

General Description

The CH20N06SN 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.

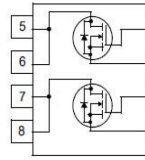
Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Dual DIE in one package

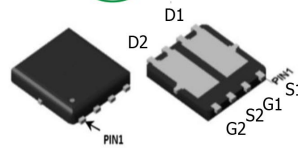
Application

- Power Management in Notebook Computer,
- Portable Equipment and Battery Powered Systems

Product Summary



$V_{DS1} = 60V$
 $V_{DS2} = 60V$
 $R_{DS(ON)1} = 26\ m\Omega$
 $R_{DS(ON)2} = 26\ m\Omega$
 $I_{D1} = 20A$
 $I_{D2} = 20A$



PDFN3*3

Ordering Information:

Part NO.	CH20N06SN
Marking	CH20N06SN
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

Absolute Maximum Ratings ($T_c = 25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	20	A
	$I_{D@TC=75^\circ C}$	13	A
	$I_{D@TC=100^\circ C}$	13	A
Pulsed Drain Current ^①	I_{DM}	80	A
Total Power Dissipation($TC=25^\circ C$)	$P_D@TC=25^\circ C$	22.7	W
Total Power Dissipation($TA=25^\circ C$)	$P_D@TA=25^\circ C$	0.69	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
Single Pulse Avalanche Energy	E_{AS}	27	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.5	$^{\circ}C/W$
Thermal resistance, junction - ambient	R_{thJA}	-	-	70	$^{\circ}C/W$
Soldering temperature, wavesoldering for 10s	T_{solder}	-	-	265	$^{\circ}C$

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.6	2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$		26	33	$m\Omega$
		$V_{GS}=4.5V, I_D=10A$		33	45	$m\Omega$
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=10A$		19		S
Source-drain voltage	VSD	$I_S=20A$			1.20	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$f = 1MHz$	-	860	-	pF
Output capacitance	C_{oss}		-	62	-	
Reverse transfer capacitance	C_{rss}		-	51	-	

•Gate Charge characteristics($T_a = 25^{\circ}C$)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD} = 25V$	-	20.3	-	nC
Gate - Source charge	Q_{gs}	$I_D = 5A$	-	3.7	-	
Gate - Drain charge	Q_{gd}	$V_{GS} = 10V$	-	5.3	-	

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2. E_{AS} condition: $T_J=25^{\circ}C, V_{DD}=15V, V_G=10V, R_g=25\Omega, L=0.5mH$.

Notes 3.Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Performance Characteristics

