CP80P04D6

40V P-Channel Enhancement Mode MOSFET

Description

The CP80P04D6 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in load switch and battery protection applications.

General Features

- V_{DS} =-40V，I_D =-80A
  $R_{DS(ON)}$(Typ.)=5mΩ @V_{GS}=-10V
  $R_{DS(ON)}$(Typ.)=6.6mΩ @V_{GS}=-4.5V
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

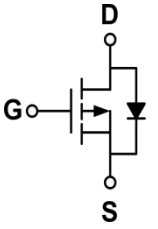
Application

- Battery protection
- Load switch

Package

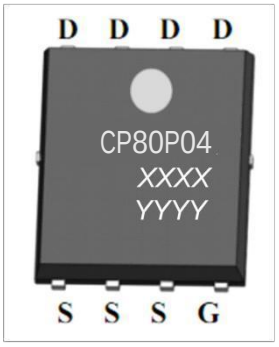
- PDFN5*6-8L

Schematic diagram

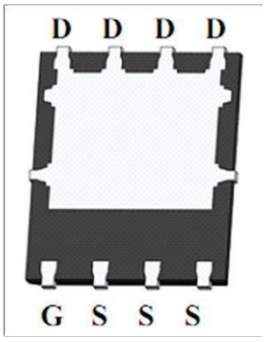


Marking and pin assignment

PDFN5*6-8L



Top View



Bottom View

XXXX—Wafer Information

YYYY—Quality Code

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
CP80P04D6-G	-55°C to +150°C	PDFN5*6-8L	4000

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	-40	V
Gate-source voltage		V_{GS}	±20	V
Continuous Drain Current	TC=25°C	I_D	-80	A
	TC=70°C		-60	
Pulsed Drain Current		I_{DP}	-320	A
Avalanche energy(L=0.1mH)		E_{AS}	518	mJ
Power Dissipation	TC=25°C	P_D	80	W
	TC=70°C		56	
Operating junction Temperature range		Tj	-55—150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-40	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V	-	-	-1	μA
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-1.0	-1.5	-2.5	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=-20A	-	5	6	mΩ
		V_{GS}=4.5V, I_D=-20A	-	6.6	8	
Forward transconductance	gfs	V_{DS}=-5V, I_D=-20A	-	27	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=-15V ,V_{GS}=0V f=1.0MHz	-	6620	-	pF
Output capacitance	C_{OSS}		-	564	-	
Reverse transfer capacitance	C_{RSS}		-	517	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DS}=-20V R_L=2.2 Ω V_{GS}=-10V R_{GEN}=10 Ω	-	6.5	-	ns
Rise time	tr		-	15	-	
Turn-off delay time	$t_{D(OFF)}$		-	26	-	
Fall time	tf		-	14	-	
Total gate charge	Qg(10V)	V_{DS}=-15V,I_D=-20A V_{GS}=-10V	-	119	-	nC
Total gate charge	Qg(4.5V)		-	124	-	
Gate-source charge	Qgs		-	20	-	
Gate-drain charge	Qgd		-	17	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V_{SD}	V_{GS}=0V,Is=-20.0A	-	-0.8	-1.0	V

