版本	修订日期	有修订的页码	修订涉及的内容	拟制	审核
A	2020-9-30				

BRCL3130CZF

!"#$ %!&'(' (## **DATA SHEET**

/ Descriptions

BRCL3130CZF / BRCL3130CZF
MOSFET
BRCL3130CZF DFN252-6L
BRCL3130CZF

6) # 7 89:;:(8<=# / 1› /# %13?@2*# ›/# A#)›B)# ›C* B1A*›3C# /3D@*›3C# .31# D›*)›@4&D›3C,%3DE4 1# 0A** 1E# %13* 2*›3C!7 89:;:(8<=#23C*A›C/#A? AC2 ?#%3- 1#FG$=H6I)›B)&A22@1A2E# 3D*AB #? * 2*›3C#2›12@›*/# AC?#? DAE#2›12@›*/!#

7 89:;:(8<=#›/#%@*#›C*3#AC#@D*1A&/4AD#J=K'5'&L9#%A2MAB #AC?#3CDE#3C # N* 1CAD#234%3C C*#4AM /# ›*#AC#›? AD#/3D@*›3C#›C#D›4›* ?#/%A2 #3.#0A** 1E#%A2M!#7 89:;:(8<=#)A/#AD#*) #%13* 2*›3C#.@C2*›3C/# 1 O@›1 ?#›C#*) #0A** 1E#A%%D›2A*›3C#›C2D@?›CB#3 12)A1B›CBI#3 1?›/2)A1B›CBI#3 12@11 C*#AC?#D3A?#/)31*# 2›12@›*›CB#%13* 2*›3C# *2! 6) #A22@1A* #3 12)A1B›CB#? * 2*›3C# 3D*AB # C/@1 /#/A. #AC?#.@DD#@*›D›PA*›3C# 2)A1B›CB!6) #D3-#/*AC?0E#2@11 C*#?1A›C/#D›**D #2@11 C*#.134#*) #2 DD#-)D #›C#/*31AB !6) #? ›2 #›/#C3*# 3CDE#*A1B * ?#.31#?›B›*AD#2 DD@DA1#%)3C /I#0@*#AD/3#.31#ACE#3*) 1#9›&Q3C#AC?#9›&R3DE#0A** 1E&%3- 1 ?# ›C.314A*›3C#A%%D›AC2 /#1 O@›1›CB#D3CB&* 14#0A** 1E#D›. !#

/ Features

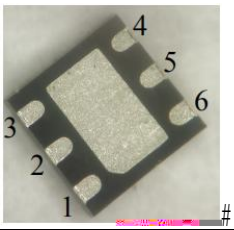
◆# 45mΩ MOSFET
◆# DFN252-6L
◆#
◆# 0V
◆# 3.0uA <0.1uA;
◆#
◆#
◆# QC* B1A* #A? AC2 ?#%3- 1#FG$=H6#-›*)#HO@› AD C*#3.#ST4U# J$VGKW#
◆# YD*1A&/4AD#J=K'5'&L9#%A2MAB X#
◆# G 1&* 4% 1A*@1 #R13* 2*›3CX#G 12)A1B #8@11 C*#R13* 2*›3CX#G 1?›/2)A1B #8@11 C*X#93A?#$)31*# 8›12@›*›CB!#
◆# 8)A1B 1#? * 2*›3C#.@C2*›3CX(Z#0A** 1E#2)A1B›CB#.@C2*›3CX? DAE#*›4 /#A1 #B C 1A* ?# ›C/›? X[›B)&A22@1A2E# 3D*AB #? * 2*›3C!#
◆# 93-#8@11 C*#83C/@4%*›3CX#G% 1A*›3C#F3? +#:!(\"#*E%X#R3- 1&?3-C#F3? +#](!;@"#*E%#X#
◆# 6) #G 1?›/2)A1B #›/#C3*#/ D.#1 23 1E#AC?#C ?/#*3#0 #A2*› A* ?X#
◆# [AD3B C&.1 #R13?@2*!#

/ Applications

GC &8 DD#D›*)›@4&›3C#0A** 1E#%A2MX#9›*)›@4&R3DE4 1#0A** 1E#%A2M!

