● General Description

The CH15N100D combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● Features

■ Advance high cell density Trench technology

■Low $R_{DS(ON)}$ to minimize conductive loss

■Low Gate Charge for fast switching ■Low Thermal resistance

●Application

■MB/VGA Vcore

■SMPS 2nd Synchronous Rectifier

■POL application

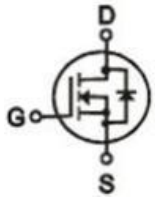
■BLDC Motor driver

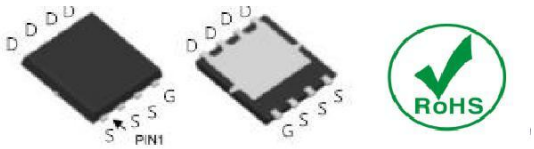
● Product Summary

$V_{DS} = 100V$

$R_{DS(ON)} = 90\ m\Omega$

$I_D = 15A$





DFN3*3

●Ordering Information:

Part NO.	CH15N100N
Marking	CH15N100N
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	20	V
Continuous Drain Current	$I_{D@}$TC=25℃	15	A
	$I_{D@}$TC=75℃	10	A
	$I_{D@}$TC=100℃	6.5	A
Pulsed Drain Current	I_{DM}	40	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	40	W
Total Power Dissipation(TA=100℃)	P_D@TC=100℃	30	W
Operating Junction Temperature	T_J	-55 to 175	℃
Storage Temperature	T_{STG}	-55 to 175	℃
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	100	mJ
Avalanche Current@L=0.1mH	I_{AS}	55	A

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	2.7		°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	100	°C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	125	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V,I_D =250uA	100			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1	1.5	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±20V ,V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5A		90	110	mΩ
		VGS=4.5V, ID=3A		100	128	mΩ
Forward Transconductance	g_{FS}	V_{DS} =15V, I_D=10A		18		s
Source-drain voltage	V_{SD}	Is=20A			1.20	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz	-	811	-	pF
Output capacitance	C_{oss}		-	50	-	
Reverse transfer capacitance	C_{rss}		-	35	-	

●Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{DS} =30V	-	12	-	nC
Gate - Source charge	Q_{gs}	I_D = 15A	-	2.2	-	
Gate - Drain charge	Q_{gd}	V_{GS} = 10V	-	2.5	-	