Typical Performance Characteristics

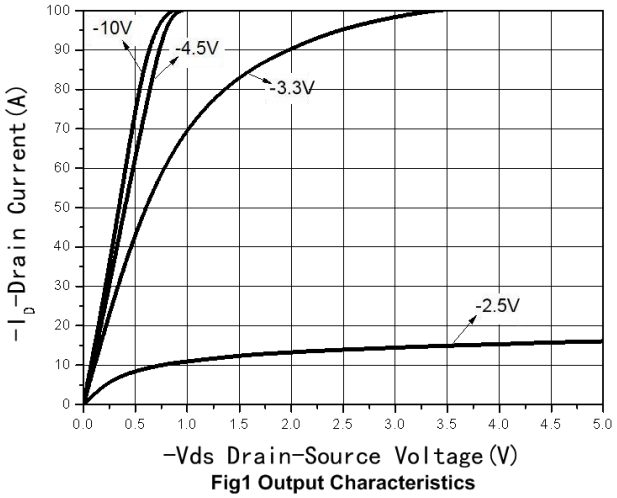


Fig1 Output Characteristics

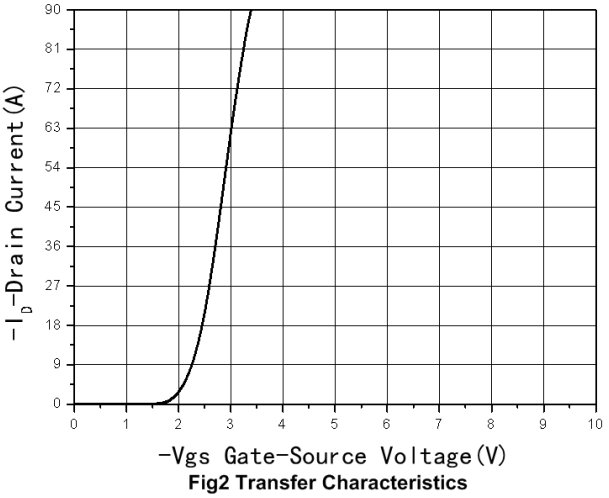


Fig2 Transfer Characteristics

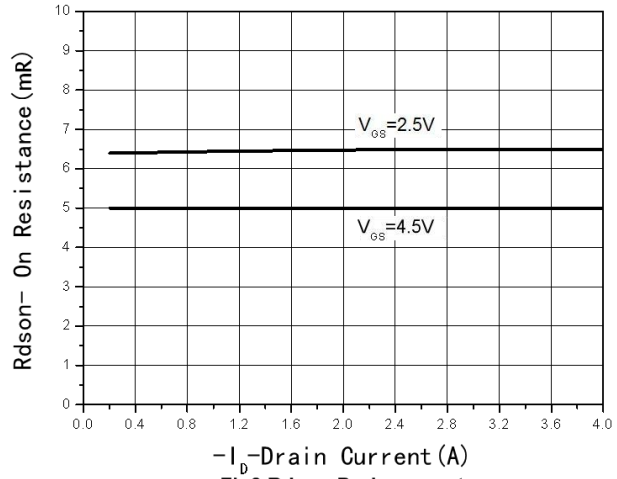


Fig3 Rdson-Drain current

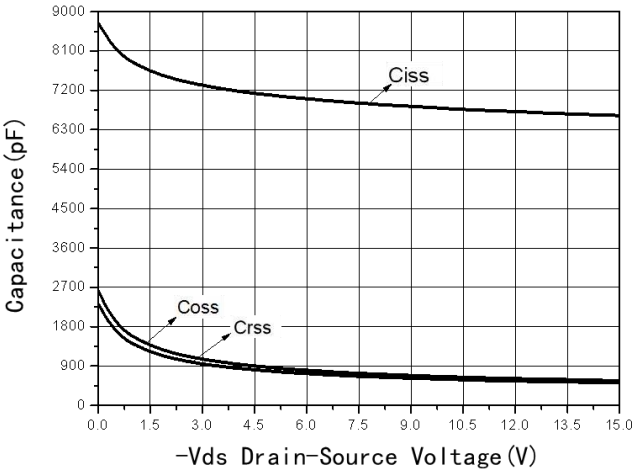


Fig4 Capacitance vs Vds

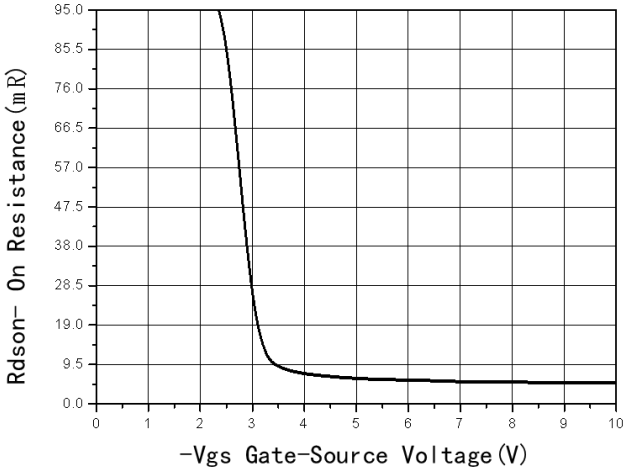


Fig5 Rdson-Gate Drain voltage

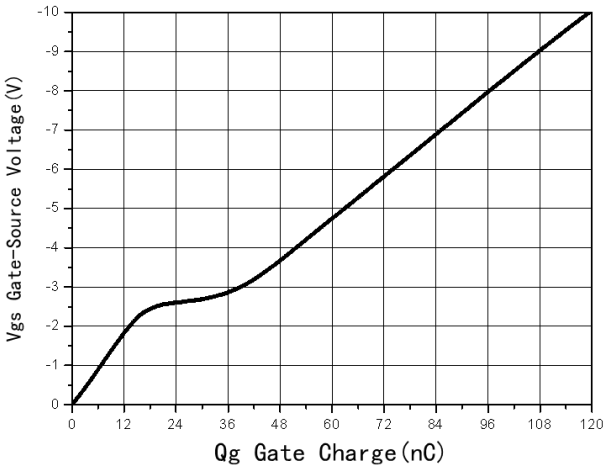


