



General Description

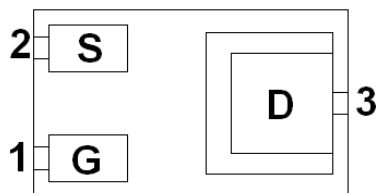
AFP1601E, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

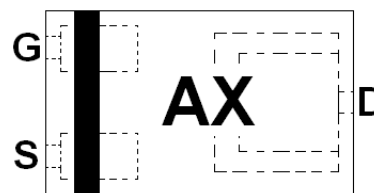
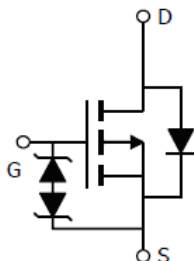
Features

- -20V/-0.4A, $R_{DS(ON)}= 500\text{ m}\Omega @ V_{GS} = -4.5\text{V}$
- -20V/-0.3A, $R_{DS(ON)}= 680\text{ m}\Omega @ V_{GS} = -2.5\text{V}$
- -20V/-0.1A, $R_{DS(ON)}= 995\text{ m}\Omega @ V_{GS} = -1.8\text{V}$
- Low Offset (Error) Voltage
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection Diode design-in
- Low Battery Voltage Operation
- DFN1.0X0.6-3L package design

Pin Description (DFN1.0X0.6-3L)



BOTTOM VIEW



TOP VIEW

Application

- Load/Power Switching Cell Phones, Pagers
- Battery Operated Systems
- Power Supply Converter Circuits

Pin Define

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP1601EFN106RG	AX	DFN1.0X0.6-3L	Tape & Reel	10000 EA

※ A Product Code

※ X Monthly Code

(even year : A , B~ L)

(odd year : N , M~X)

※ AFP1601EFN106RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-20	V
Gate –Source Voltage	V _{GSS}	±12	V
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C	-0.7
		T _A =70°C	-0.4
Pulsed Drain Current	I _{DM}	-1.0	A
Continuous Source Current(Diode Conduction)	I _S	-0.3	A
Power Dissipation	P _D	T _A =25°C	0.27
		T _A =70°C	0.16
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	°C

