

Dual N-Channel Enhancement Mode MOSFET

Description

The CP6934AD6 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. The complementary MOSFETs may be used to form a fast switch.

General Features

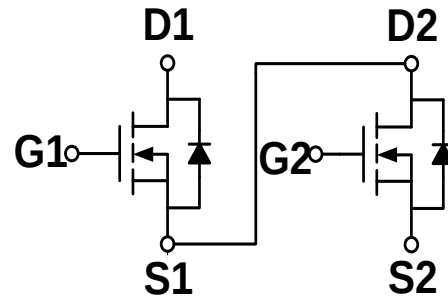
- ◆ **Q1:**
 $V_{DS} = 30V$, $I_D = 65A$
 $R_{DS(ON)} = 4.9m\Omega$ (typical) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 8.2m\Omega$ (typical) @ $V_{GS} = 4.5V$
- ◆ **Q2:**
 $V_{DS} = 30V$, $I_D = 85A$
 $R_{DS(ON)} = 3.8m\Omega$ (typical) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 5.4m\Omega$ (typical) @ $V_{GS} = 4.5V$
- ◆ Excellent gate charge x $R_{DS(ON)}$ product(FOM)
- ◆ Very low on-resistance $R_{DS(ON)}$
- ◆ 150 °C operating temperature
- ◆ Pb-free lead plating
- ◆ 100% UIS tested



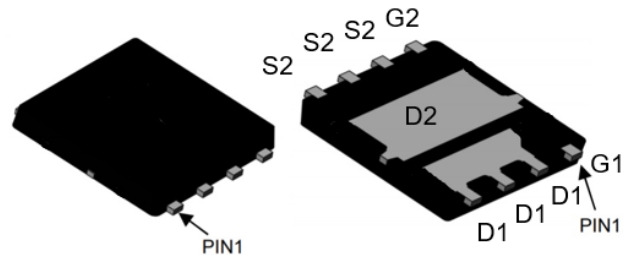
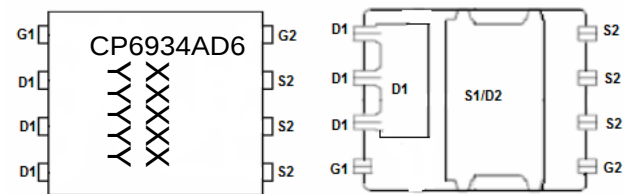
Application

- ◆ DC/DC Converters in Computing
- ◆ Isolated DC/DC Converters in Telecom and Industrial

Schematic diagram



Marking and pin assignment



XXXX—Wafer Information

YYYY—Quality Code

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
CP6934AD6-G	-55°C to +150°C	PDFN5*6-8L	5000

