

**• General Description**

The CH60N03N 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**

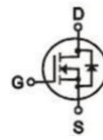
- Power Management in Notebook Computer,
- Portable Equipment and Battery Powered Systems

**• Ordering Information:**

Part NO.	CH60N03N
Marking	CH60N03N
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

**• Absolute Maximum Ratings ( $T_c = 25^\circ\text{C}$ )**

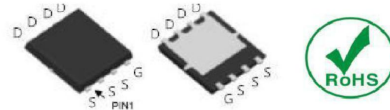
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D@TC=25^\circ\text{C}$	60	A
	$I_D@TC=75^\circ\text{C}$	43	A
	$I_D@TC=100^\circ\text{C}$	29	A
Pulsed Drain Current <sup>①</sup>	$I_{DM}$	80	A
Total Power Dissipation( $TC=25^\circ\text{C}$ )	$P_D@TC=25^\circ\text{C}$	22.7	W
Total Power Dissipation( $TA=25^\circ\text{C}$ )	$P_D@TA=25^\circ\text{C}$	0.69	W
Operating Junction Temperature	$T_J$	-55 to 150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 to 150	$^\circ\text{C}$
Single Pulse Avalanche Energy	$E_{AS}$	30	mJ

**• Product Summary**


$V_{DS} = 30V$

$R_{DS(ON)} < 7m\Omega$

$I_D = 60A$



DFN3\*3

**•Thermal resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R <sub>thJC</sub>	-	-	2.5	° C/W
Thermal resistance, junction - ambient	R <sub>thJA</sub>	-	-	70	° C/W
Soldering temperature, wavesoldering for 10s	T <sub>sold</sub>	-	-	265	° C

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30			V
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1.0	1.5	3.0	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1.0	uA
Gate- Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
Static Drain-source On Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		6.5	8	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		9	14	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =25V, I <sub>D</sub> =10A		19		s
Source-drain voltage	VSD	I <sub>S</sub> =10A			1.20	V

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C <sub>iss</sub>	f = 1MHz	-	1051	-	pF
Output capacitance	C <sub>oss</sub>		-	144	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	121	-	

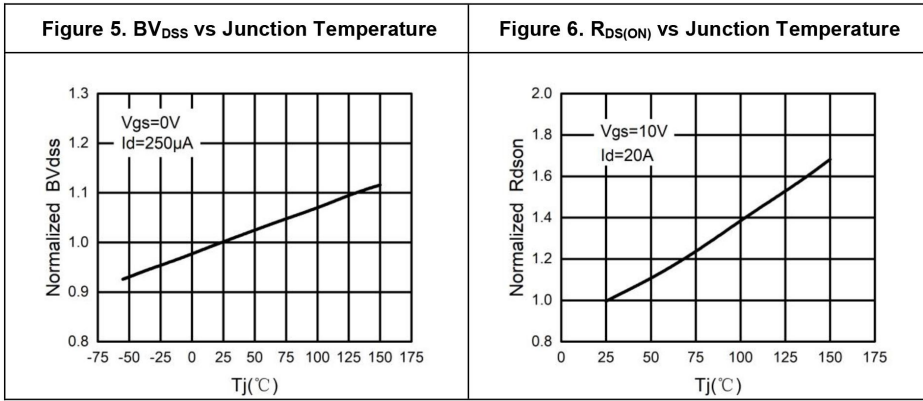
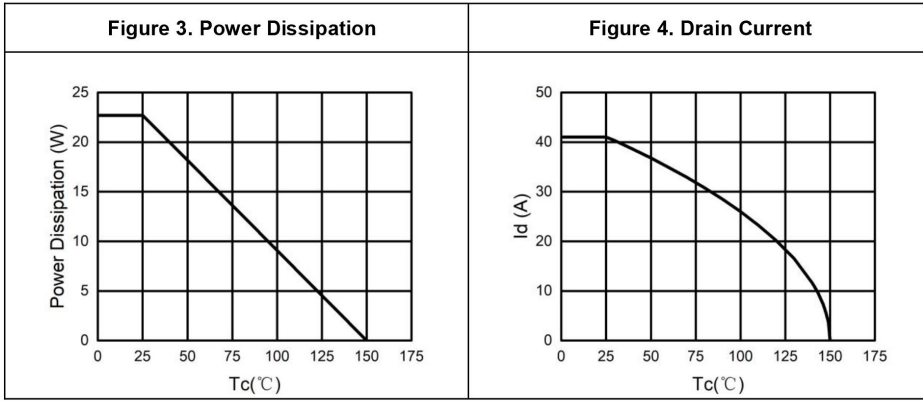
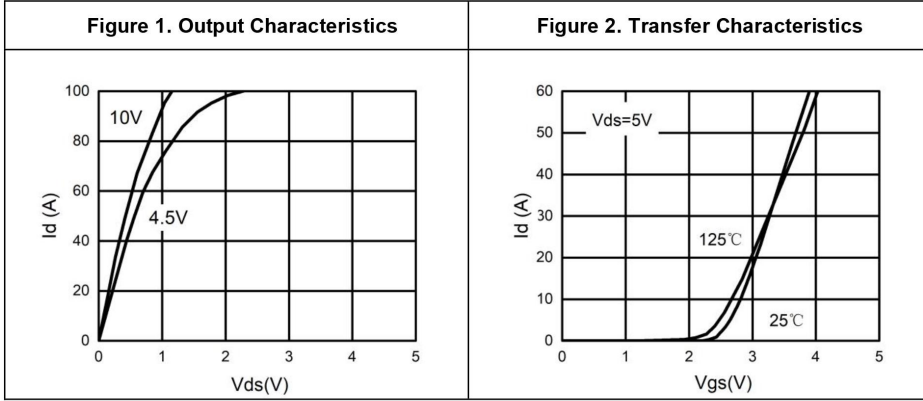
**•Gate Charge characteristics(T<sub>a</sub> = 25°C)**

