30V P-Channel Enhancement Mode MOSFET

Description

The CP35QP03 uses advanced trench technology to provide excellent $R_{DS(ON)}$, This device is suitable for use as a load switch or in PWM applications.

General Features

- V_{DS} =-30V I_D =-35A
  $R_{DS(ON)}$(Typ.)=11.8mΩ @V_{GS}=-10V
  $R_{DS(ON)}$(Typ.)=17.2mΩ @V_{GS}=-4.5V
- High power and current handing capability
- Lead free product is acquired
- Surface mount package
- 150 °C operating temperature
- 100% UIS tested

Application

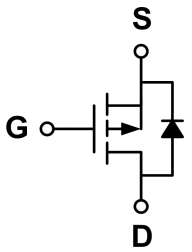
- PWM applications
- Load switch
- Uninterruptible power supply

Package

- PDFN3*3-8L

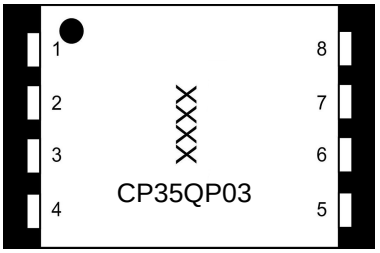
100% UIS TESTED!
100% ΔVds TESTED!

Schematic diagram



Marking and pin assignment

PDFN3 3-8L
（Top View）



Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
CP35QP03	-55°C to +150°C	PDFN3*3-8L	5000

Absolute Maximum Ratings (TA=25 unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	-30	V
Gate-source voltage		V_{GS}	±25	V
Continuous Drain Current	TC=25°C	I_D	-35	A
	TC=70°C		-23	
Pulsed Drain Current		I_{DP}	-120	A
Avalanche energy(T_j=25℃ ,V_{DD}=30V,V_G=10V,L=0.5mH,Rg=25Ω)		E_{AS}	45	mJ
Power Dissipation	TC=25°C	P_D	29	W
	TC=70°C		12	
Operating junction Temperature range		Tj	-55—150	℃

℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V	-	-	-1	μA
		T_J=55°C	-	-	-5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±25V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1.7	-2.2	-3	V
Drain-source on-state resistance[1]	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-10A	-	11.8	14	mΩ
		V_{GS}=-4.5V, I_D=-10A	-	17.8	20	
On Status Drain Current	$I_{D(ON)}$	V_{DS}=-5V, V_{GS}=-10V	-100	-	-	A
Diode Characteristics						
Diode Forward Voltage[1]	V_{SD}	I_{SD}=-20A,V_{GS}=0V	-	-0.8	-1.3	V
Diode Continuous Forward Current	I_S		-	-30	-	A
Reverse Recovery Time	t_{rr}	I_F=-30A, dI/dt=-100A/us	-	24	-	ns
Reverse Recovery Charge	Q_{rr}		-	16	-	nC
Dynamic Characteristics[2]						
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V,f=1MHz	-	2.4	-	Ω
Input capacitance	C_{ISS}	V_{GS}=0V ,V_{DS}=-15V f=1.0MHz	-	2150	-	pF
Output capacitance	C_{OSS}		-	307	-	
Reverse transfer capacitance	C_{RSS}		-	269	-	
Turn-on delay time	$t_{D(ON)}$	V_{GS}=-10V, V_{DS}=-15V, R_L=1.6Ω, I_D=30A, R_G=3Ω	-	11	-	ns
Turn-on Rise time	tr		-	9.4	-	
Turn-off delay time	$t_{D(OFF)}$		-	24	-	
Turn-off Fall time	tf		-	12	-	
Total gate charge	Q_g	V_{GS}=-10V,I_D=-10A V_{DS}=-15V	-	44.3		nC
Gate-source charge	Q_{gs}			5.3		
Gate-drain charge	Q_{gd}		-	9.6	-	

Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient[A]	≤ 10s	$R_{\theta JA}$	29	34	℃/W
Maximum Junction-to-Ambient[A]	Steady-State		56	66	
Maximum Junction-to-Lead[B]	Steady-State	$R_{\theta JC}$	3.5	4.2	

A:The value of R qJA is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: The R qJA is the sum of the thermal impedence from junction to lead R qJL and lead to ambient.

