

Descriptions

CT2N12210C features a low on-state resistance. This device is suitable for applications such as power switches of portable machines. Best suited for 1-cell lithium-ion battery applications.

Features

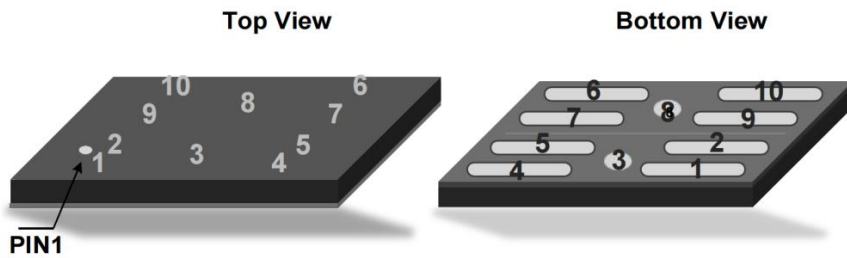
- CSP(Chip Size Package)
- Source-source On-state resistance:
R_{ss(on)} typ. = 2.1 mΩ (V_{GS} = 3.8 V)
- RoHS Compliant and Halogen-Free
- ESD Protected

V _{SSS} (V)	I _S (A)	R _{SS(on)} TYP (mΩ)
12	14	2.0 @VGS=4.5V
		2.1 @VGS=3.8V
		2.4 @VGS=3.1V
		3.1 @VGS=2.5V

Applications

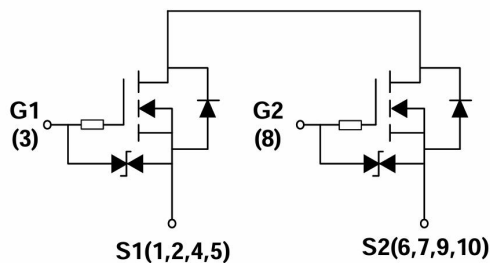
- Battery protection
- Mobile Device battery charging and discharging
- Load switch

Equivalent Circuit



CSP2.98*1.49-10L

Pinning



Device Symbol

Absolute Maximum Ratings(Ta=25°C)

Parameter		Symbol	Value	Unit
Source -Source Voltage		V_{SSS}	12	V
Gate-Source Voltage		V_{GSS}	±8	V
Continuous Source Current	DC ¹	I_{S1}	14	A
	DC ²	I_{S2}	30	A
Pulsed Source Current ³		I_{SP}	138	A
Total Power Dissipation	DC ¹	P_{D1}	0.57	W
	DC ²	P_{D2}	3.5	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C
Maximum Junction-to-Ambient	DC ¹	$R_{\theta JA1}$	210	°C/W
	DC ²	$R_{\theta JA2}$	36	°C/W

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Source-Source Breakdown Voltage	V_{SSS}	V _{GS} = 0V, I _S = 250μA	12	-	-	V
Zero Gate Voltage Source Current	I_{SSS}	V _{SS} = 12V, V _{GS} = 0V	-	-	1	μA
Gate-body Leakage Current	I_{GSS}	V _{SS} = 0V, V _{GS} = ±8V	-	-	±100	μA
Gate-Threshold Voltage	V_{GS(off)}	V _{SS} = 8V, I _S = 250μA	0.4	0.9	1.4	V
Source-Source on-Resistance	R_{SS(on)}	V _{GS} = 4.5V, I _S = 6A	1.5	2.0	2.7	mΩ
		V _{GS} = 3.8V, I _S = 6A	1.6	2.1	2.8	
		V _{GS} = 3.1V, I _S = 6A	1.7	2.4	3.9	
		V _{GS} = 2.5V, I _S = 6A	2.0	3.1	6.0	
Forward Transconductance	 y_{gfs} 	V _{SS} = 5V, I _S = 6A	-	40	-	S
Dynamic Characteristics¹						
Input Capacitance	C_{iss}	V _{SS} = 10V, V _{GS} = 0V, f = 100kHz	-	4012	-	pF
Output Capacitance	C_{oss}		-	455	-	
Reverse Transfer Capacitance	C_{rss}		-	139	-	
Switching Characteristics						
Total Gate Charge ¹	Q_g	V _{GS} = 4.5V, V _{SS} = 6V, I _S = 6A	-	37	-	nC
Gate Source Charge ¹	Q_{gs}		-	7.2	-	
Gate Drain Charge ¹	Q_{gd}		-	4.8	-	
Turn-on Delay Time ^{1,2}	t_{d(on)}	V _{GS} = 4.5V, V _{SS} = 6V, I _S = 6A	-	0.95	-	μs
Rise Time ^{1,2}	t_r		-	1.33	-	
Turn-off Delay Time ^{1,2}	t_{d(off)}		-	2.90	-	
Fall Time ^{1,2}	t_f		-	3.61	-	
Source-Source Diode Characteristics						
Forward Source to Source Voltage	V_{F(S-S)}	I _S = 6A, V _{GS} = 0V	-	-	1.2	V