/ Typical Application

/ Pinning



####

Pin Number	Pin Name	Pin Description
1	ZJJ#	R3- 1#$@%%ᴅE#
2 7	^KJ	^13@C?I#23CC 2*#*) #C BA*› #* 14›CAᴅ#3.#*) #0A** 1E#*3#*)›/#%›C!#
3	Z6#	⟨C* 1CAᴅ#* /*#%›C!#
4	K8#	K3# ᴅ 2*1›2Aᴅ#23CC 2*›3C!#
5 6	ZF#	6) #C BA*› #* 14›CAᴅ#3.#*) #2)A1B 1I#6) #›C* 1CAᴅ#=H6#/ ->*2)# 23CC 2*/#*)›/#* 14›CAᴅ#*3#^KJ!#

#

#

/ Marking

#

#$ #FA1M›CB#⟨C/*1@2*›3C/!#

#

/ Absolute Maximum Ratings(Ta=25)

,RA1A4 * 1#	,$E403ᴅ##	,ZAᴅ@ ##	,YC›*#
ZJJ#›C%@*#%›C# 3ᴅ*AB #	Z⟨K#	&(!:#*3#_L#	Z
ZF#›C%@*#%›C# 3ᴅ*AB #	ZZF#	&`#*3#_;(#	Z#
FAN›4@4#a@C2*›3C#6 4% 1A*@1	6a#	;'T#	℃#
9 A?#6 4% 1A*@1 #	69#	:((#	℃#
G% 1A*›CB#a@C2*›3C#6 4% 1A*@1	63%1#	&S(#*3#_bT#	℃#
$*31AB #6 4% 1A*@1	6/*B#	&TT#*3#_;T(#	℃#
RA2MAB #6) 14Aᴅ# /›/*AC2	ca"#	'T(#	℃,d#
	ca2#	;:(#	℃,d#
H$J [7F #	H$J#	'(((#	Z#

#

#

#

#

#

#

#

#

#

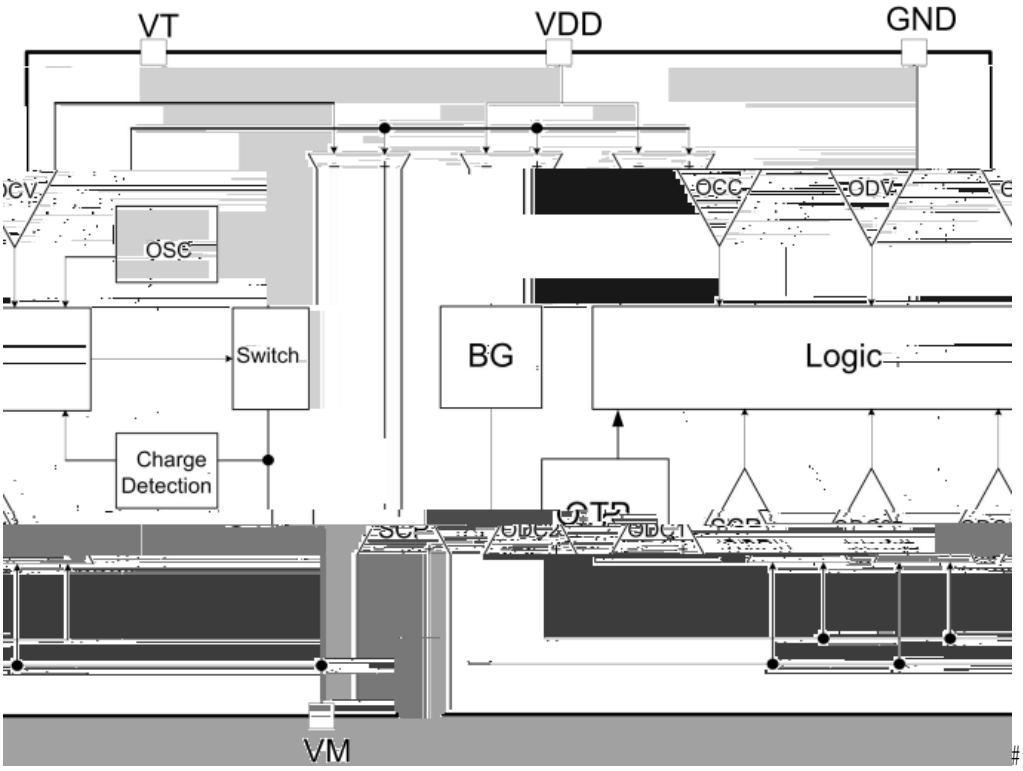
#

#

,RA1A4 * 1#	,$E403#	,6 /*# 83C?›*›3C#	,F›C# #	,6E%#	,FAN#	,YC›*#
G 12)A1B #J * 2*›3C#Z3*AB #	Z8Y#	#	S!'T#	S!:(#	S!:T#	Z#
G 12)A1B # A/ #Z3*AB #	Z89#	#	S!(T#	S!;(#	S!;T#	Z#
G 1?›/2)A1B #J * 2*›3C#Z3*AB #	ZJ9#	#	'!e'#	'!b(#	'!bb#	Z#