Typical Performance Characteristics

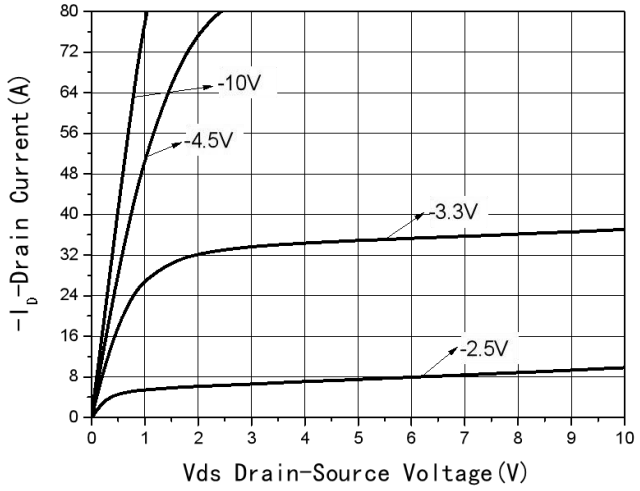


Fig1 Output Characteristics

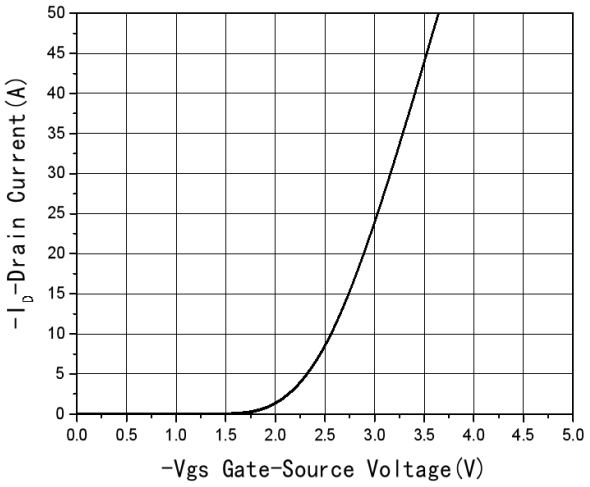


Fig2 Transfer Characteristics

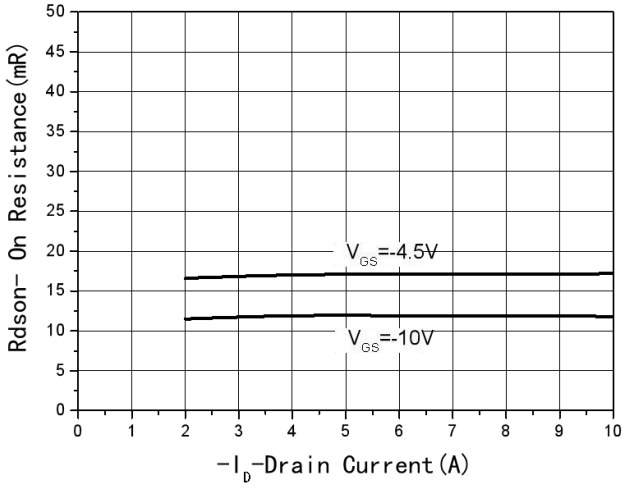


Fig3 Rdson-Drain current

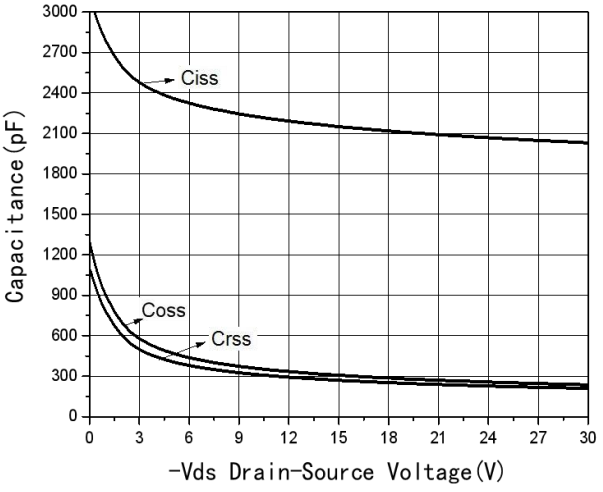


Fig4 Capacitance vs Vds