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

Typical Performance Characteristics

Figure1: Output Characteristics

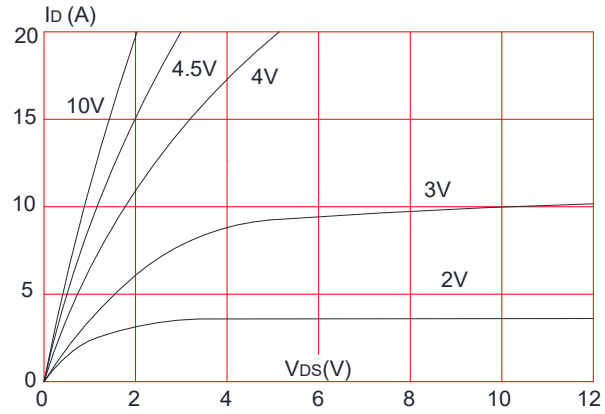


Figure 2: Typical Transfer Characteristics

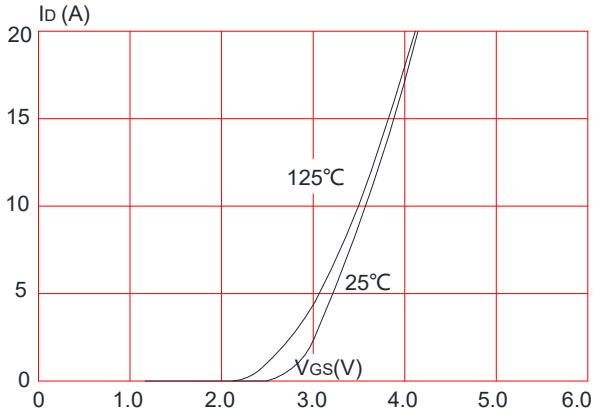


Figure 3: On-resistance vs. Drain Current

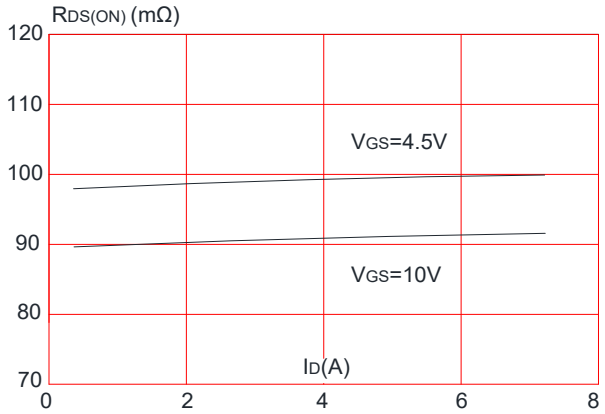


Figure 4: Body Diode Characteristics

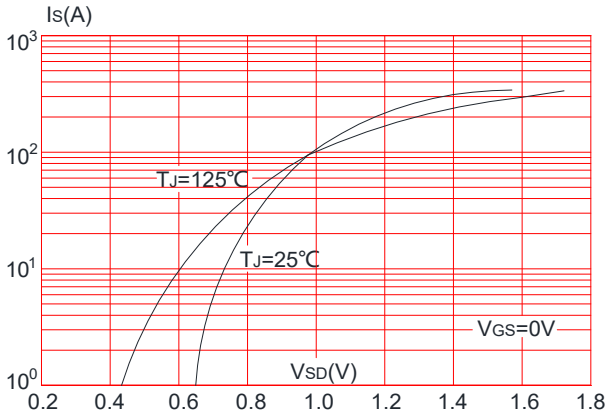


Figure 5: Gate Charge Characteristics

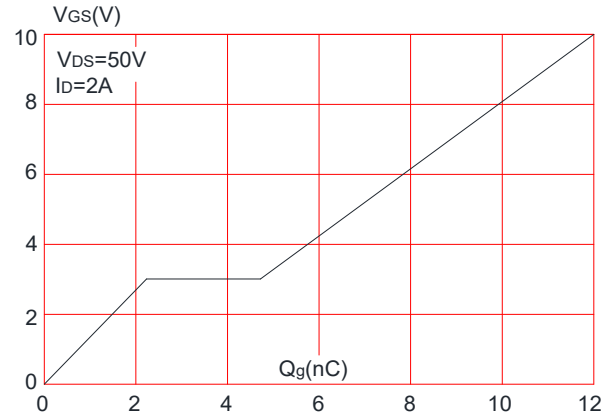


