



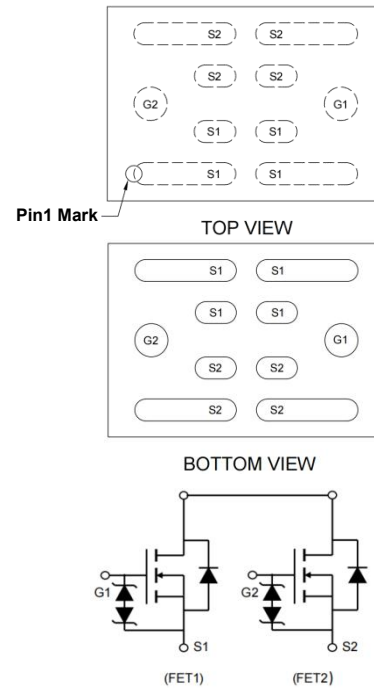
Product Summary

V_{SS}	$R_{SS(ON)} \max$
12V	$<2.9m\Omega @V_{GS}=4.5V$
	$<3.4m\Omega @V_{GS}=3.8V$
	$<3.9m\Omega @V_{GS}=3.1V$
	$<6.0m\Omega @V_{GS}=2.5V$

Description and Applications

- Battery protection switch
- Mobile device battery charging and discharging
- With ESD Protection, HBM Class 2

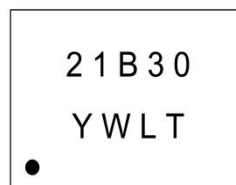
Package & Internal Circuit



Ordering Information

Part Number	Package Type	Package Qty
CFC21B30	WLCSP_2.08x1.45	8,000/Tape & Reel

Marking Information



Green product

21B30--Part Number

Y--Year

W--Week

LT--Lot sequence

Absolute Maximum Rating ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Source-Source Voltage	V_{SS}	12	V
Gate-Source Voltage	V_{GS}	± 8	V
Source Current - Continuous	I_{SS}	30	A
Pulsed Source Current	I_{SM}	100	A
Power Dissipation	P_D	3.1	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient	$t \leq 10s$	$R_{\theta JA}$	30	-	$^{\circ}C/W$
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	40	-	$^{\circ}C/W$

Electrical Characteristics ($T_J=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Parameters						
BV _{SSS}	Source-Source Breakdown Voltage	I _{SS} = 250μA, V _{GS} =0V	12			V
I _{SSS}	Zero Gate Voltage Drain Current	V _{SS} =12V, V _{GS} =0V			1	μA
		T _J =55°C			5	μA
I _{GSS}	Gate-Body leakage current	V _{SS} =0V, V _{GS} = ±8V			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{SS} =V _{GS} , I _{SS} =250μA	0.4	0.9	1.4	V
R _{SS(ON)}	Static-Source to Source on-Resistance	V _{GS} =4.5V, I _{SS} =6A	1.8	2.3	2.9	mΩ
		V _{GS} =3.8V, I _{SS} =6A	1.9	2.8	3.4	mΩ
		V _{GS} =3.1V, I _{SS} =6A	2.3	3.3	3.9	mΩ
		V _{GS} =2.5V, I _{SS} =6A	3.0	4.4	6.0	mΩ
g _{FS}	Forward Transconductance	V _{SS} =5V, I _{SS} =20A		71		S
V _{FSS}	Forward Source to Source Voltage	V _{GS} = 4.5V, I _{SS} =10A		0.72	1	V
Dynamic parameters						
R _g	Gate resistance	f=1.0MHz		800		Ω
C _{iss}	Input Capacitance	V _{GS} =0V V _{SS} = 10V f=100kHz		3263		pF
C _{oss}	Output Capacitance			558		pF
C _{rss}	Reverse Transfer Capacitance			196		pF
Switching Parameters						
Q _g	Total Gate Charge	V _{GS} =4.5V V _{SS} =6V I _{SS} =6A		34		nC
Q _{gs}	Gate Source Charge			4.2		nC
Q _{gd}	Gate Drain Charge			10		nC
t _{D(on)}	Turn-On Delay Time	V _{GS} =4V V _{DD} =9V R _G =50Ω I _{SS} =8A R _L =0.75Ω		1.3		μs
t _r	Turn-On Rise Time			4.6		μs
t _{D(off)}	Turn-Off Delay Time			5.6		μs
t _f	Turn-Off Fall Time			10.6		μs