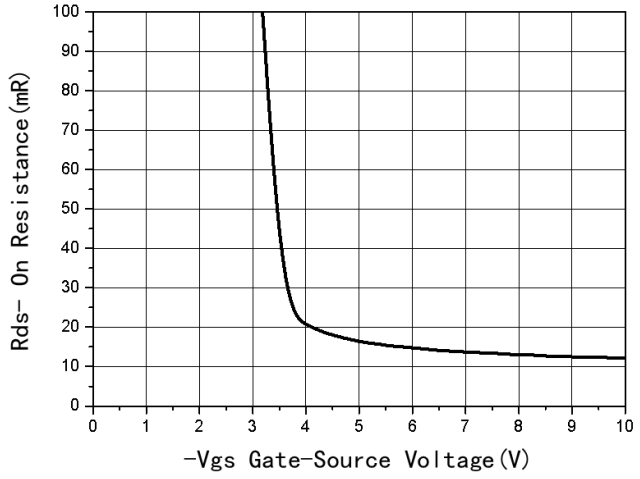


Fig5 Rdson-Gate Drain voltage

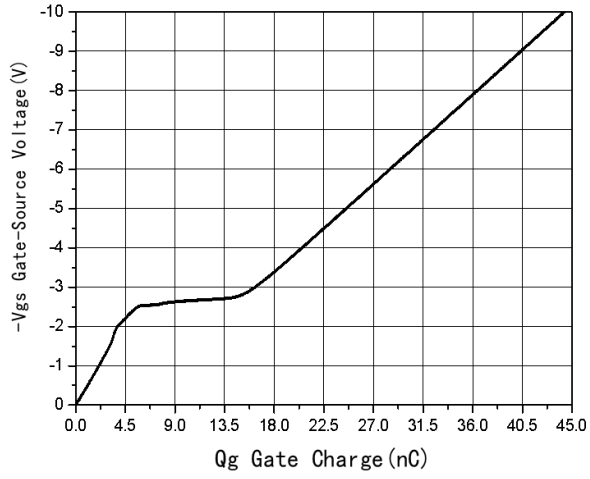


Fig6 Gate Charge

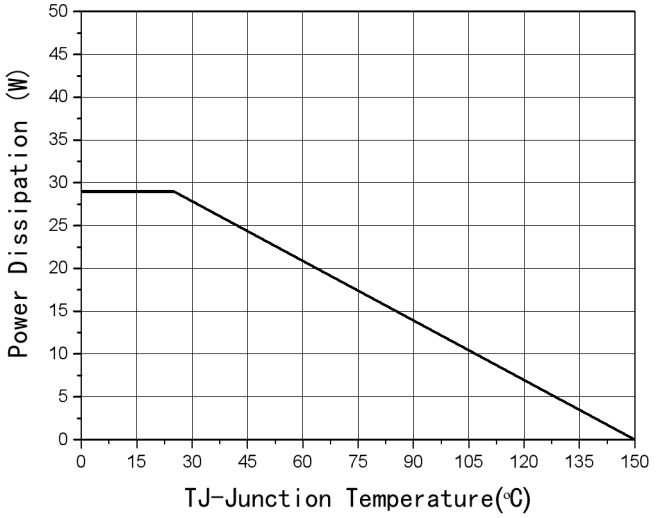


Fig7 Power De-rating

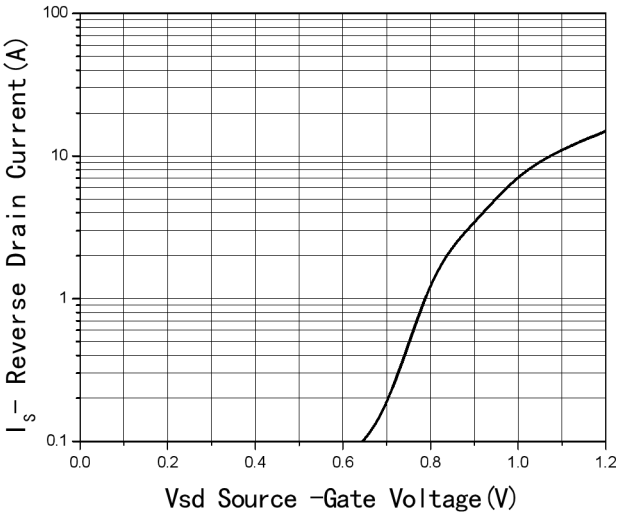


Fig8 Source-Drain Diode Forward

Package Information

- **PDFN3*3-8L**