Notes:

1. Mounted on FR4 board (25.4mm x 25.4mm x t1.0mm) using the minimum recommended pad size (36μm Copper).
2. Mounted on Ceramic substrate (70mm x 70mm x t1.0mm)
3. t = 10μs, duty cycle ≤ 1%.

Electrical Characteristic Curve

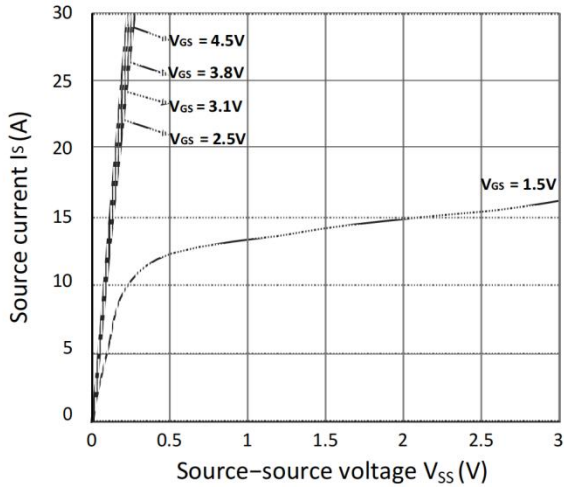


Figure 1. Output Characteristics

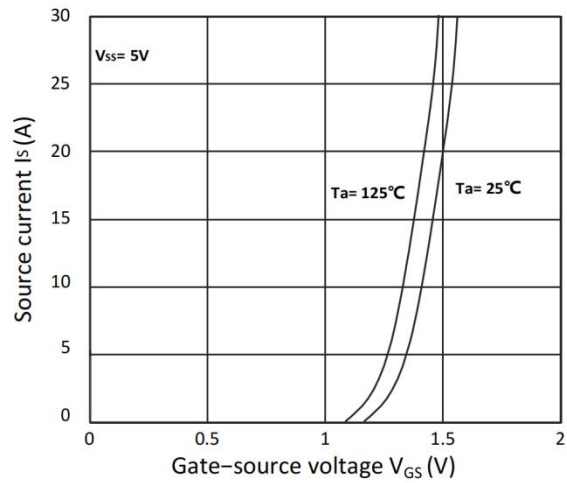


Figure 2. Transfer Characteristics

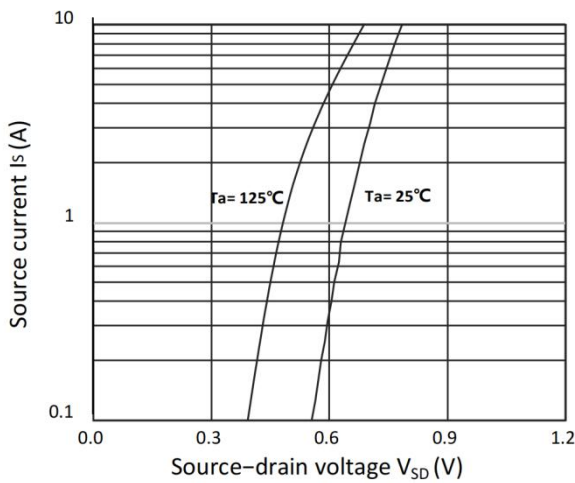


Figure 3. Forward Characteristics of Reverse

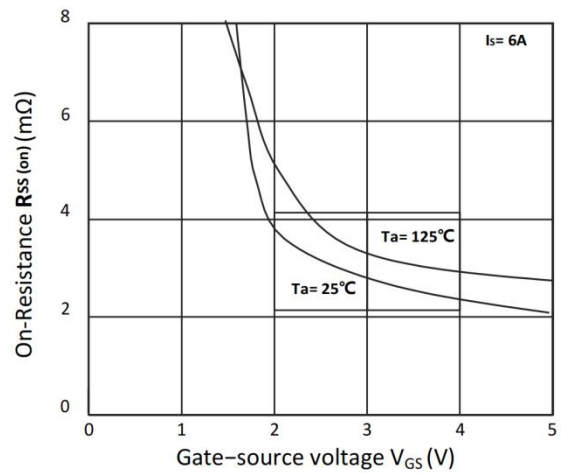


