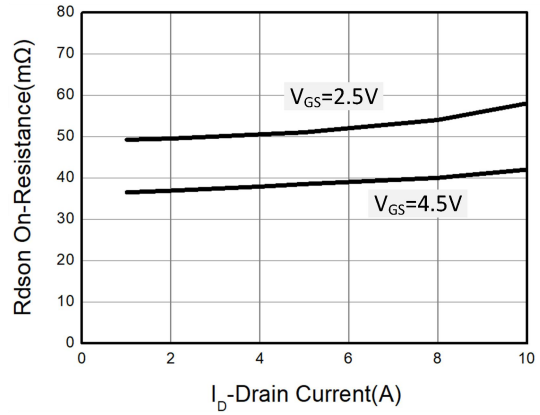
### Notes

- a. Pulse test: Pulse width ≤ 300μs, duty cycle ≤ 2 %  
b. Guaranteed by design, not subject to production testing

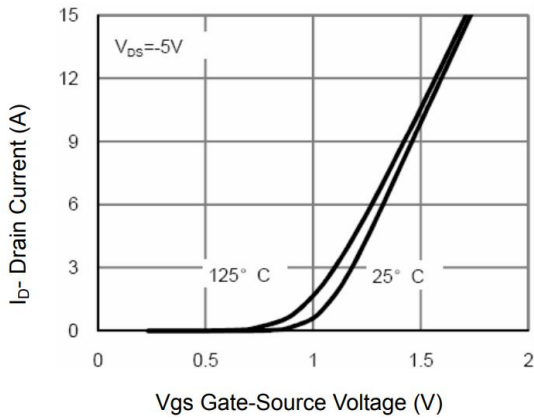
**TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)**



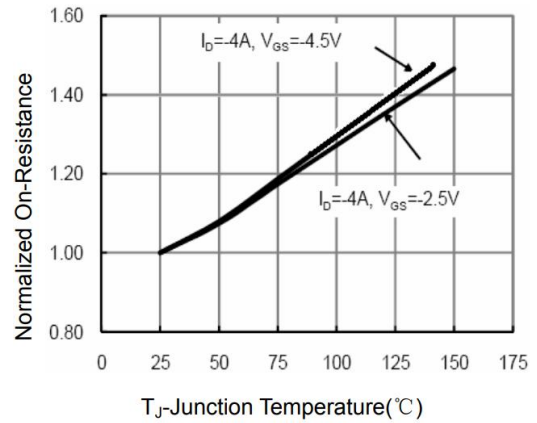
**Fig.1 Output Characteristic**



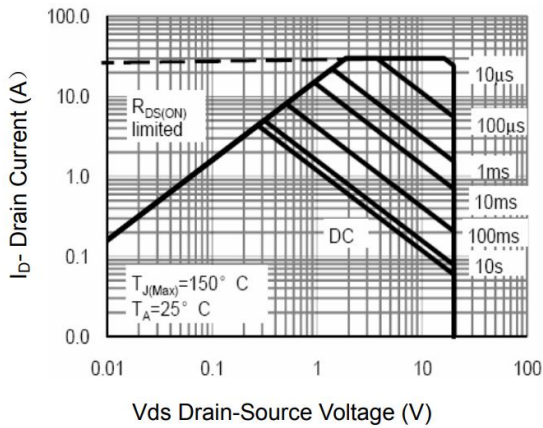
**Fig.2 On-Resistance vs. Drain Current**