F0 1?›/2)A1B #J ὸ Z d *

/ Functionl Block Diagram



#

/ Functional Description

BRCL3130CZF

MOSFET

45mΩ

6) #7 89:;:(8<=#43C>*31/#*) # 3D*AB #AC?#2@11 C*#3.#A#0A** 1E#AC?#%13* 2*/#>*#.134#0 >CB#?A4AB ?# ?@ #*3#3 12)A1B # 3D*AB I#3 1?>/2)A1B # 3D*AB I#3 1?>/2)A1B #2@11 C*I#AC?#/)31*#2>12@>*#23C?>*>3C/# 0E# ?>/23CC 2*>CB#*) #0A** 1E#.134#*) #D3A?# 31#2)A1B 1!#6) #% 1>%) 1AD# 2>12@>*#>/# 1E# />4%D !#6) # FG$=H6#>/#>C* B1A* ?#AC?#>*/# J$VGKW#>/#A/#D3-#A/#ST4h#*E%>2AD!#

#

/ Normal Operating mode

D.#C3# N2 %*>3C#23C?>*>3C#>/#? * 2* ?I#2)A1B>CB#AC?#?>/2)A1B>CB#2AC#0 #2A11> ?#3@*#.1 DE!#6)>/#23C?>*>3C# >/#2AD ?#*) #C314AD#3% 1A*>CB#43? !#

/ Overcharge Condition

VCU ,
TCU BRCL3130CZF FET

1 VCL BRCL3130CZF
2 BRCL3130CZF
VM 0.7V
BRCL3130CZF VCU
VCU BRCL3130CZF VCU
VCU
VM 1
VCU VCU
1 2 VCU
1 2

d) C#*) #0A** 1E# 3D*AB #0 234 /#)›B) 1#*)AC#*) #3 12)A1B #?* 2*›3C# 3D*AB #VZ8YW# ?@1›CB#
2)A1B›CB#@C? 1#C314AD#23C?›*›3C#AC?#*) #/*A* #23C*›C@ /#.31#*) #3 12)A1B #?* 2*›3C#? DAE#*›4 #V68YW#
31#D3CB 1I#*) #7 89:;:(8<=#*@1C/#*) #2)A1B›CB#23C*13D#=H6#3..#*3#/*3%#2)A1B›CB!#6)›/#23C?›*›3C#›/#
2AD ?#*) #3 12)A1B #23C?›*›3C!#
6) #3 12)A1B #23C?›*›3C#›/#1 D A/ ?#›C#*) #.3D3-›CB#*-3#2A/ /+#
; #d) C#*) #0A** 1E# 3D*AB #?13%/#0 D3-#*) #3 12)A1B #1 D A/ # 3D*AB #VZ89WI#*) #7 89:;:(8<=#
@1C/#) #2)A1B›CB#23C*13D#=H6#3C#AC?#1 *@1C/#*3#*) #C314AD#23C?›*›3C!#
' #d) C#A#D3A?#›/#23CC 2* ?#AC?#?›/2)A1B›CB#/*A1*/I#*) #7 89:;:(8<=#*@1C/#*) #2)A1B›CB#23C*13D#
=H6#3C#AC?#1 *@1C/#*3#*) #C314AD#23C?›*›3C!#6) #1 D A/ #4 2)AC›/4#›/#A/#.3D3-/+#*) #?›/2)A1B›CB#
2@11 C*#.D3-/#*)13@B)#AC#›C* 1CAD#%A1A/›*›2#?›3? #3.#*) #2)A1B›CB#=H6#›44 ?›A* DE#A.* 1#A#D3A?#›/#
23CC 2* ?#AC?#?›/2)A1B›CB#/*A1*/I#AC?#*) #ZF#%›C# 3D*AB #›C21 A/ /#A03@*#(!e#Z#V.31-A1?# 3D*AB #3.#*) #
?›3? W#.134#*) #^KJ#%›C# 3D*AB #434 C*A1›DE!#6) #7 89:;:(8<=#? * 2*/#*)›/# 3D*AB #AC?#1 D A/ /#
) #3 12)A1B #23C?››3C!#83C/ O@ C*DEI#›C#*) #2A/ #*)A*#*) #0A** 1E# 3D*AB #›/# O@AD#*3#31#D3- 1#*)AC#
) #3 12)A1B #? 2*›3C# 3D*AB #VZ8YWI#*) #7 89:;:(8<=#1 *@1C/#*3#*) #C314AD# 23C?›*›3C#
›44 ?›A* DEI#0@*#›C#*) #2A/ #*) #0A** 1E# 3D*AB #›/#)›B) 1#*)AC#*) #3 12)A1B #?* 2*›3C# 3D*AB #
VZ8YWI*) #2)›%#?3 /#C3*#1 *@1C#*3#*) #C314AD# 23C?›*›3C#@C*›D#*) #0A** 1E# 3D*AB #?13%/#0 D3-#*) #

