• General Description

The CH30P03A 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.

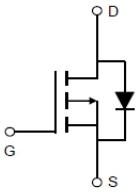
• Features

- ■ 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



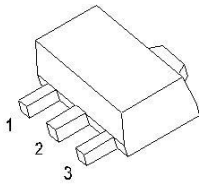
V_{DS}=-30V

$R_{DS(ON)}$ =23mΩ

I_D=-20A

RoHS

SOT-89-3L



1.GATE
2. DRAIN
3. SOURCE

•Ordering Information:

Part NO.	CH30P03A
Marking	CH30P03A
Packing Information	REEL TAPE
Basic ordering unit (pcs)	1000

•Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@}T_C$=25℃	-20	A
	$I_{D@}T_C$=75℃	-10.5	A
	$I_{D@}T_C$=100℃	- 9	A
	$I_{D@}T_A$=25℃	-11.2	A
	$I_{D@}T_A$=75℃	-8.5	A
Pulsed Drain Current ①	I_{DM}	-38	A
Total Power Dissipation②	$P_{D@}T_C$=25℃	9	W
Total Power Dissipation	$P_{D@}T_C$=100℃	2.0	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃

Single Pulse Avalanche Energy	E_{AS}	58	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case②	R_{thJC}	-	-	7.1	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	140	°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	-30			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =-250uA	-1.2		-2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-30V, 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=-10A		23	30	mΩ
		V_{GS}=-4.5V, I_D=-10A		28	38	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D=-5A		9		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	-	1135	-	pF
Output capacitance	C_{oss}		-	184	-	
Reverse transfer capacitance	C_{rss}		-	117	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{DD} =15V	-	21	-	nC
Gate - Source charge	Q_{gs}	I_D = 7.5A	-	1.4	-	
Gate - Drain charge	Q_{gd}	V_{GS} = 10V	-	4.1	-	

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

Typical Electrical And Thermal Characteristics (Curves)

