• General Description

The CH70N04A 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

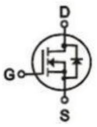
■MB/VGA Vcore

■SMPS 2nd Synchronous Rectifier

■POL application

■BLDC Motor driver

• Product Summary

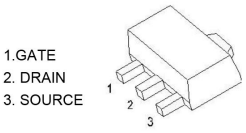


VDS =40V

ID =70A

$R_{DS(ON)}$ Typ = 8.5mΩ
@ V_{GS} = 10V

SOT-89-3L



•Ordering Information:

Part NO.	CH70N04A
Marking	CH70N04A
Packing Information	REEL TAPE
Basic ordering unit (pcs)	1000

•Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	20	V
Continuous Drain Current	$I_{D@}$TC=25℃	70	A
	$I_{D@}$TC=75℃	50	A
	$I_{D@}$TC=100℃	36	A
Pulsed Drain Current ①	I_{DM}	240	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	48	W
Total Power Dissipation(TA=25℃)	P_D@TA=25℃	2.0	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	72	mJ
Avalanche Current@L=0.1mH	I_{AS}	55	A

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.6	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	62.5	°C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	°C

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V,I_D =250uA	40			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1	1.5	2.0	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=20V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±12V ,V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		8.5	10	mΩ
		V_{GS}=4.5V, I_D=10A		11	14	mΩ
Forward Transconductance	g_{FS}	V_{DS} =15V, I_D=10A		16		s
Source-drain voltage	V_{SD}	Is=20A			1.50	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz	-	3177	-	pF
Output capacitance	C_{oss}		-	150	-	
Reverse transfer capacitance	C_{rss}		-	133	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{Ds} =20V	-	45	-	nC
Gate - Source charge	Q_{gs}	I_D =20A	-	8	-	
Gate - Drain charge	Q_{gd}	V_{GS}=0V TO 10V	-	11	-	

Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=17A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

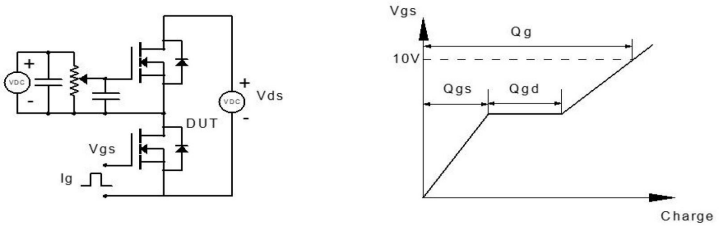


Figure 1: Gate Charge Test Circuit & Waveform

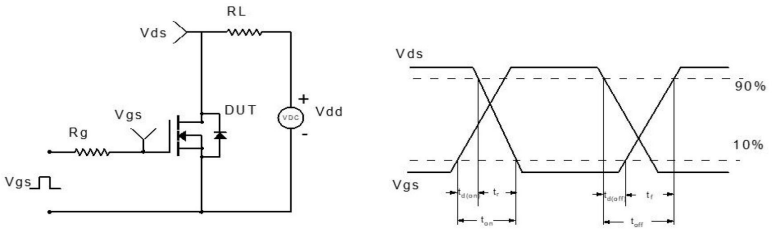


Figure 2: Resistive Switching Test Circuit & Waveform

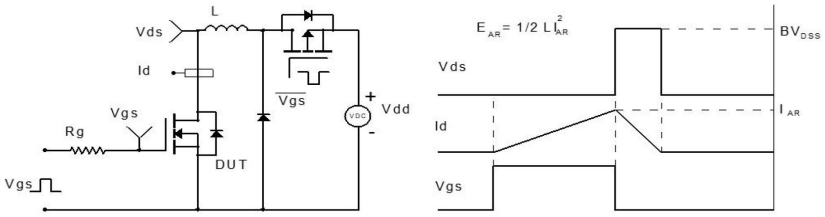


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

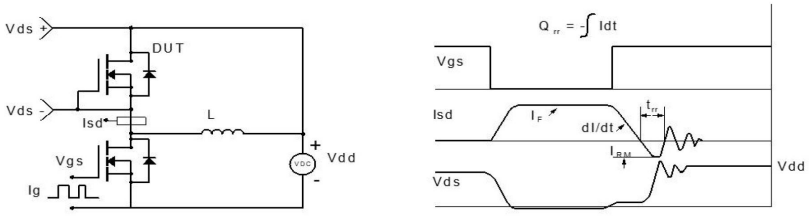
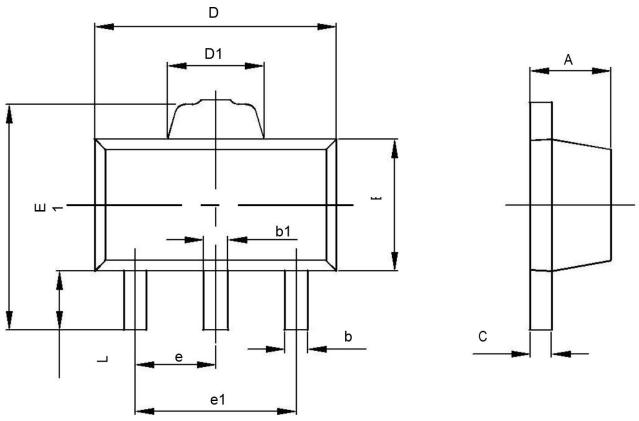


Figure 4: Diode Recovery Test Circuit & Waveform

SOT-89-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043