Figure 1: Output Characteristics

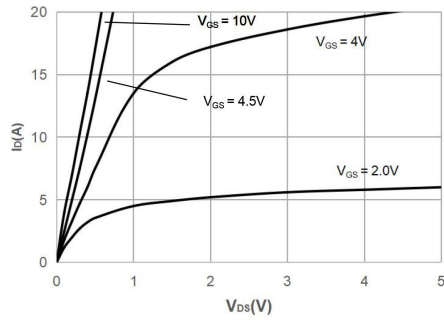


Figure 2: Typical Transfer Characteristics

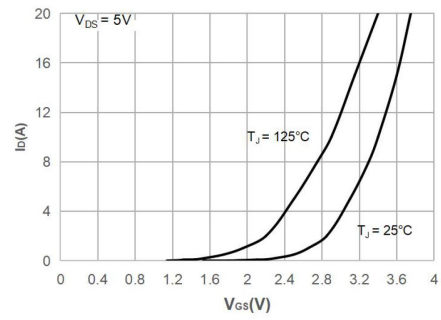


Figure 3: On-resistance vs. Drain Current

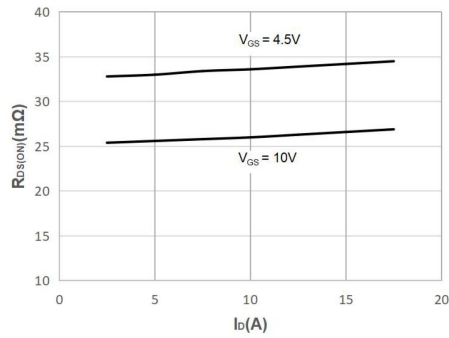


Figure 4: Body Diode Characteristics

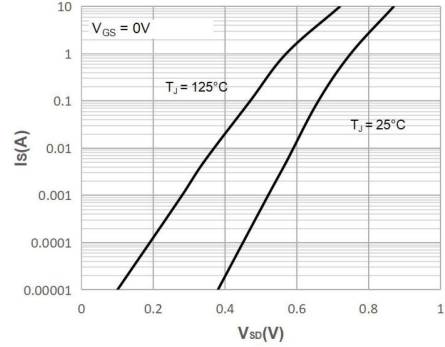


Figure 5: Gate Charge Characteristics

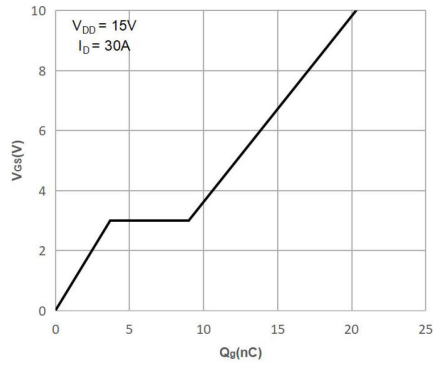
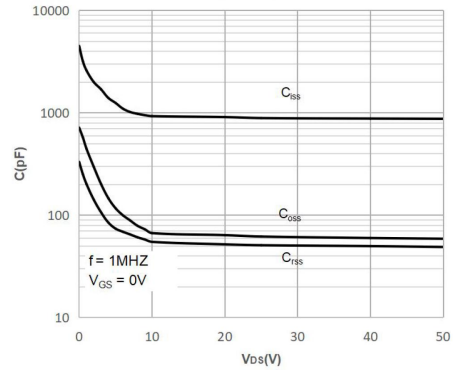