Figure 1. Output Characteristics

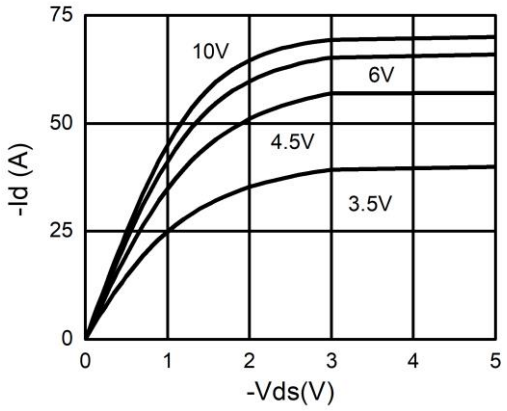


Figure 2. Transfer Characteristics

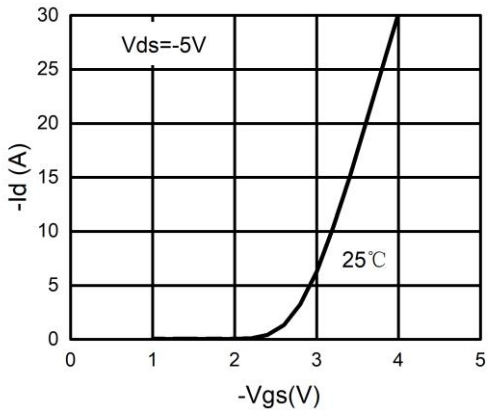


Figure 3. Power Dissipation

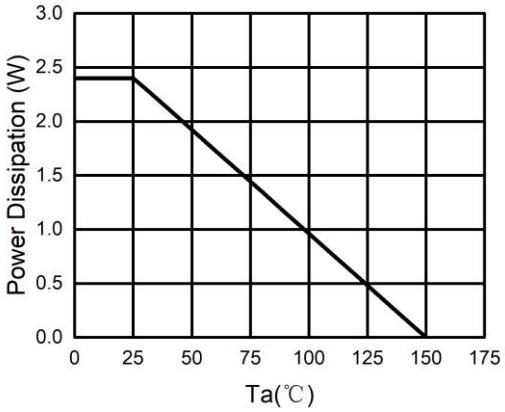


Figure 4. Drain Current

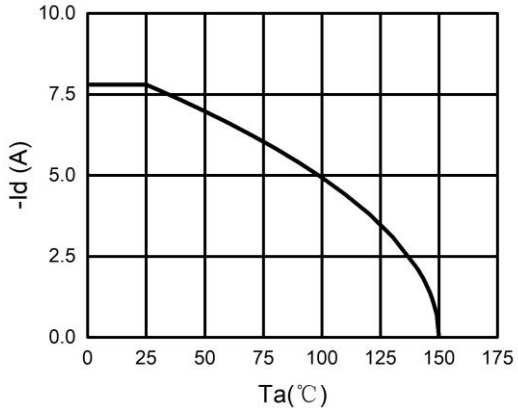


Figure 5. BV_{DSS} vs Junction Temperature

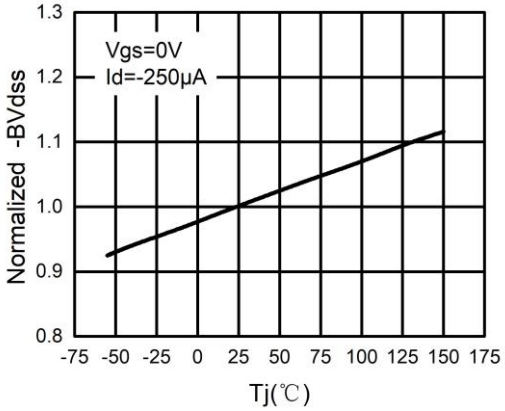