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

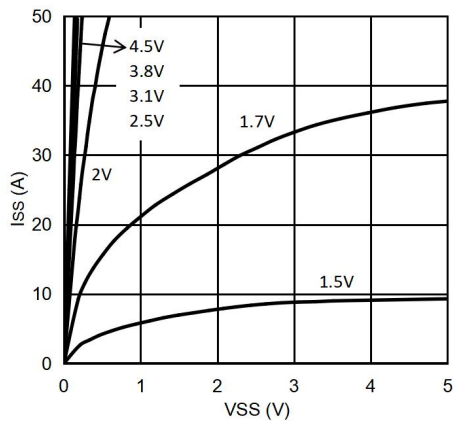


Figure 1: On-Region Characteristics

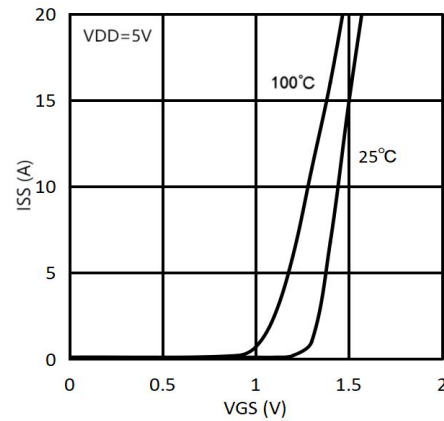


Figure 2: Transfer Characteristics

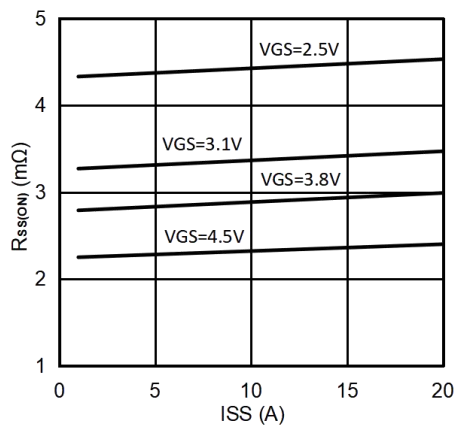


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

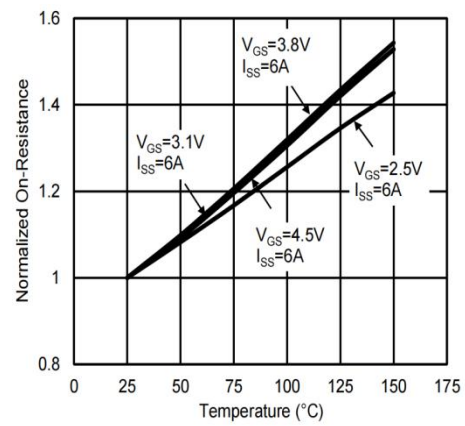


Figure 4: On-Resistance vs. Junction Temperature

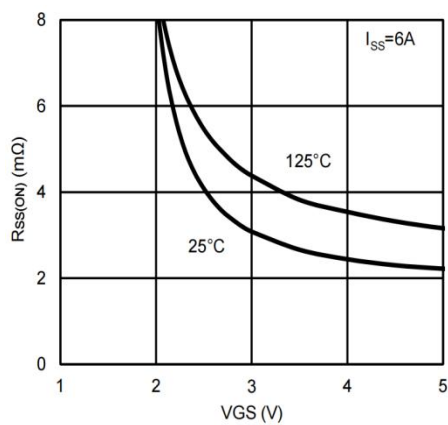


Figure 5: On-Resistance vs. Gate-Source Voltage

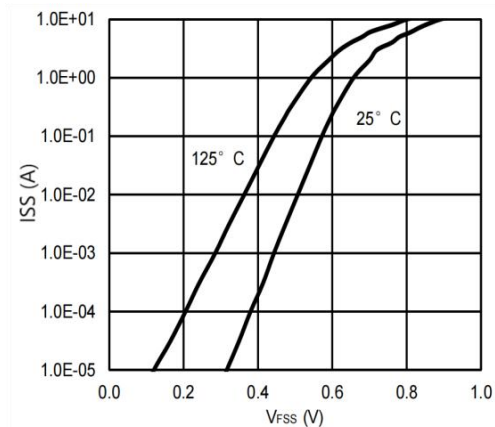


Figure 6: Forward Source to Source Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