Figure 4. $R_{SS(on)}$ vs. V_{GS}

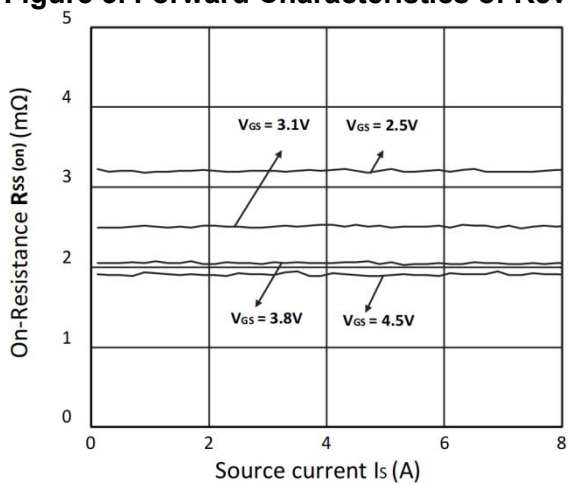


Figure 5. $R_{SS(on)}$ vs. I_S

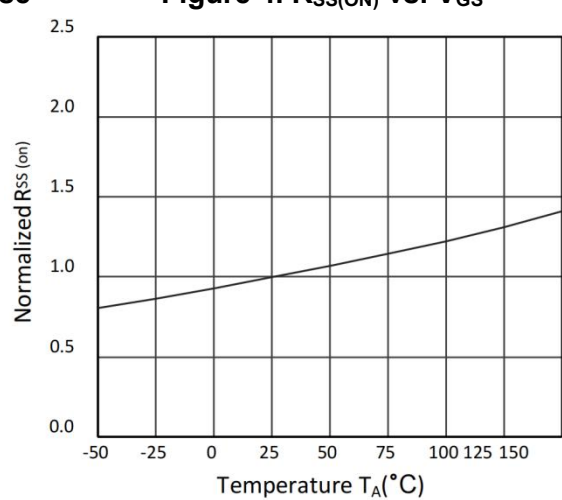


Figure 6. Normalized $R_{SS(on)}$ vs. Temperature

Electrical Characteristic Curve

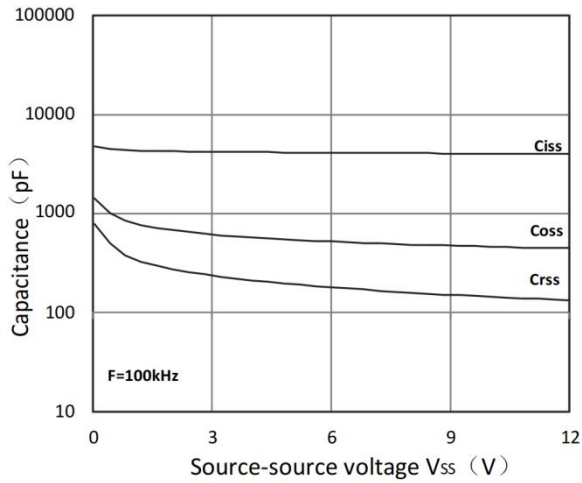


Figure 7. Capacitance Characteristics

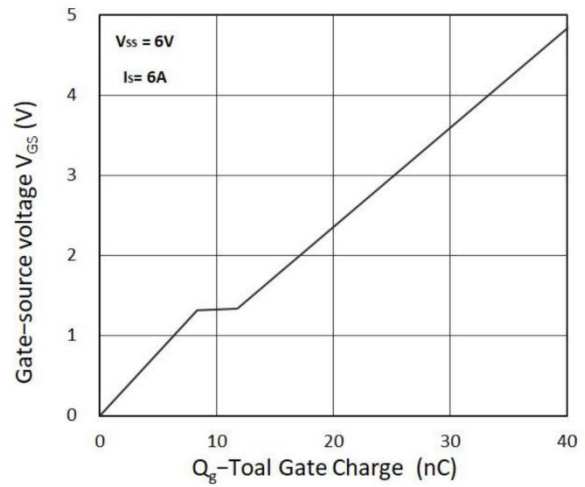


Figure 8. Gate Charge Characteristics

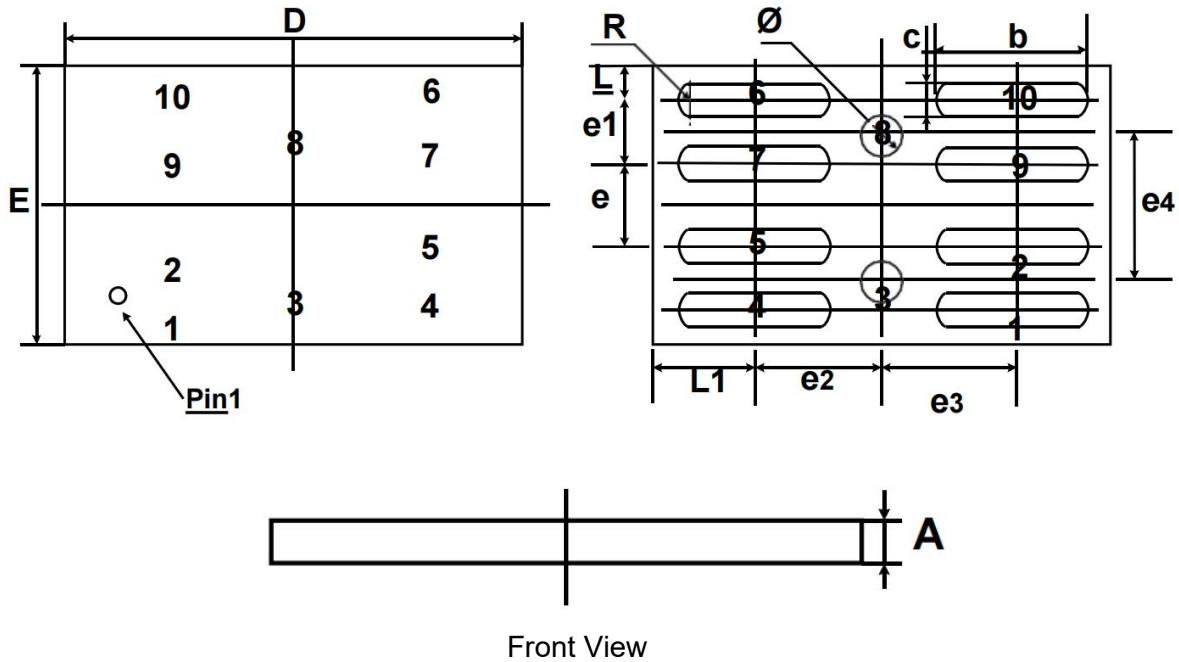
Marking Instructions

Part Number	CT2N12210C	
Marking Code	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> 12210 XXXX XXX ● </div>	12210= Device code XXXX XXX= Date code

Packaging SPEC

Qty: 8k/Reel

Package Outline Dimensions



Unit:mm

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.0800	0.1000	0.1200
b	1.0200	1.0400	1.0600
c	0.1550	0.1750	0.1950
D	2.9550	2.9800	3.0050
E	1.4650	1.4900	1.5150
e	0.4250 BSC		
e1	0.3250 BSC		
e2	0.8950 BSC		
e3	0.8950 BSC		
e4	0.7500 BSC		
L	0.1825	0.2075	0.2325
L1	0.5700	0.5950	0.6200
R	0.0875REF		
Ø	0.2300	0.2500	0.2700