

General Description

The CH70N04D 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.

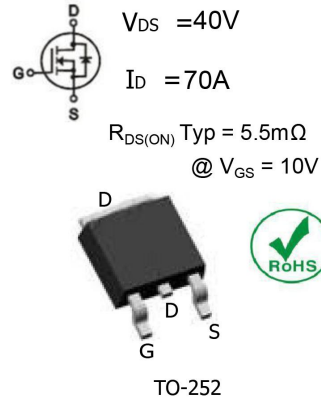
Features

- 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



Ordering Information:

Part NO.	CH70N04D
Marking	CH70N04D
Packing Information	REEL TAPE
Basic ordering unit (pcs)	2500

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	70	A
	$I_{D@TC=75^\circ C}$	50	A
	$I_{D@TC=100^\circ C}$	36	A
Pulsed Drain Current (1)	I_{DM}	240	A
Total Power Dissipation($TC=25^\circ C$)	$P_{D@TC=25^\circ C}$	48	W
Total Power Dissipation($TA=25^\circ C$)	$P_{D@TA=25^\circ C}$	2.0	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$
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_{solder}	-	-	265	°C

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.5	2.0	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$		5.5	7.5	m Ω
		$V_{GS}=4.5V, I_D=10A$		7.9	10	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=10A$		16		S
Source-drain voltage	V_{SD}	$I_S=20A$			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($T_a = 25^\circ C$)

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}	$V_{GS}=0V \text{ TO } 10V$	-	11	-	

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J=25^\circ C$, $V_{DD}=20V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=17A$
 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

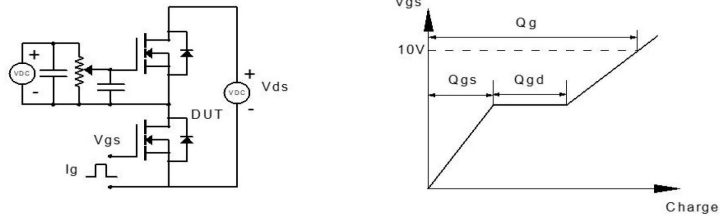


Figure 1: Gate Charge Test Circuit & Waveform

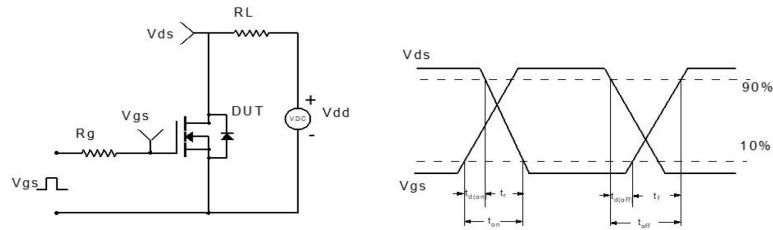


Figure 2: Resistive Switching Test Circuit & Waveform

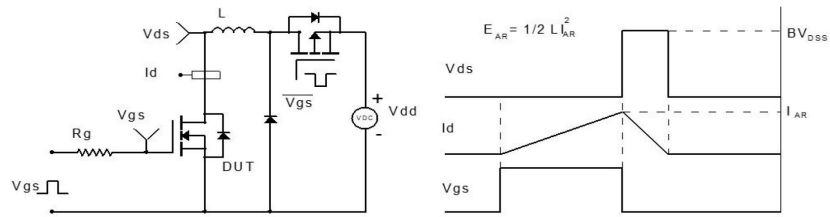


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

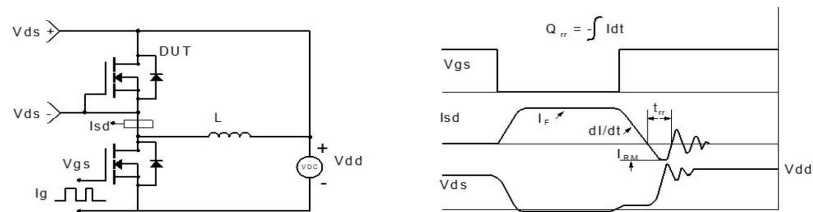
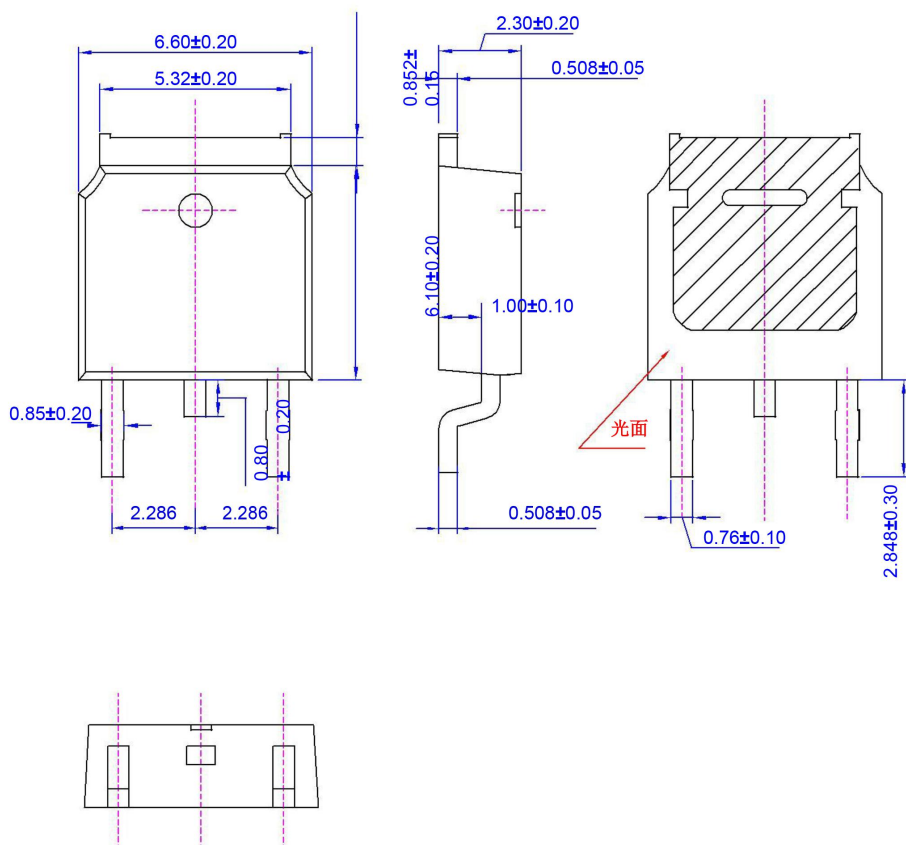


Figure 4: Diode Recovery Test Circuit & Waveform

● Dimensions (TO-252)



注:

1. 塑封体未标注为光面 $Ra=0.1$; 亚光面 $Ra=0.8$
2. 未注公差 ± 0.15 , 未标注圆角 $R_{max}=0.25$
3. 塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
4. 标注单位 mm