Figure 6: Capacitance Characteristics

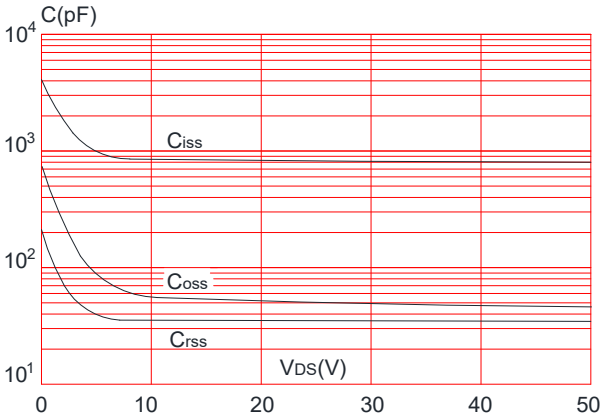


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

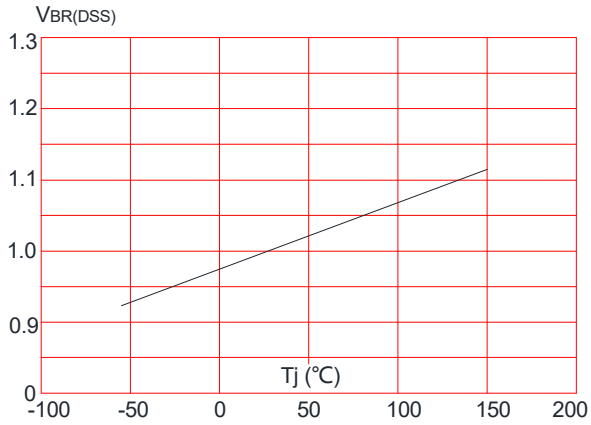


Figure 8: Normalized on Resistance vs. Junction Temperature

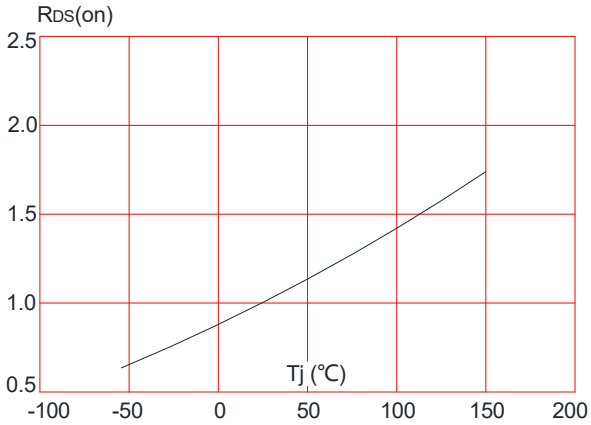


Figure 9: Maximum Safe Operating Area

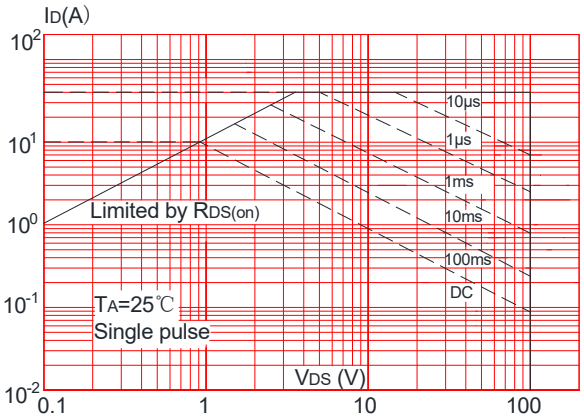


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

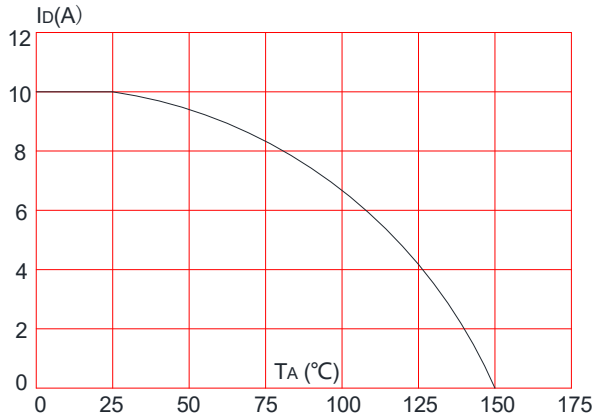
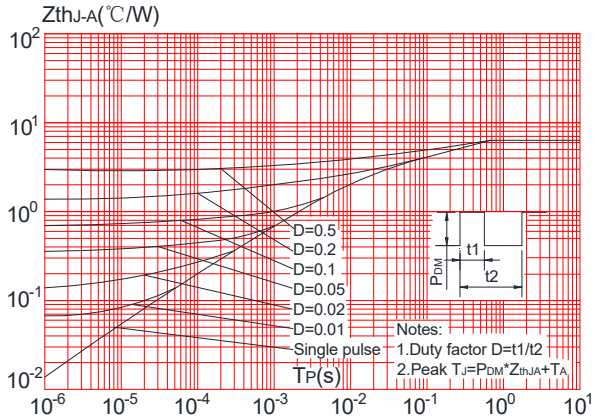