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

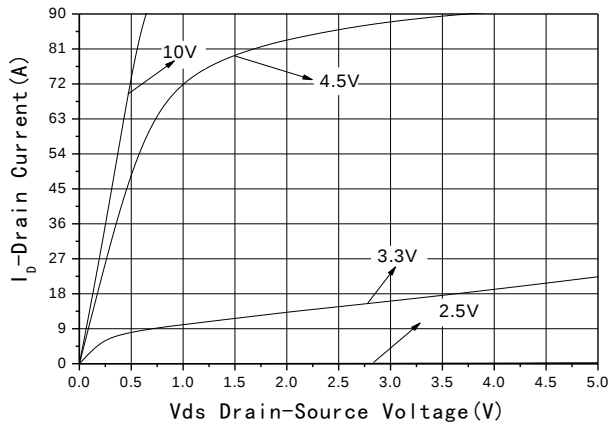
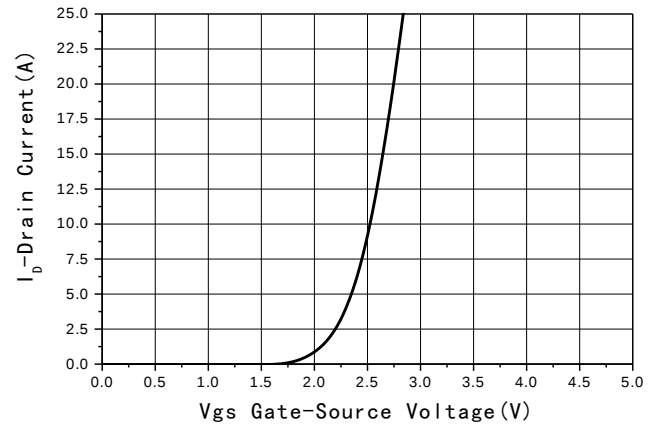
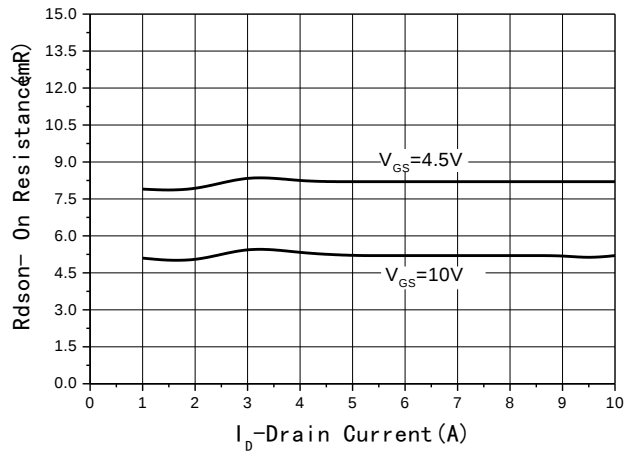
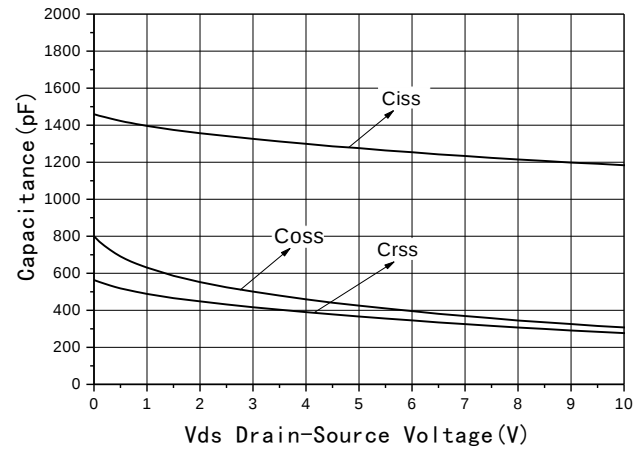
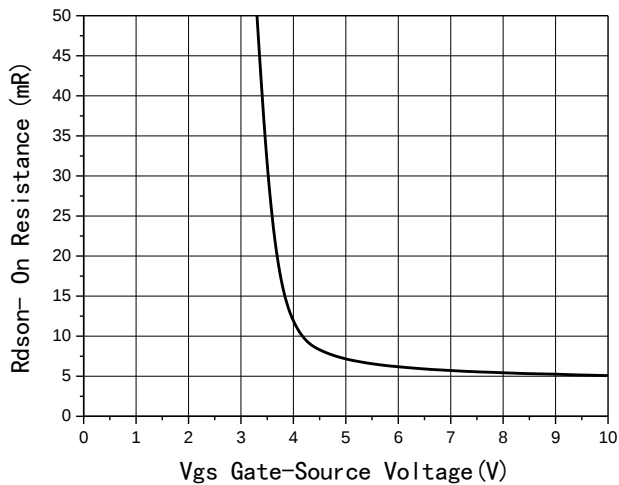
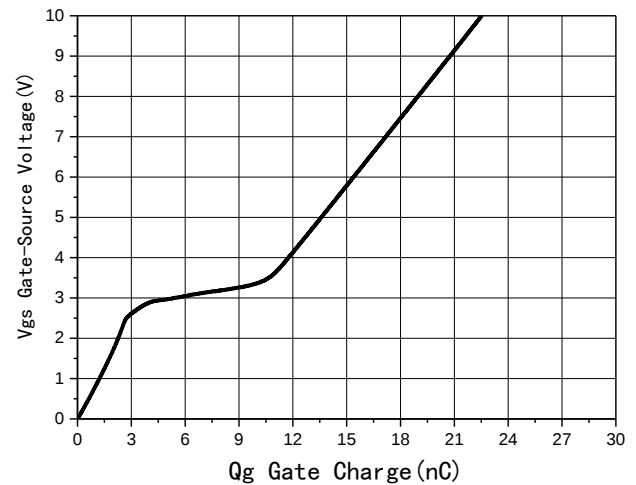
Parameter	Symbol	Limit		Unit
		Q1	Q2	
Drain-source voltage	V_{DS}	30	30	V
Gate-source voltage	V_{GS}	±20	±20	V
Operating junction Temperature range	T_j	-55—150	-55—150	°C