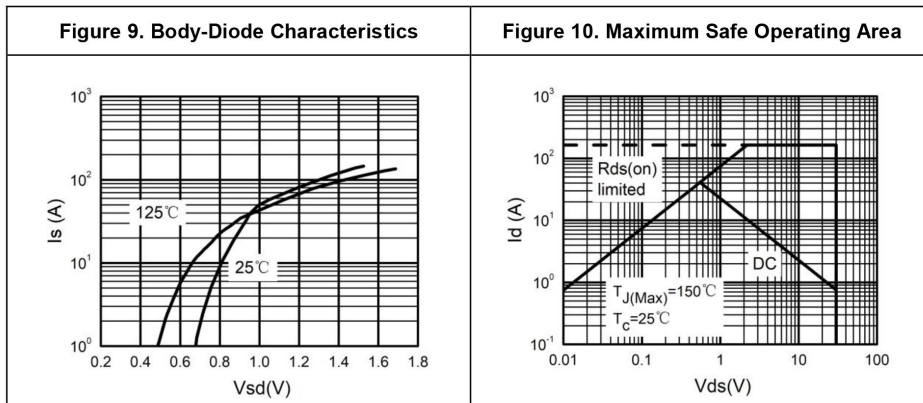
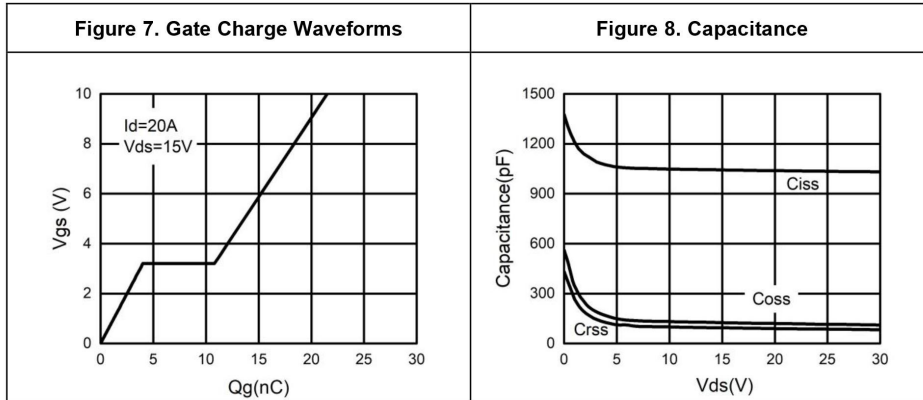
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q <sub>g</sub>	VDD = 25V	-	21.5	-	nC
Gate - Source charge	Q <sub>gs</sub>	I <sub>D</sub> = 5A	-	4	-	
Gate - Drain charge	Q <sub>gd</sub>	VGS = 10V	-	6	-	