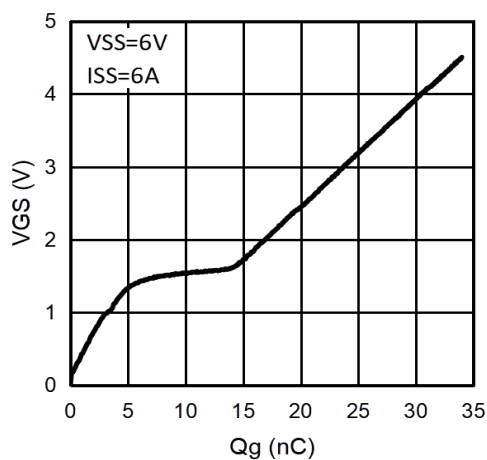


Figure 7: Gate-Charge Characteristics

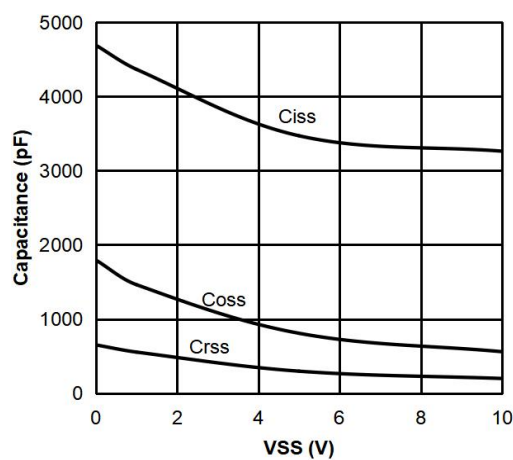


Figure 8: Capacitance Characteristics

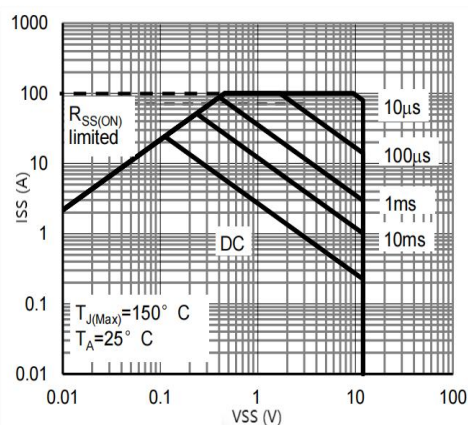


Figure 9: Maximum Forward Biased Safe Operating Are

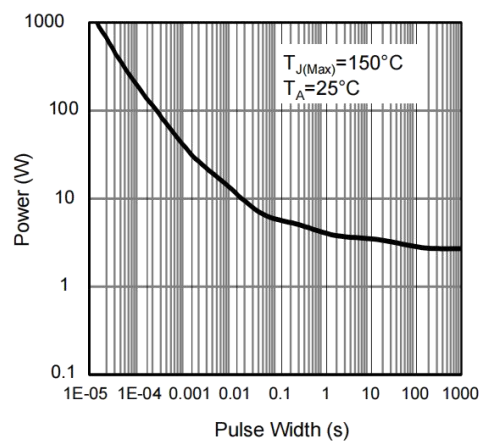


Figure 10: Single Pulse Power Rating Junction-to Ambient

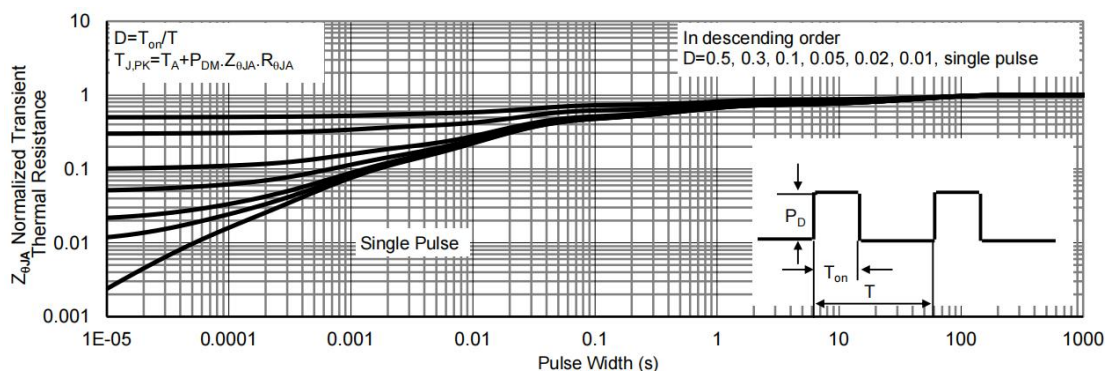
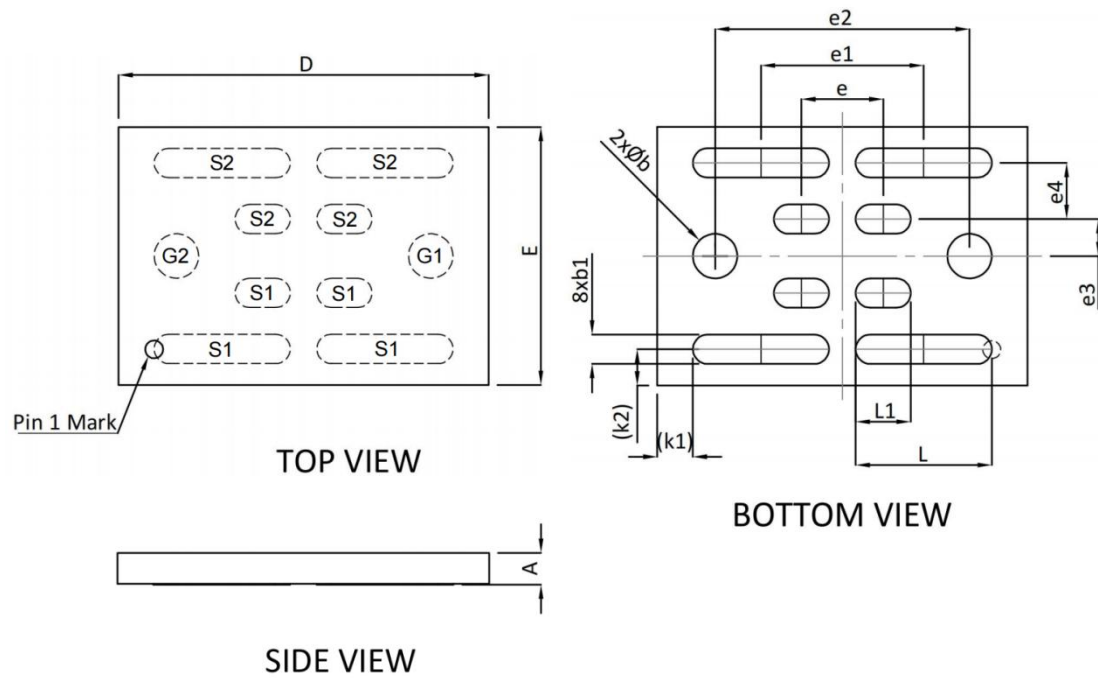


Figure 11: Normalized Maximum Transient Thermal Impedance

WLCSP2.08x1.45 Package



SYMBOLS	DIM.INMM			DIM.ININCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.063	0.093	0.123	0.0025	0.0037	0.0048
b	0.220	0.250	0.280	0.0087	0.0098	0.0110
b1	0.135	0.165	0.195	0.0053	0.0065	0.0077
D	2.050	2.080	2.110	0.0807	0.0819	0.0831
E	1.420	1.450	1.500	0.0559	0.0571	0.0591
e	0.460BSC			0.0181BSC		
e1	0.915BSC			0.0360BSC		
e2	1.430BSC			0.0563BSC		
e3	0.208BSC			0.0082BSC		
e4	0.315BSC			0.0124BSC		
L	0.735	0.765	0.795	0.0289	0.0301	0.0313
L1	0.280	0.310	0.340	0.0110	0.0122	0.0134
k1	---	0.200	---	---	0.0079	---
k2	---	0.203	---	---	0.0080	---

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