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Test Circuit

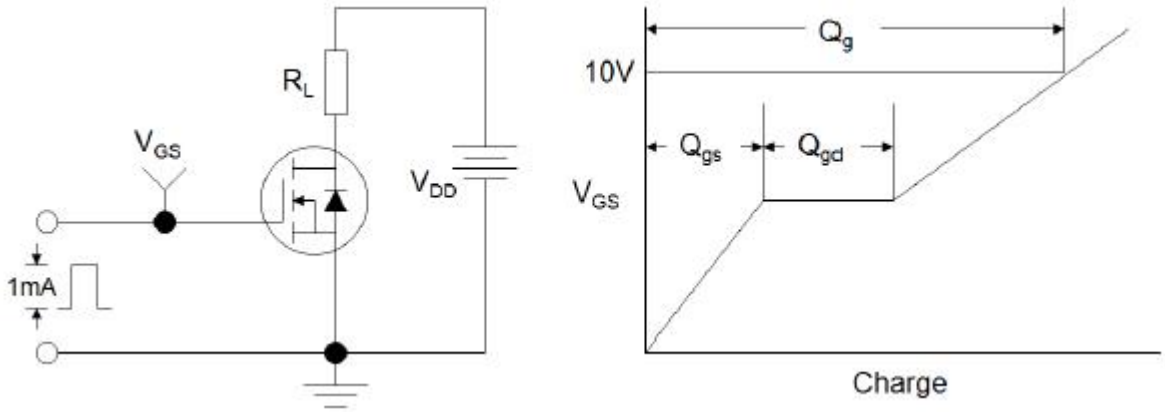


Figure1:Gate Charge Test Circuit & Waveform

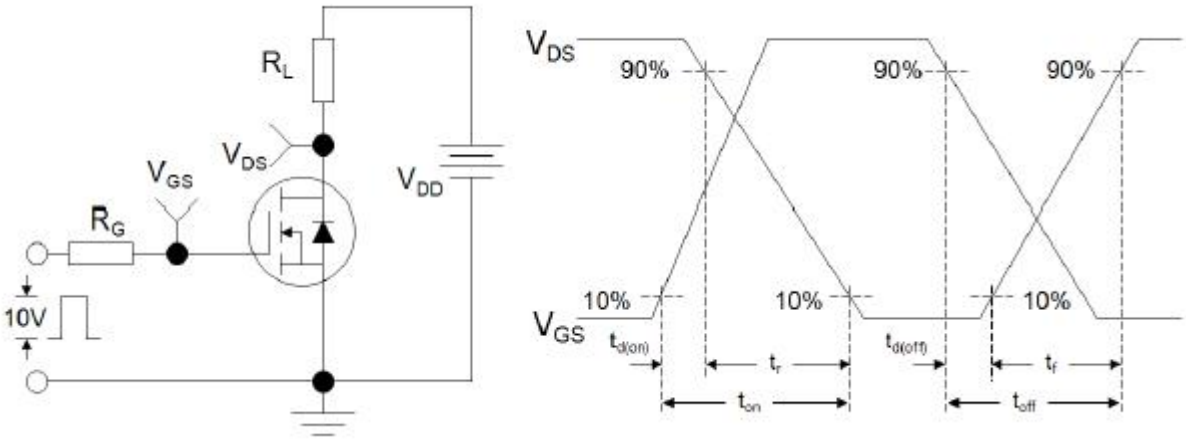


Figure 2: Resistive Switching Test Circuit & Waveforms