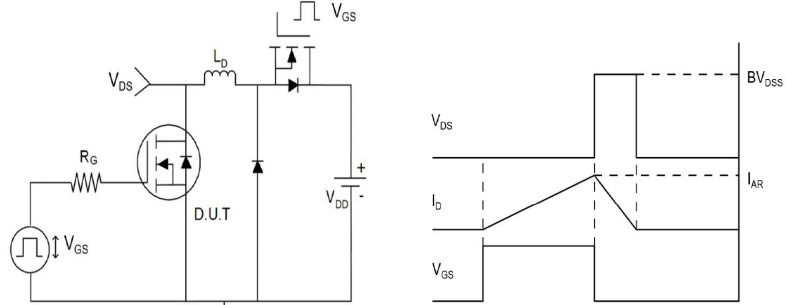
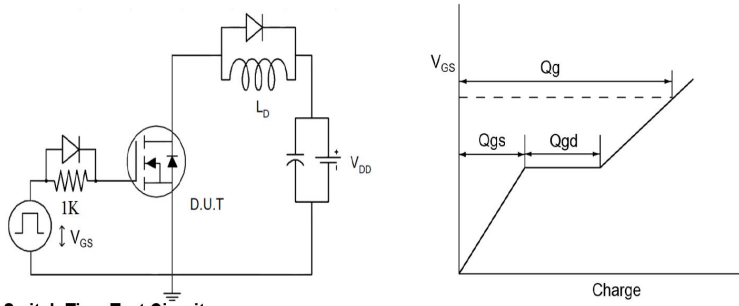
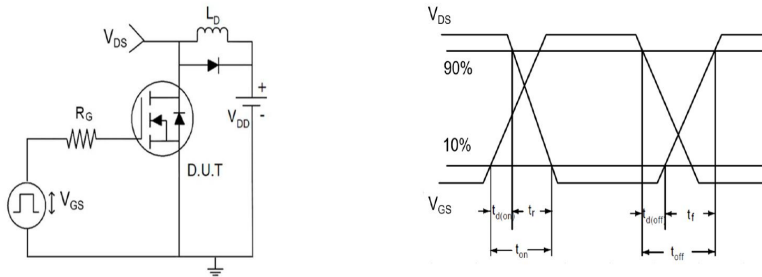
Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.

Notes 2.E<sub>AS</sub> condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=15V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω, L=0.5mH.

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

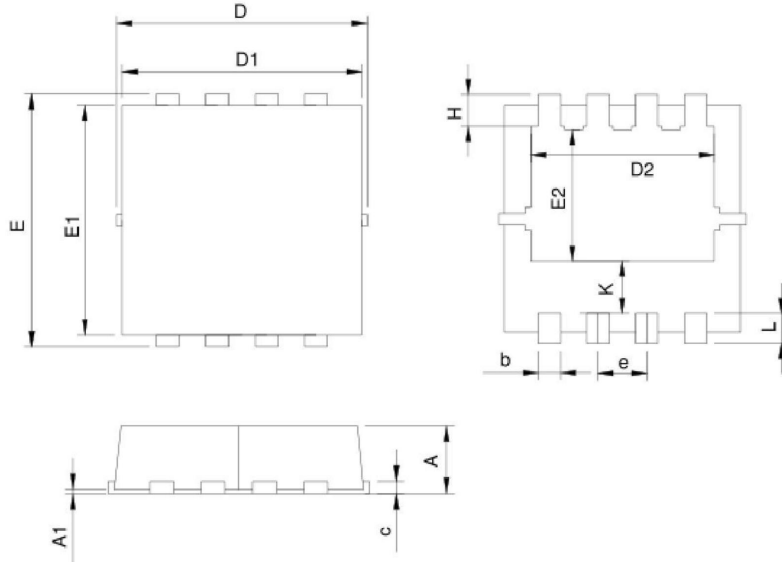
**Typical Electrical And Thermal Characteristics (Curves)**




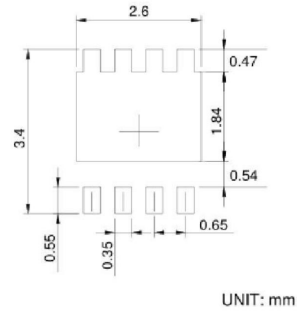
**Test Circuit**
**1)  $E_{AS}$  Test Circuits**

**2) Gate Charge Test Circuit**

**3) Switch Time Test Circuit**


**•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