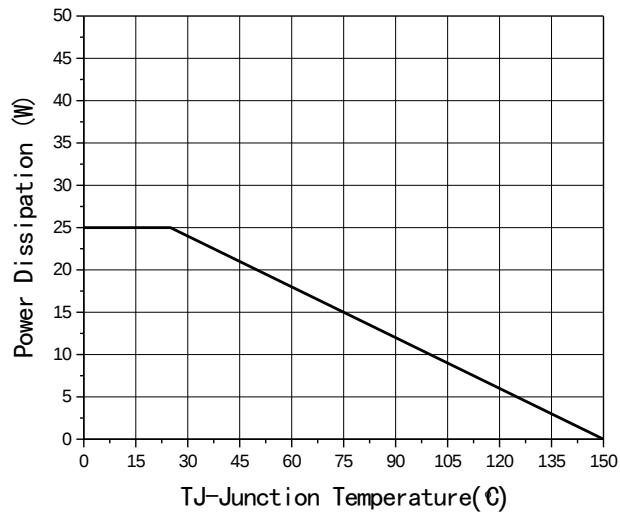
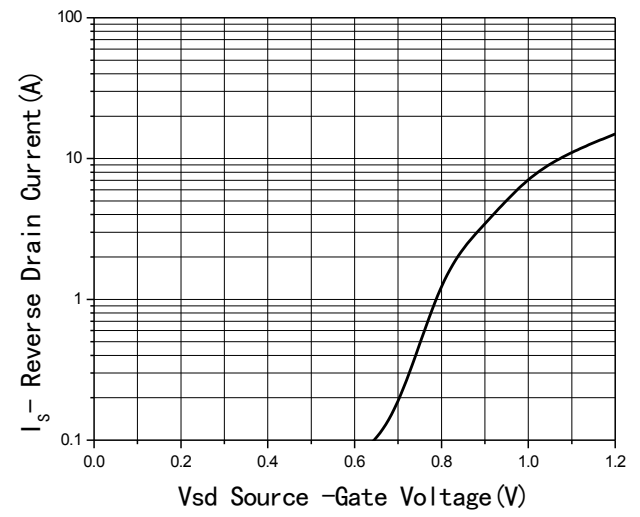
Drain Current-Continuous (Silicon Limited)	$T_A=25^{\circ}\text{C}$	I_D	65	85	A
	$T_A=75^{\circ}\text{C}$		55	65	
Pulsed Drain Current (Package Limited)		I_{DM}	120	230	A
Avalanche Current		I_{AS}, I_{AR}	30	60	A
Avalanche energy $L=0.1\text{mH}$		E_{AS}, E_{AR}	45	180	mJ
Power Dissipation	$T_C=25^{\circ}\text{C}$	P_D	25	40	W
	$T_C=75^{\circ}\text{C}$		18	30	
Junction and Storage Temperature Range		T_J, T_{STG}	-55—150		$^{\circ}\text{C}$

N-Channel Electrical Characteristics (Q1) ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-body leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.5	V
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	4.9	7	m Ω
		$V_{GS}=4.5V, I_D=15A$	-	8.2	10	
Forward transconductance	g_{fs}	$V_{DS}=5V, I_D=16A$	-	43	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	$V_{DS}=15V, V_{GS}=0V$ $f=1.0\text{MHz}$	-	1133	-	pF
Output capacitance	C_{OSS}		-	253	-	
Reverse transfer capacitance	C_{RSS}		-	231	-	
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $f=1.0\text{MHz}$	-	1.6	2.4	Ω
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=1.5\Omega$ $R_{GEN}=3\Omega$	-	4.4	-	ns
Rise time	t_r		-	9	-	
Turn-off delay time	$t_{D(OFF)}$		-	17	-	
Fall time	t_f		-	6	-	
Total gate charge	Q_g	$V_{DS}=15V, I_D=20A$ $V_{GS}=10V$	-	22.5	-	nC
Gate-source charge	Q_{gs}		-	3.7	-	
Gate-drain charge	Q_{gd}		-	6.4	-	

Typical Performance Characteristics(Q1)

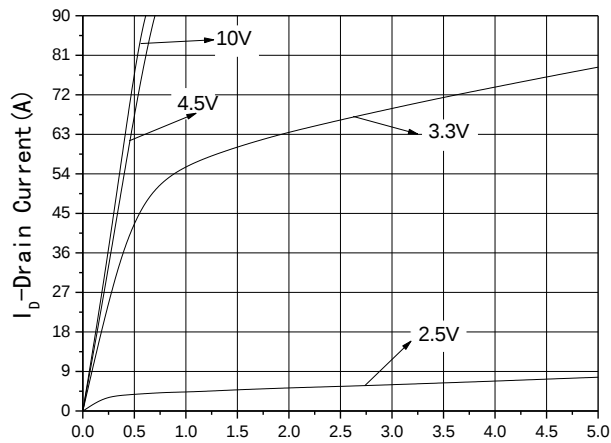
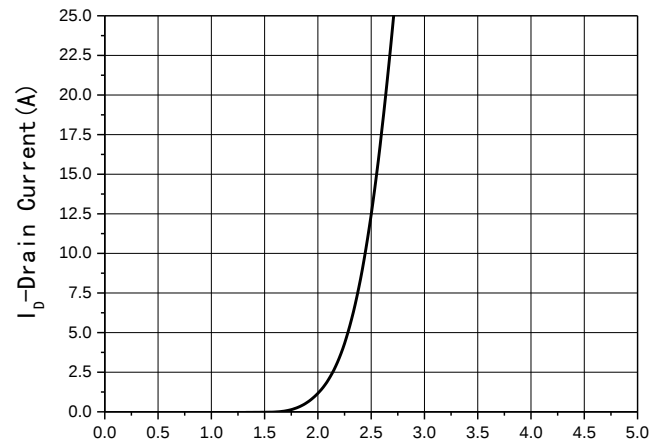
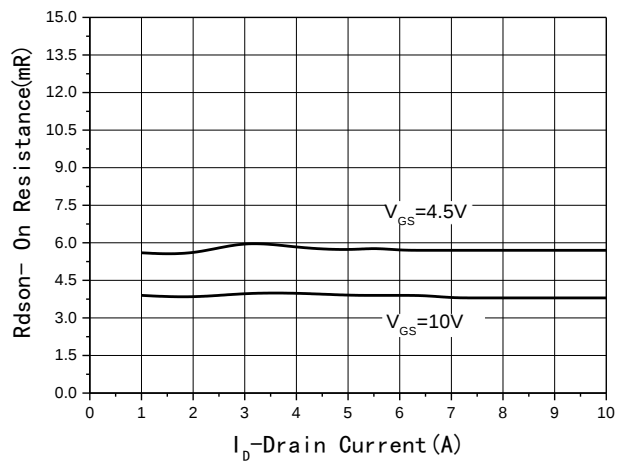
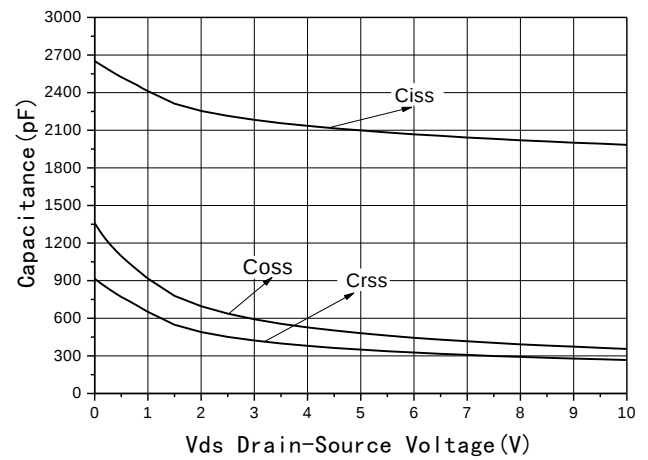
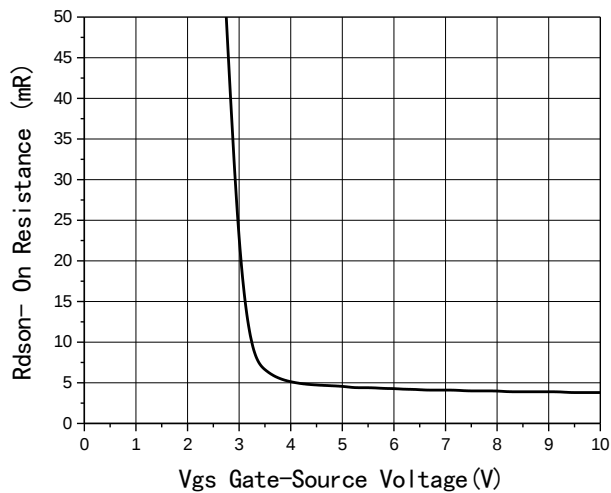
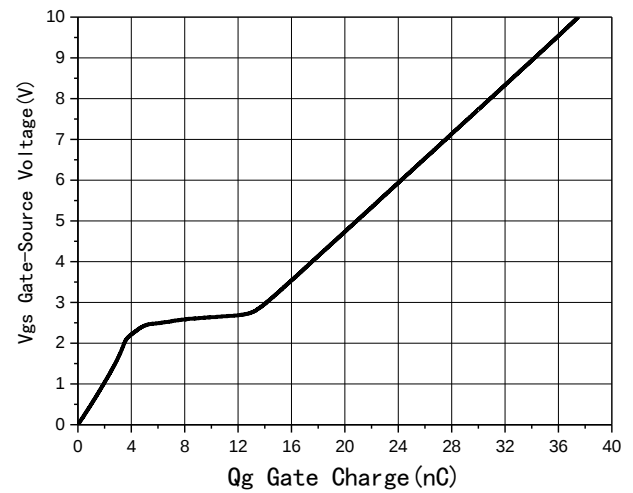

Fig1 Output Characteristics

Fig2 Transfer Characteristics

Fig3 Rdson-Drain current

Fig4 Capacitance vs Vds

Fig5 Rdson-Gate Drain voltage

Fig6 Gate Charge

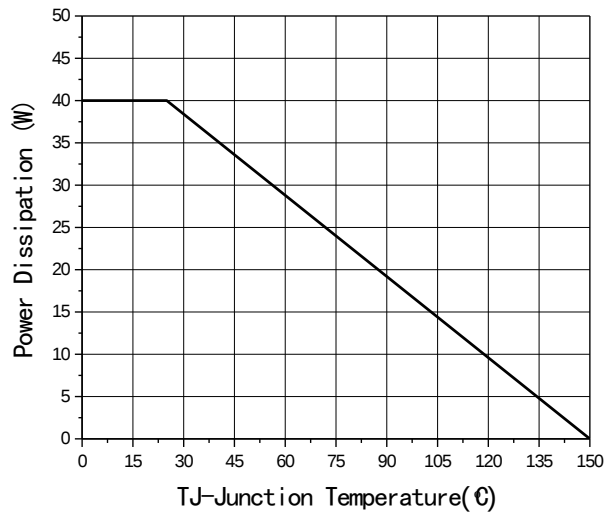
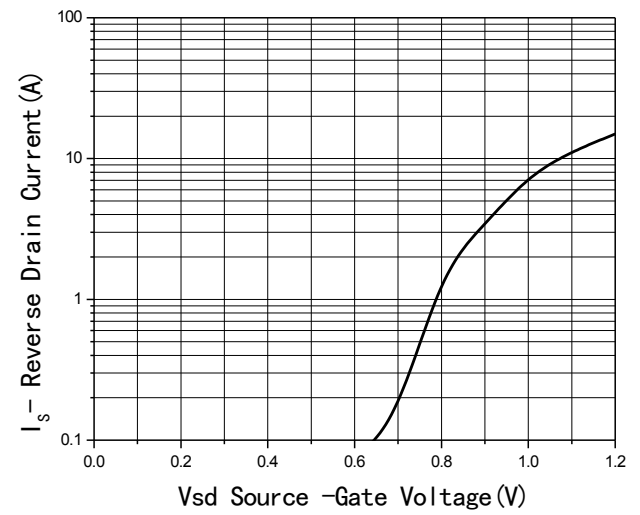

Fig7 Power De-rating

Fig8 Source-Drain Diode Forward

N-Channel Electrical Characteristics(Q2) ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

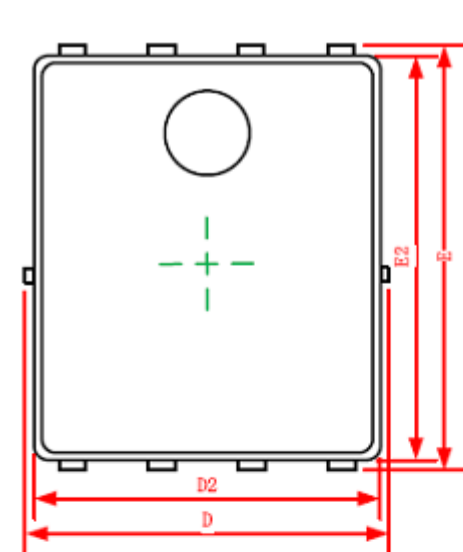
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	1	μA
Gate-body leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.6	2.5	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	3.8	5	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	5.4	7	
Forward transconductance	gfs	$V_{DS}=5V, I_D=-10A$	-	18	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	$V_{DS}=15V, V_{GS}=0V$ $f=1.0\text{MHz}$	-	1915	-	pF
Output capacitance	C_{OSS}		-	297	-	
Reverse transfer capacitance	C_{RSS}		-	225	-	
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $f=1.0\text{MHz}$	-	4	-	Ω
Switching Characteristics						
Turn-on delay time	$t_{D(on)}$	$V_{DS}=15V$ $V_{GS}=10V$ $R_L=2.3\Omega$ $R_{GEN}=3\Omega$	-	10	-	ns
Rise time	t_r		-	5.5	-	
Turn-off delay time	$t_{D(off)}$		-	3.6	-	
Fall time	t_f		-	4.6	-	
Total gate charge	Qg	$V_{DS}=15V, I_D=10A$ $V_{GS}=10V$	-	37.5	-	nC
Gate-source charge	Qgs		-	4.5	-	
Gate-drain charge	Qgd		-	8.4	-	

Typical Performance Characteristics(Q2)

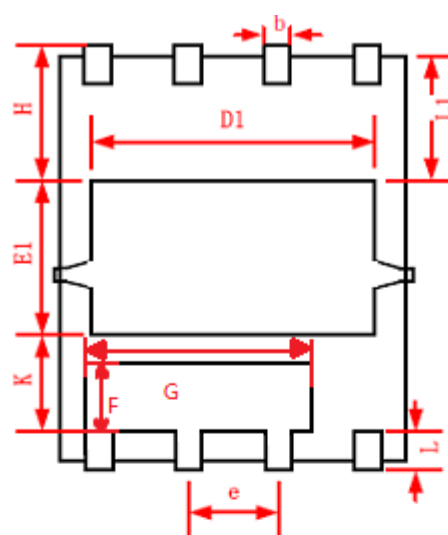

Fig1 Output Characteristics

Fig2 Transfer Characteristics

Fig3 Rds(on)-Drain current

Fig4 Capacitance vs Vds

Fig5 Rds(on)-Gate Drain voltage

Fig6 Gate Charge


Fig7 Power De-rating

Fig8 Source-Drain Diode Forward

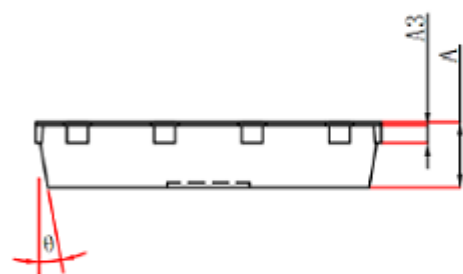
Package Information



Top View
【顶视图】



Bottom View
【背视图】



Side View
【侧视图】

Symbol	Dimensions In Millimeters		
	Min.	REF.	Max.
A	0.870	0.900	0.930
A3	0.152Ref		
D	4.944	5.020	5.096
E	5.974	6.050	6.126
D1	3.960	4.010	4.060
E1	2.154	2.204	2.254
D2	4.870	4.900	4.930
E2	5.720	5.750	5.780
K	1.310	1.360	1.410
b	0.350	0.380	0.410
e	1.27Ref		
L	0.485	0.560	0.635
L1	1.723	1.773	1.823
H	1.873	1.923	1.973
θ	10°	11°	12°
F	0.900		
G	3.400		