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

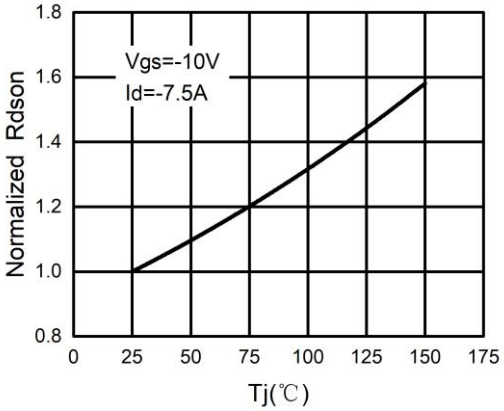


Figure 7. Gate Charge Waveforms

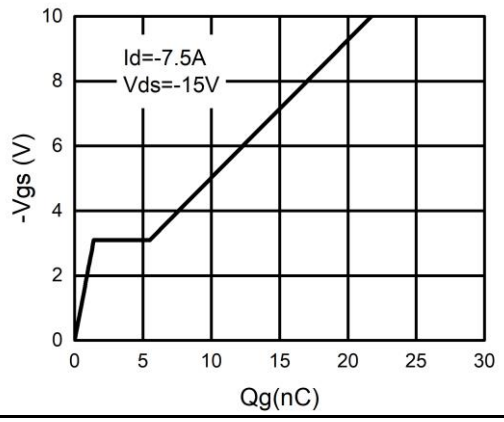


Figure 8. Capacitance

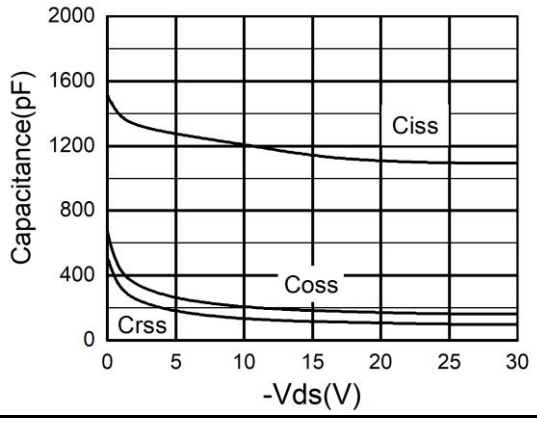


Figure 9. Body-Diode Characteristics

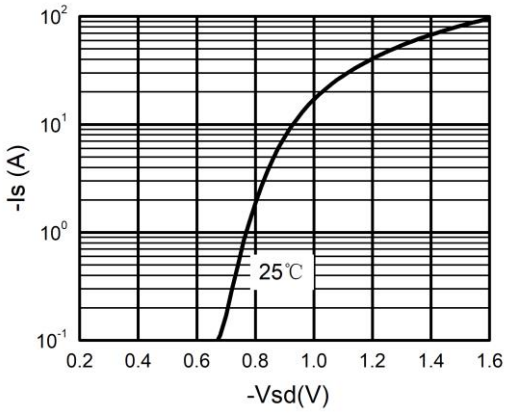
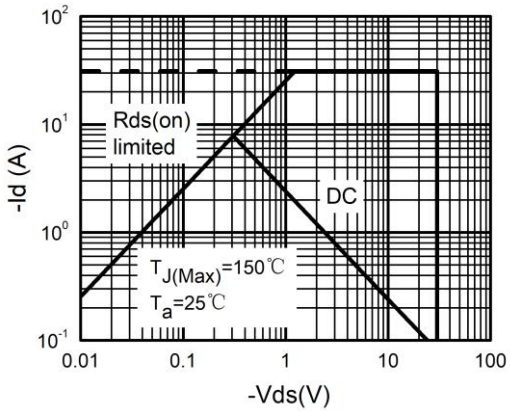
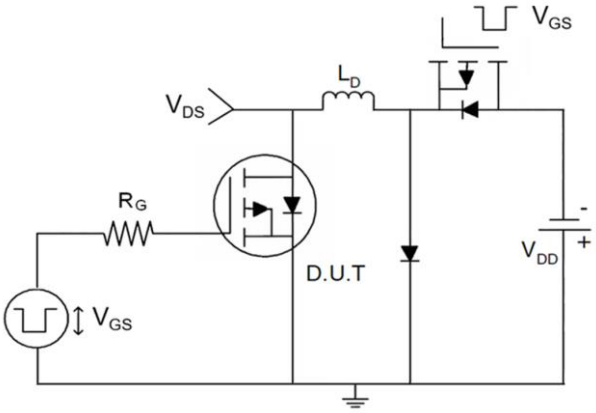