/ Overdischarge Condition

VDL ,
TDL BRCL3130CZF
FET VM VM VDD RVMD
IPDN VM VDD
RVMD
VM VCHA ,
VDR R
d) C#*) #0A** 1E# 3D*AB #?13%/#0 D3 - #*) #3 1?›/2)A1B #? * 2*›3C# 3D*AB #VZJ9W#?@1›CB#?›/2)A1B›CB#
@C? 1#C314AD#23C?›*›3C#AC?#›*#23C*›C@ /#.31#*) #3 1?›/2)A1B #? * 2*›3C#? DAE#*›4 #V*J9W#31#D3CB 1I#*) #
7 89:;:(8<=#*@1C/#*) #?›/2)A1B›CB#23C*13D#=H6#3..#AC?#/*3%/#?›/2)A1B›CB!#6)›/#23C?›*›3C#›/#2ADD ?#
3 1?›/2)A1B #23C?›*›3C!#".* 1#*) #?›/2)A1B›CB#23C*13D#=H6#›/#*@1C ?#3..I#*) #ZF#%›C#›/#%@DD ?#@%#0E#*) #
ZFJ#1 /›/*31#0 *- C#ZF#AC?#ZJJ#›C#7 89:;:(8<= *) #2@11 C*#3.#*) #2)›%#›/#1 ?@2 ?#*3#*) #
%3 - 1&?3 - C#2@11 C*#VQRJKW!#6)›/#23C?›*›3C#›/#2ADD ?#%3 - 1&?3 - C#23C?›*›3C!#6) #ZF#AC?#ZJJ#%›C/#A1 #
/)31* ?#0E#*) # ZFJ#1 /›/*31!##
K3* +#Q.#*) #ZF#%›C# 3D*AB #›/#C3#D //#*)AC#*) #2)A1B 1#? * 2*›3C# 3D*AB #VZ8["WI# -) C#*) #0A** 1E#
@C? 1#3 1?›/2)A1B #23C?›*›3C#›/#23CC 2* ?#*3#A#2)A1B 1I#*) #3 1?›/2)A1B #23C?›*›3C#›/#1 D A/ ?#V*) #
?›/2)A1B›CB# 23C*13D# =H6# ›/# *@1C ?# 3CW# A/# @/@ADI# %13 ›? ?# *)A*# *) # 0A** 1E# 3D*AB # 1 A2) /# *) #
3 1?›/2)A1B #1 D A/ # 3D*AB #VZJ W#31#)›B) 1!##
#