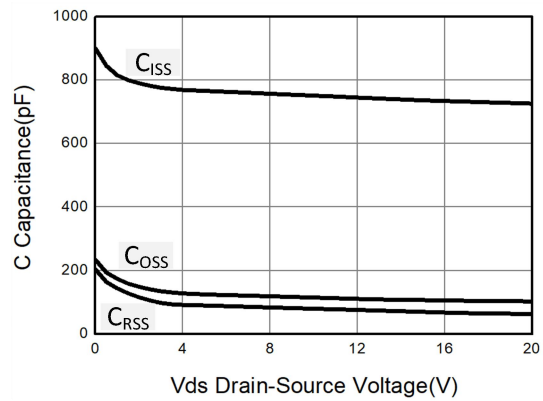
**Fig.3 Transfer Characteristic**



**Fig.4 On-Resistance vs. Junction Temperature**



**Fig.5 Safe Operation Area**



**Fig.6 Capacitance Characteristic**

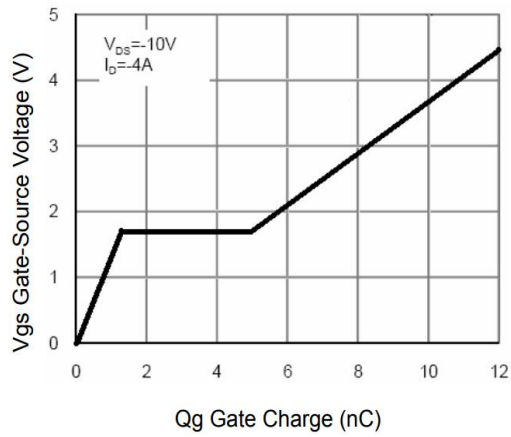
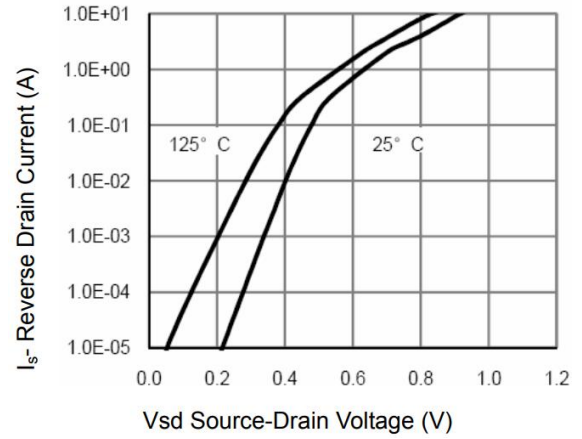


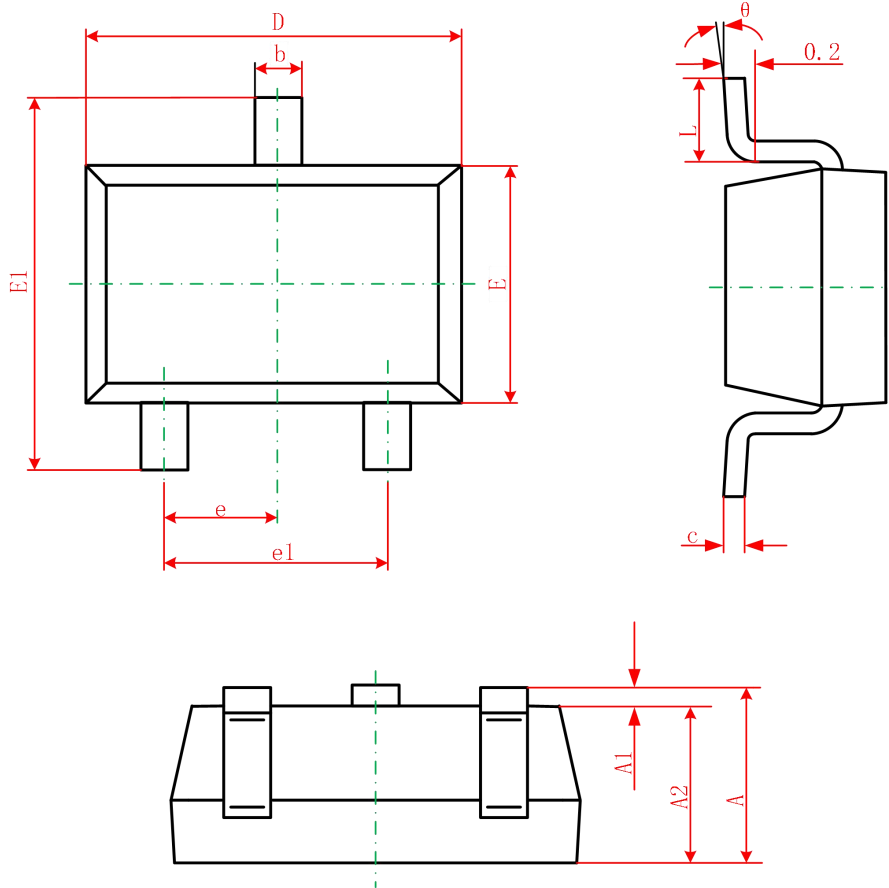
Fig.7 Gate-Charge Characteristic



GFig.8 Body Diode Characteristic

**PACKAGE INFORMATION**

- SOT23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°



**RECOMMENDED MINIMUM PADS FOR SOT23-3L**