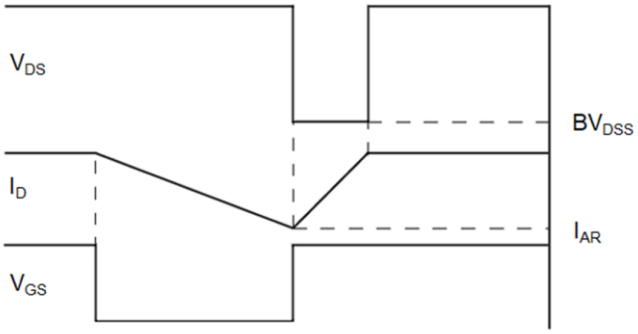
Figure 10. Maximum Safe Operating Area



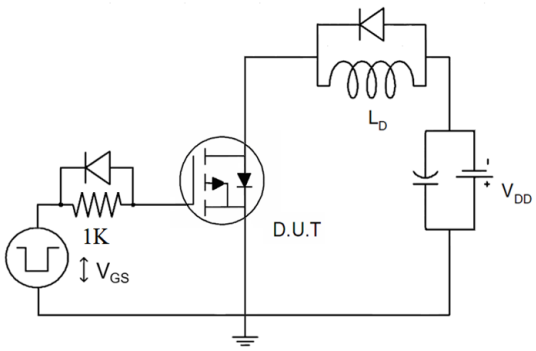
Test Circuit

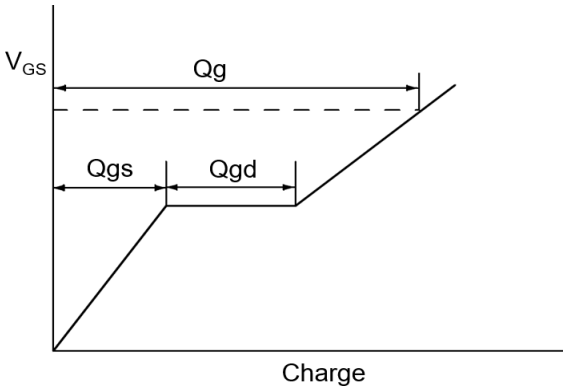
1) E_{AS} Test Circuits



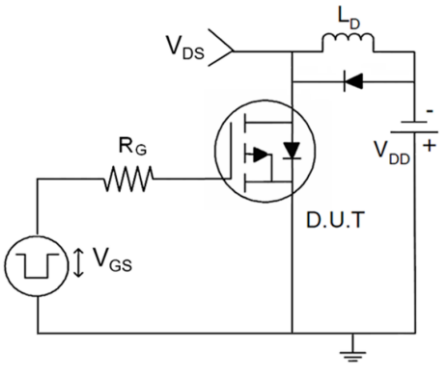


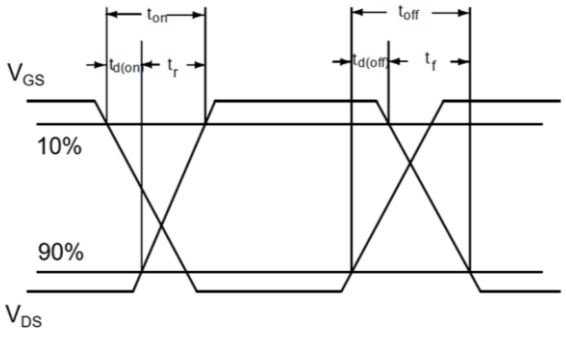
2) Gate Charge Test Circuit



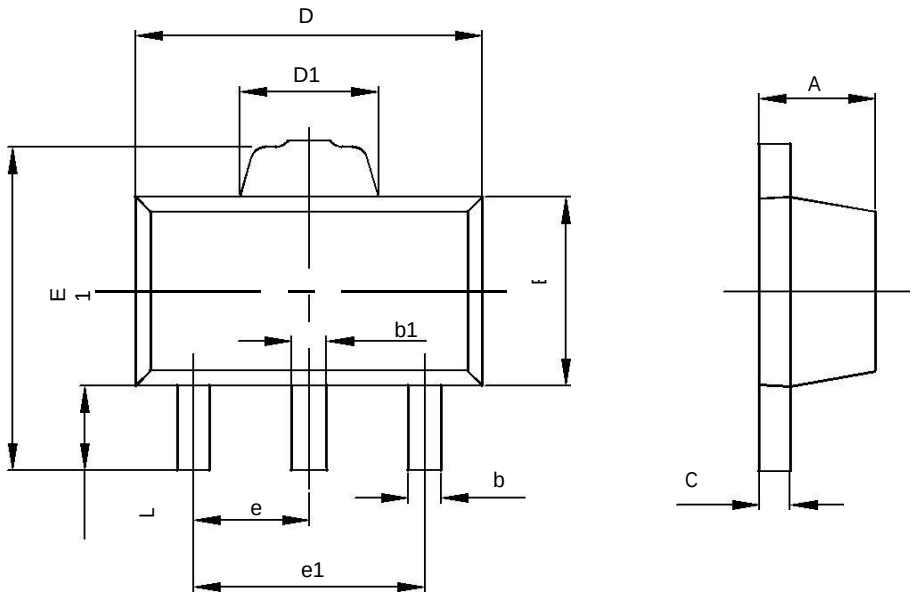


3) Switch Time Test Circuit





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