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

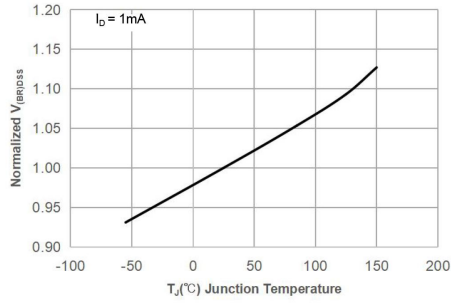


Figure 8: Normalized on Resistance vs. Junction Temperature

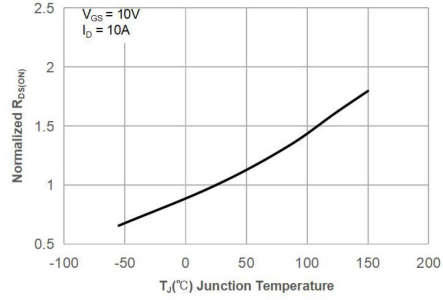


Figure 9: Maximum Safe Operating Area

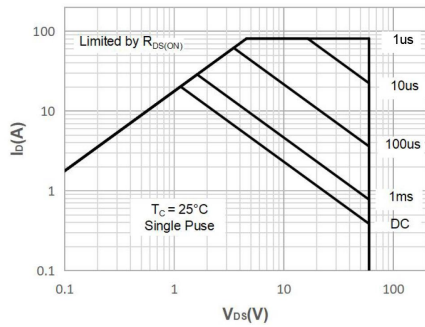


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

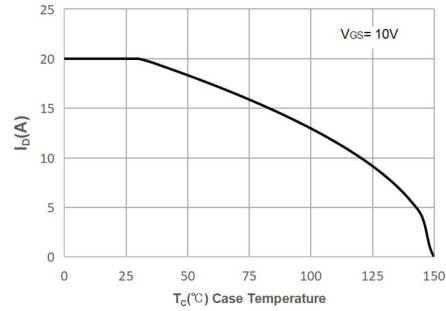


Figure 11: Normalized Maximum Transient Thermal Impedance

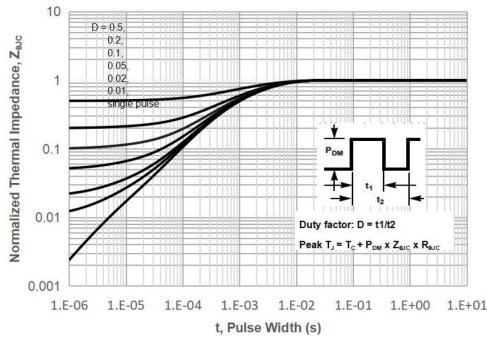
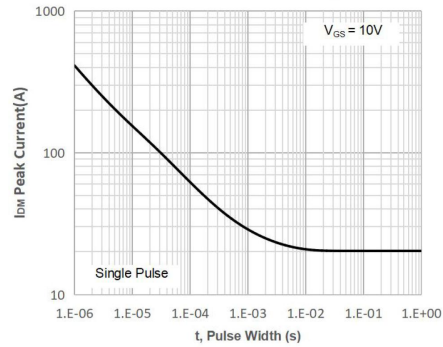


Figure 12: Peak Current Capacity



Test Circuit

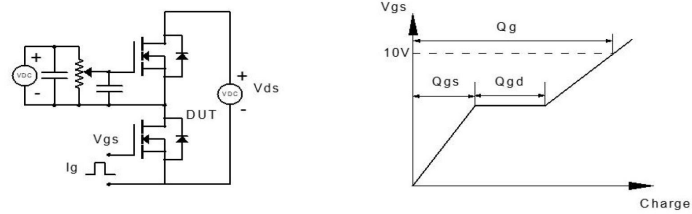


Figure 1: Gate Charge Test Circuit & Waveform

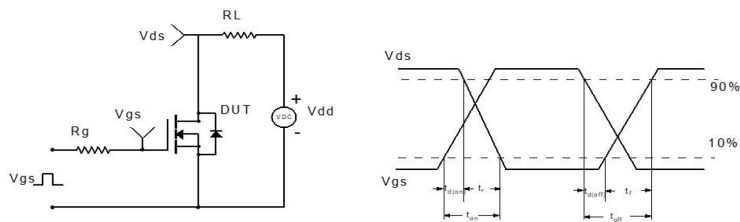


Figure 2: Resistive Switching Test Circuit & Waveform

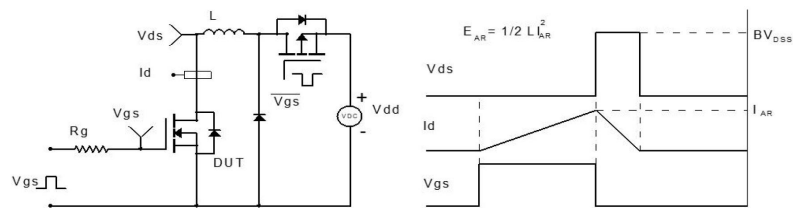


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

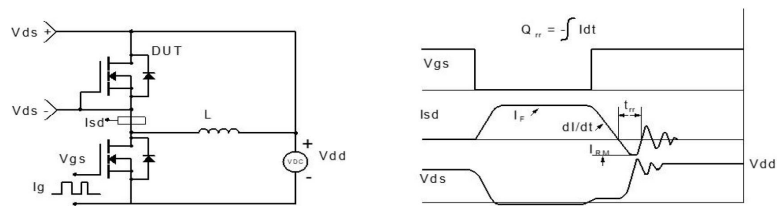


Figure 4: Diode Recovery Test Circuit & Waveform

- Dimensions (DFN3*3)

Unit: mm

<i>A</i>	0.70	0.75	0.80
<i>b</i>	0.25	0.30	0.35
<i>c</i>	0.10	0.15	0.25
<i>D</i>	3.25	3.35	3.45
<i>D1</i>	3.00	3.10	3.20
<i>D2</i>	1.78	1.88	1.98
<i>D3</i>	---	0.13	---
<i>E</i>	3.20	3.30	3.40
<i>E1</i>	3.00	3.15	3.20
<i>E2</i>	2.39	2.49	2.59
<i>e</i>	0.65BSC		
<i>H</i>	0.30	0.39	0.50
<i>L</i>	0.30	0.40	0.50
<i>L1</i>	---	0.13	---
<i>K</i>	0.30	---	---
θ	---	10°	12°
<i>M</i>	*	*	0.15