Fig6 Gate Charge

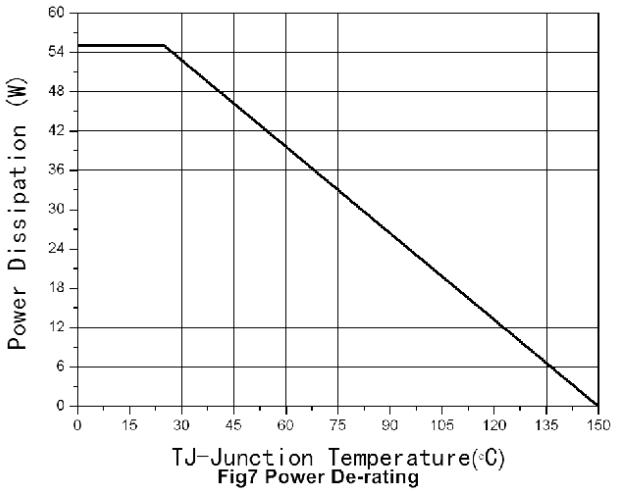


Fig7 Power De-rating

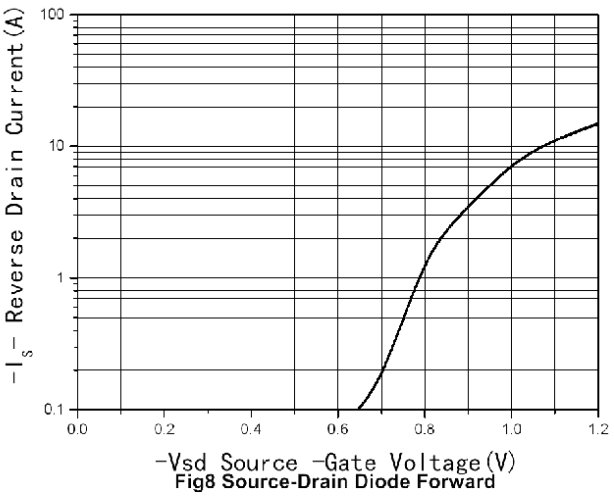
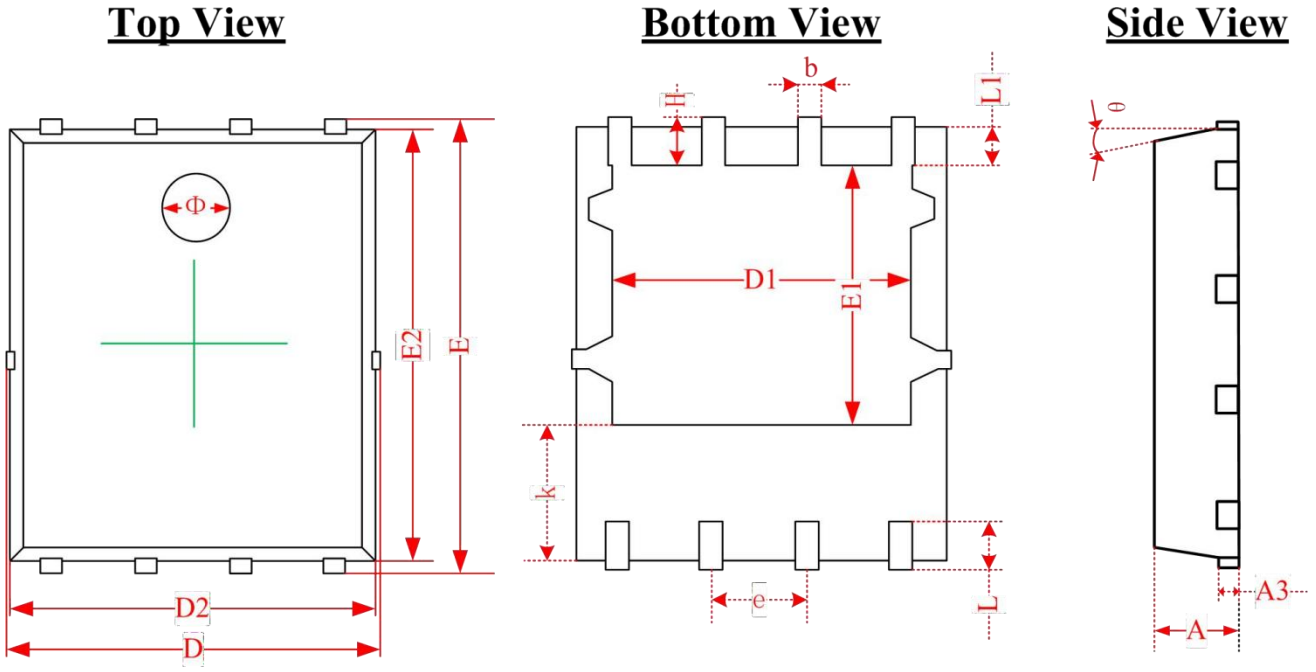


Fig8 Source-Drain Diode Forward

Package Information

- **PDFN5*6-8L**



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.870	0.900	0.930	0.034	0.035	0.036
A3		0.203REF.			0.008REF.	
D	4.944	5.020	5.096	0.195	0.198	0.201
E	5.974	6.050	6.126	0.235	0.238	0.241
D1	3.910	4.010	4.110	0.154	0.158	0.162
E1	3.375	3.475	3.575	0.133	0.137	0.141
D2	4.870	4.900	4.930	0.192	0.193	0.194
E2	5.720	5.750	5.780	0.226	0.227	0.228
k	1.190	1.290	1.390	0.047	0.051	0.055
b	0.350	0.380	0.410	0.014	0.015	0.016
e		1.270TYP.			0.050TYP.	
L	0.559	0.635	0.711	0.022	0.025	0.028
L1	0.424	0.500	0.576	0.017	0.020	0.023
H	0.574	0.650	0.726	0.023	0.026	0.029
θ	10°	11°	12°	10°	11°	12°
Φ	1.150	1.200	1.250	0.045	0.047	0.049