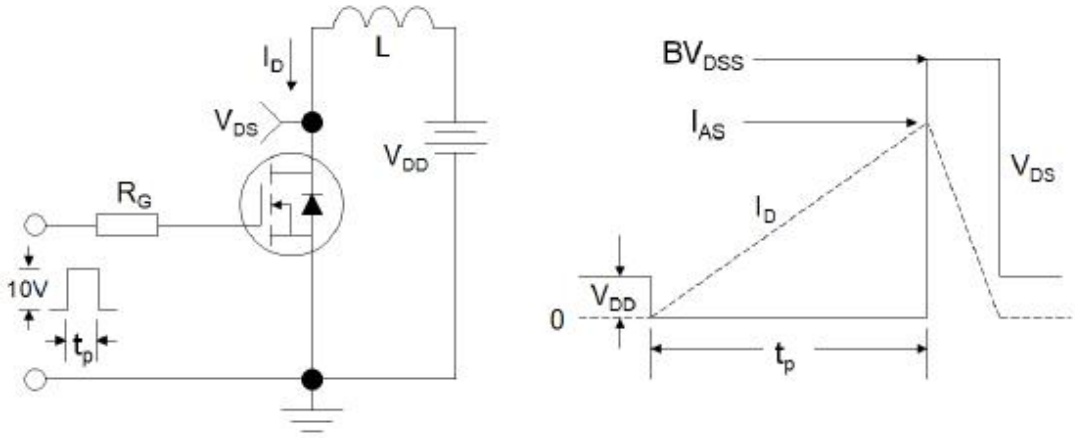
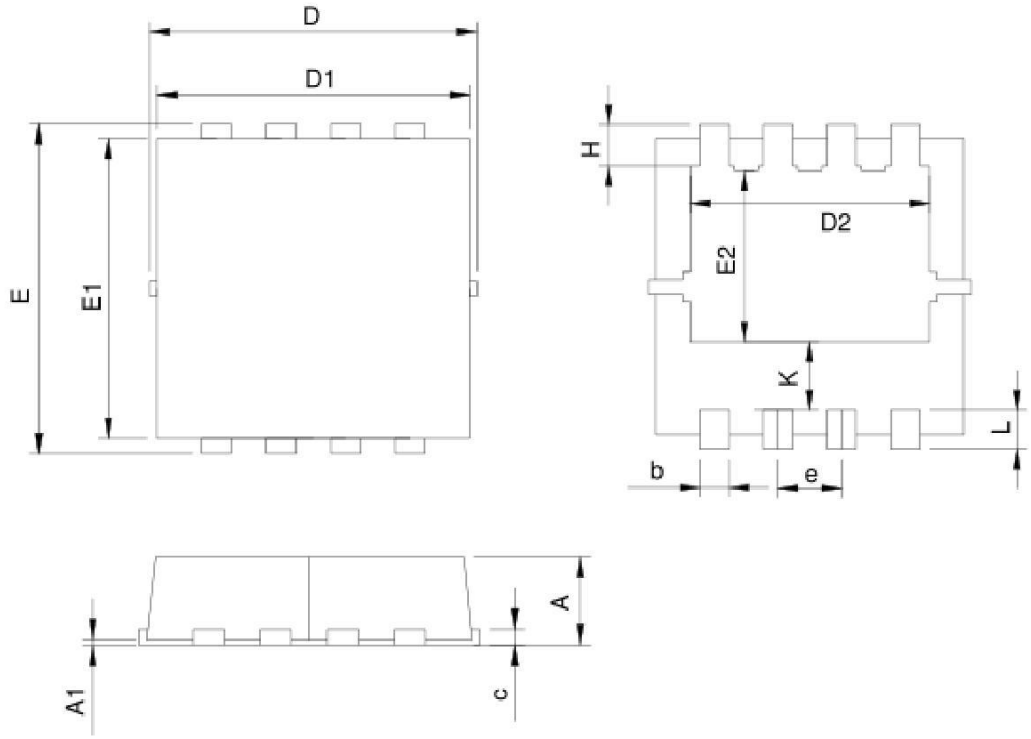


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

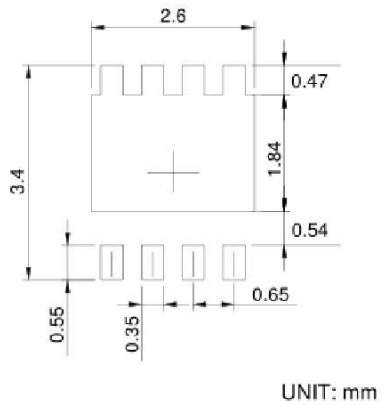
•Dimensions(DFN3×3)

Unit：mm



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm