AS04P06FL

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	80mΩ@-10V	-9.6A
	105mΩ@-4.5V	

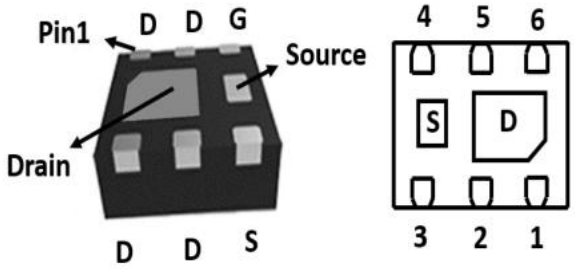
Feature

- Advanced trench technology
- Low gate charge
- Excellent $R_{DS(ON)}$

Application

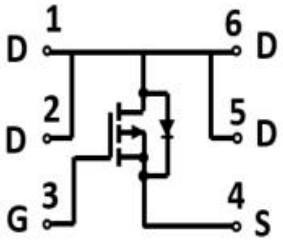
- PWM applications
- Load switch

Package



DFN2*2-6L

Circuit diagram



Marking

AS04P06FL

P-Channel Enhancement Mode MOSFET

Absolute maximum ratings (T_C=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1)](T_A=25℃)	I_D	-3.6	A
Continuous Drain Current[1)](T_A=100℃)	I_D(100℃)	-2.3	A
Pulsed Drain Current(t_P=10us,T_A=100℃)	I_{DM}	-36	A
Single Pulse Avalanche Energy[3)]	E_{AS}	45	mJ
Power Dissipation[1)](T_A=25℃)	P_D	2	W
Thermal Resistance Junction-to-Ambient[1)]	$R_{\theta JA}$	63	℃/ W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-60V,V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1.0	-1.7	-2.5	V
Drain-source on-resistance[2)]	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		70	80	mΩ
		V_{GS} =-4.5V, I_D =-3A		90	105	
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =-30V,V_{GS} =0V,f =1MHz		912		pF
Output Capacitance	C_{oss}			58		
Reverse Transfer Capacitance	C_{rss}			46		
Total Gate Charge	Q_g	V_{DD} =-20V,V_{GS} =-4.5V, I_D =-2A		9		nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			2.4		
Turn-on delay time	$t_{d(on)}$	V_{DS}=-15V, V_{GS} =-10V, I_D =-1A, R_G=3.3Ω, R_L=15Ω		8.8		nS
Turn-on rise time	t_r			19.6		
Turn-off delay time	$t_{d(off)}$			47.2		
Turn-off fall time	t_f			9.6		
Source-Drain Diode characteristics						
Diode Forward voltage[2)]	V_{SD}	V_{GS} =0V, I_{SD}=-5A			-1.2	V
Reverse Recovery Time	t_{rr}	V_{GS} =0V, I_{SD}=-5A, d_I/d_t = 100A/μs		23		nS
Reverse Recovery Charge	Q_{rr}			12		nC

Notes:

1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2) The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.

3) The E_{AS} data shows Max. rating. The test condition is V_{DD} = -30V, V_{GS} = -10V, L = 10mH.

4) Guaranteed by design, not subject to production.

Typical Characteristics

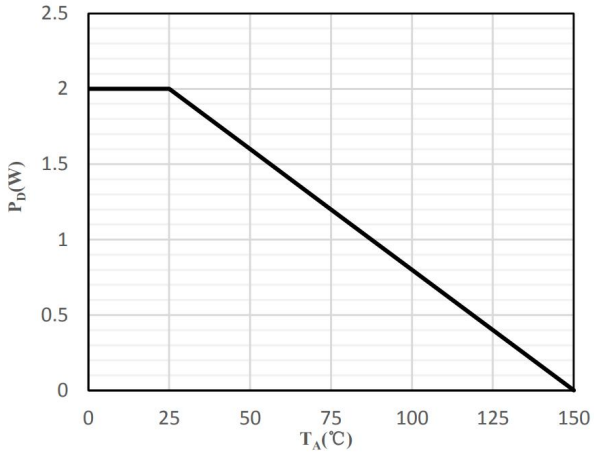


Fig 1 Power Dissipation

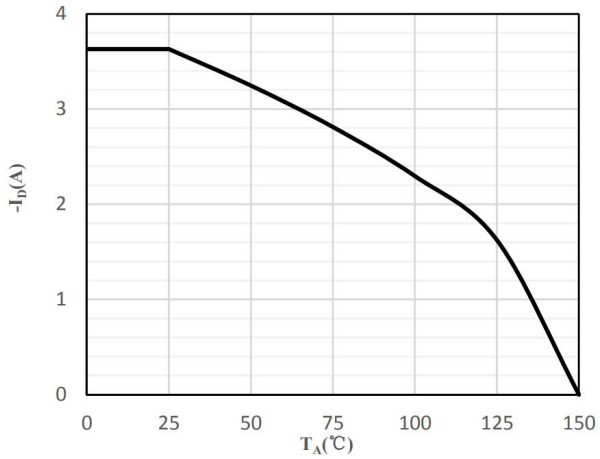


Fig 2 Drain Current

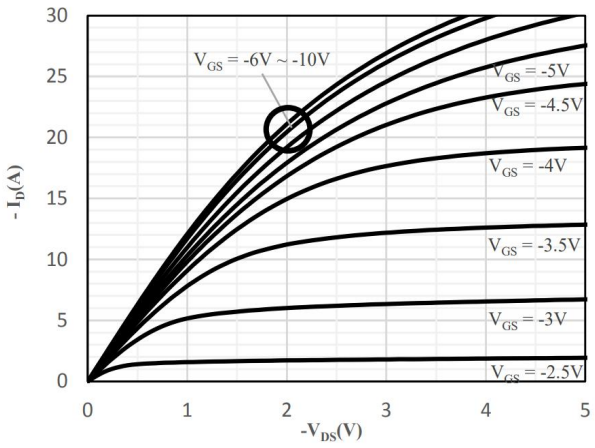


Fig 3 Typical Output Characteristics

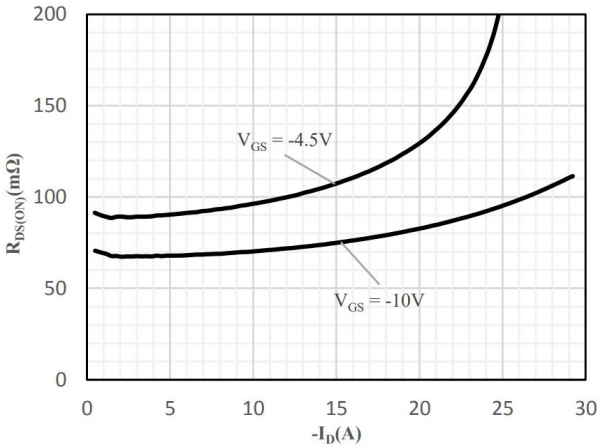


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

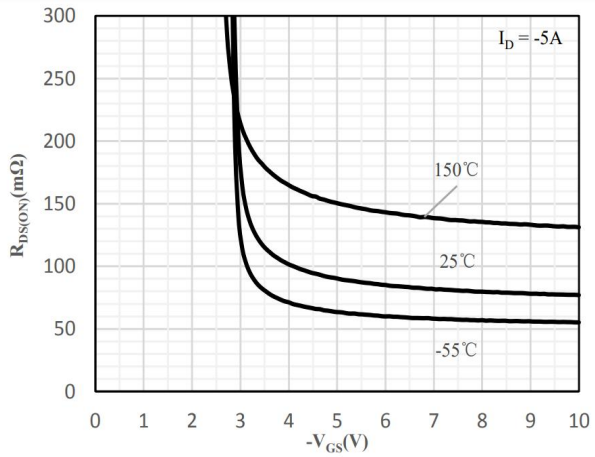


Fig 5 On-Resistance vs. Gate-Source Voltage

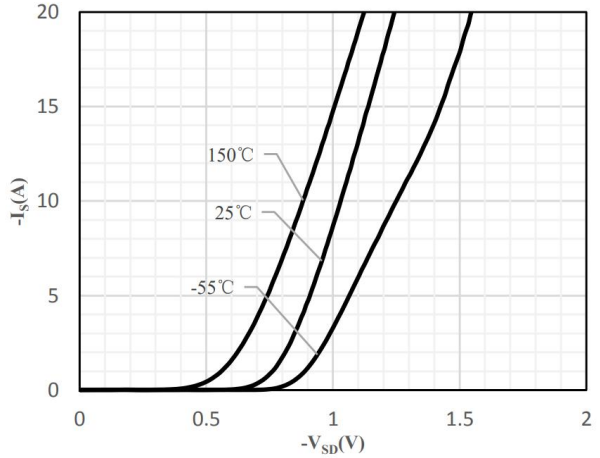


Fig 6 Body-Diode Characteristics

Typical Characteristics

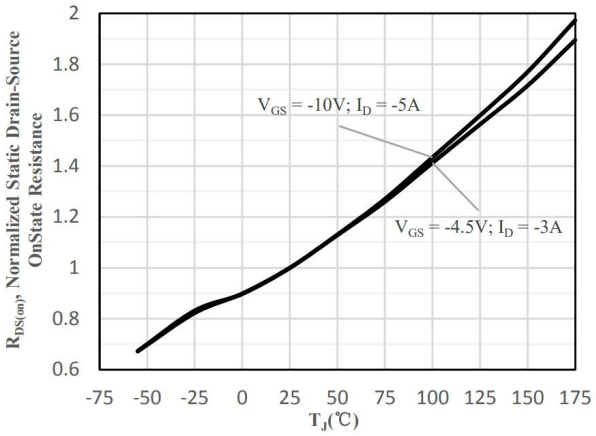


Fig 7 Normalized On-Resistance vs. Junction Temperature

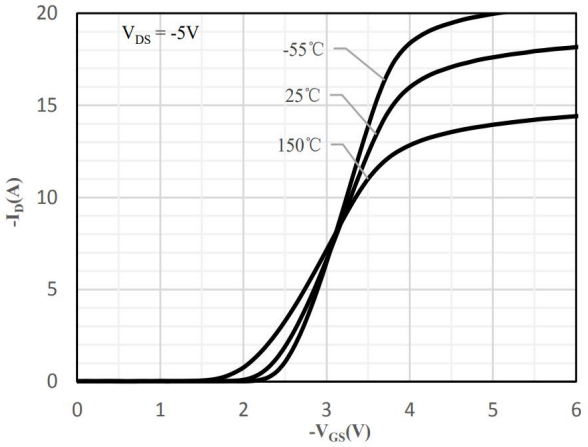


Fig 8 Transfer Characteristics

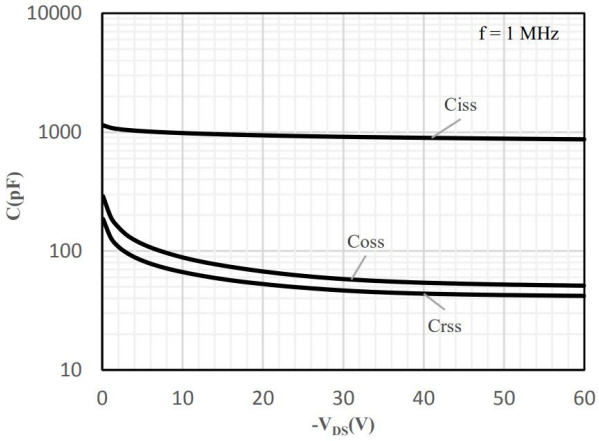


Fig 9 Capacitance Characteristics

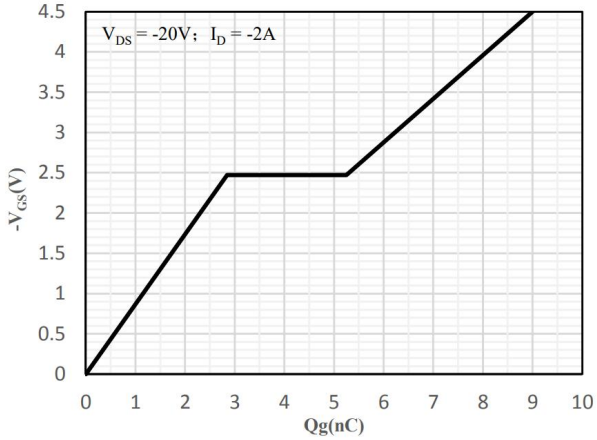


Fig 10 Gate-Charge Characteristics

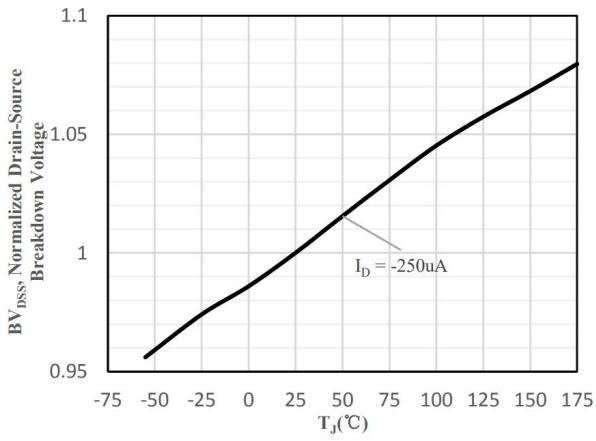


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

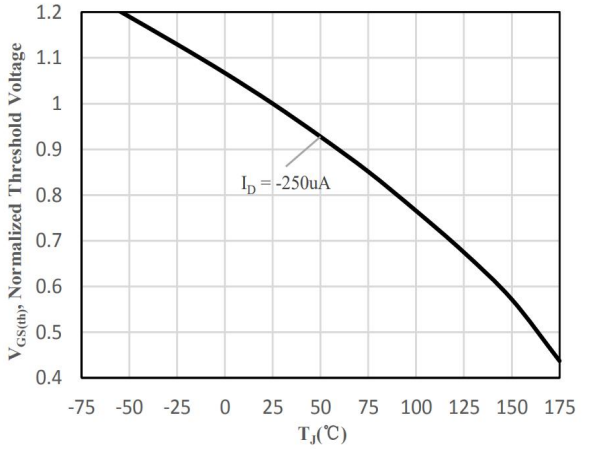
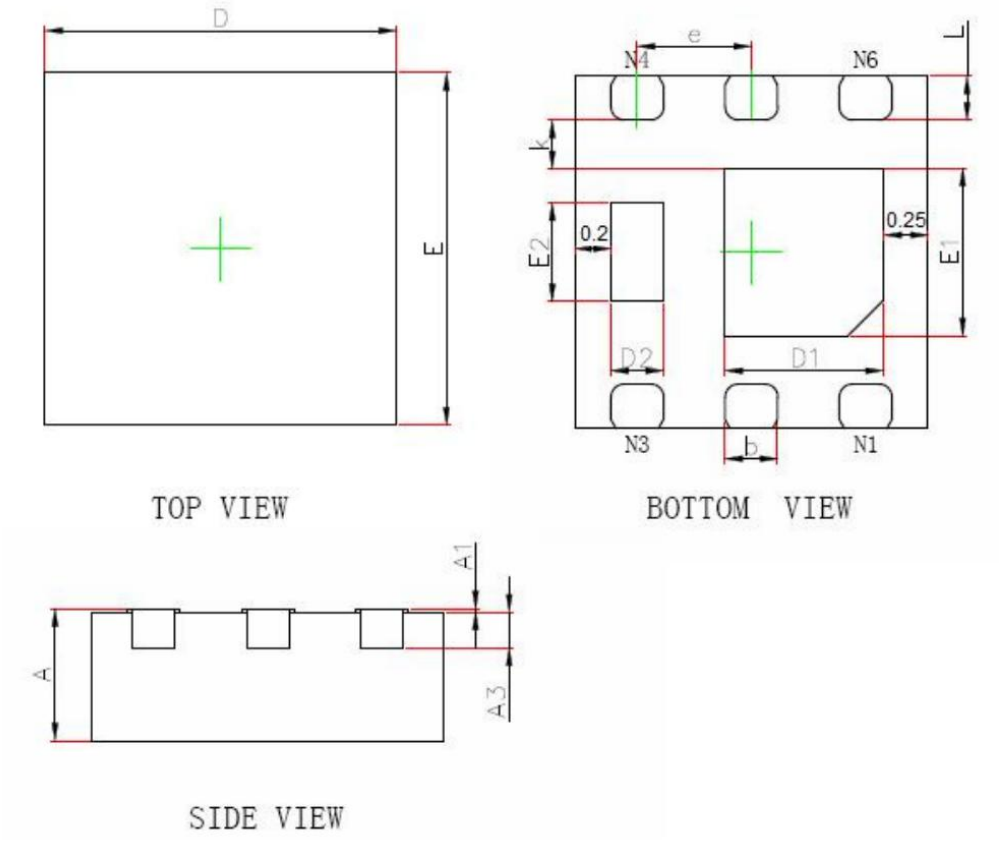


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.500	0.600	0.020	0.024
A1	0.000	0.050	0.000	0.002
A3	0.203 REF.		0.008 REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.800	1.050	0.031	0.041
E1	0.850	1.100	0.033	0.043
D2	0.200	0.400	0.008	0.016
E2	0.700	0.900	0.028	0.035
k	0.150	0.350	0.006	0.014
b	0.250	0.350	0.010	0.014
e	0.650 TYP.		0.026 TYP.	
L	0.200	0.400	0.008	0.016