/ Overcurrent Condition

o VM , n
,BRCL3130CZF FET
O 1 2 ىضا

/ Abnormal Charge Current Detection

VM I_{IOCC}
BRCL3130CZF FET
VM GND (VCHA) 0V
0V

Q.#*) #ZF#%›C# 3D*AB #?13%/#0 D3-#*) #G 12)A1B #8@11 C*#J * 2*›3C#?@1›CB#2)A1B›CB#@C? 1#*) #C314AD# 23C?›*›3C#AC?#›*#23C*›C@ /#.31#*) #3 12)A1B #? * 2*›3C#? DAE#*›4 #31#D3CB 1I#*) #7 89:;:(8<=#*@1C/# *) #2)A1B›CB# 23C*13D# =H6# 3..# AC?# /*3%/#2)A1B›CB!# 6)›/#A2*›3C#›/#2AD ?# A0C314AD# 2)A1B #2@11 C*# ? * 2*›3C!#
"0C314AD#2)A1B #2@11 C*#? * 2*›3C#›/#1 D A/ ?#-) C#*) # 3D*AB #?›.. 1 C2 #0 *- C#ZF#%›C#AC?#^KJ# %›C#0 234 /#)›B) 1#*)AC#*) #2)A1B 1#? * 2*›3C# 3D*AB #VZ8["W#0E#/ %A1A*›CB#*) #2)A1B 1!#$›C2 #*) #(# Z#0A** 1E#2)A1B›CB#.@C2*›3C#)A/#)›B) 1#%1›31›*E#*)AC#*) #A0C314AD#2)A1B #2@11 C*#? * 2*›3C#.@C2*›3CI# A0C314AD#2)A1B #2@11 C*#4AE#C3*#0 #? * 2* ?#0E#*) #%13?@2*#->*)#*) #(#Z#0A** 1E#2)A1B›CB#.@C2*›3C# -)›D #*) #0A** 1E# 3D*AB #›/#D3-!#
#

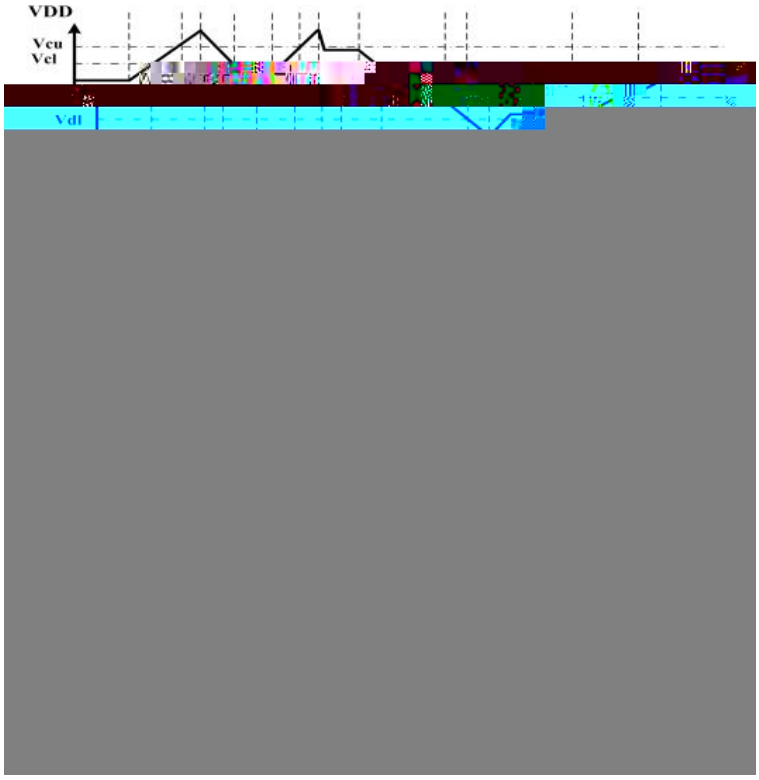
/ Load Short-circuiting Condition

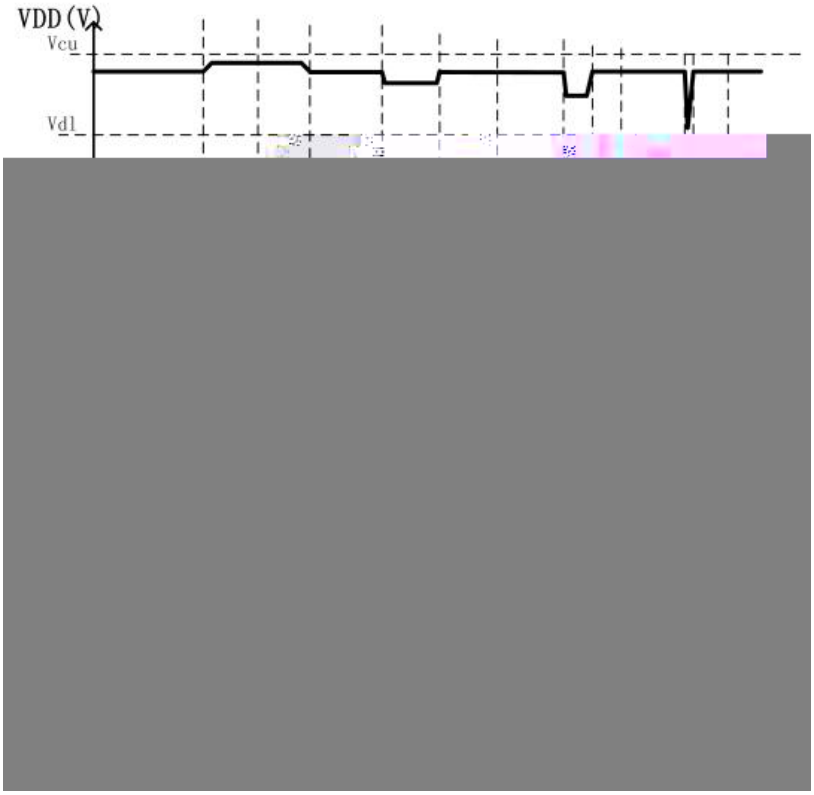
VM VSHORT tSHORT
BRCL3130CZF VM VSHORT

Q.# 3D*AB #3.#ZF#%›C#›/#)›B) 1#/)31*#2›12@›*›CB#%13* 2*›3C# 3D*AB #VZ$[G 6W#AC?#›*#23C*›C@ /#.31#*) # *$[G 6#31#D3CB 1I#*) #7 89:;:(8<=#->D#/*3%#?›/2)A1B›CB#AC?#0A** 1E#›/#?›/23CC 2* ?#.134#D3A?!#6)›/# /*A*@/#›/#1 D A/ ?#-) C# 3D*AB #3.#ZF#%›C#›/#)›B) 1#*)AC#/)31*#%13* 2*›3C# 3D*AB #VZ$[G 6WI#/@2)#A/# -) C#?›/23CC 2*›CB#*) #D3A?!#
#

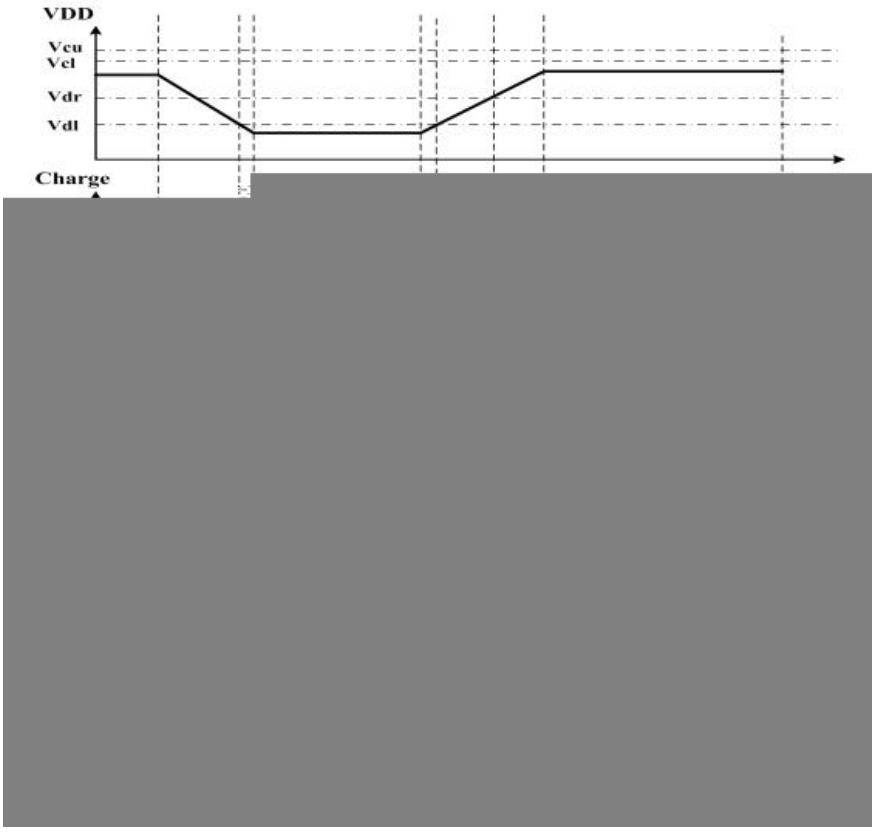
0V /

/ Timing Chart





/ Timing Chart



/ Package Dimensions

#

BRCL3130CZF

!"#$ %!&' (' (## **DATA SHEET**

#

)**%+,, - **AT!TI**01 2!234## # # # # # # # # # # # **H1** # # # # **12**#,#**12**