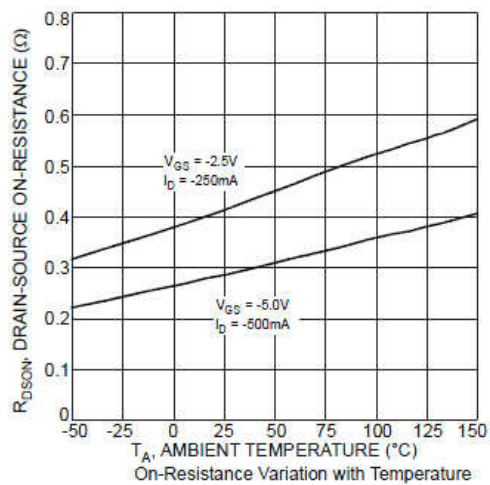
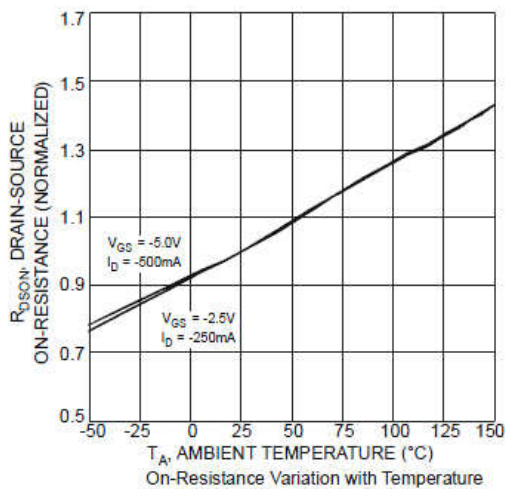
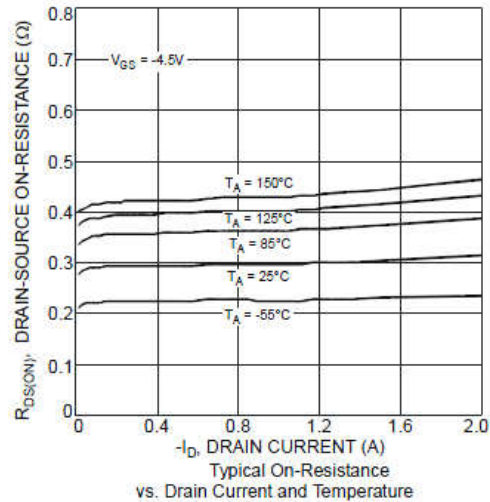
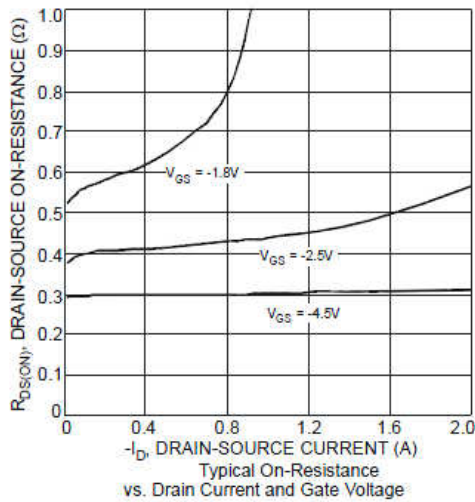
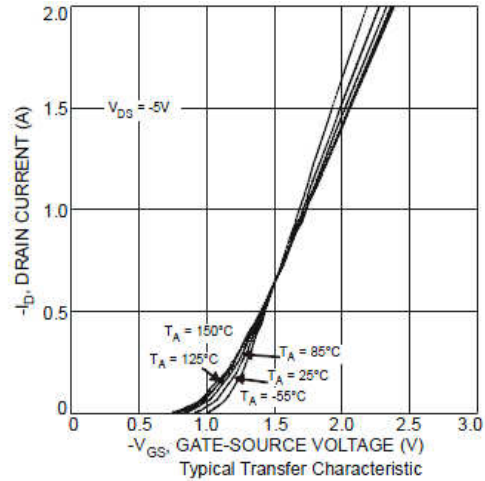
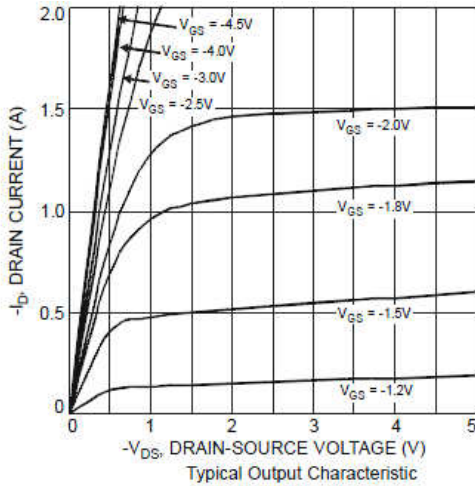
Electrical Characteristics

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250uA	-20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.3		-1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±1	mA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	uA
		V _{DS} =-20V, V _{GS} =0V T _J =85°C			-5	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} =4.5V	0.7			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-0.4A		400	500	mΩ
		V _{GS} =-2.5V, I _D =-0.3A		580	680	
		V _{GS} =-1.8V, I _D =-0.1A		850	995	
Forward Transconductance	g _{FS}	V _{bs} =-10V, I _D =-0.4A		1		S
Diode Forward Voltage	V _{SD}	I _S =-0.15A, V _{GS} =0V		0.65	1.2	V
Dynamic						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V f=1MHz		70	100	pF
Output Capacitance	C _{oss}			15		
Reverse Transfer Capacitance	C _{rss}			10		
Total Gate Charge	Q _g	V _{DS} =-10V, V _{GS} =-4.5V I _D =-0.25A		1.0	2.0	nC
Gate-Source Charge	Q _{gs}			0.2		
Gate-Drain Charge	Q _{gd}			0.3		
Turn-On Time	t _{d(on)}	V _{DD} =-10V, R _L =30Ω I _D =-0.2A, V _{GEN} =-4.5V R _G =10Ω		8	15	ns
	t _r			8	15	
Turn-Off Time	t _{d(off)}			30	60	
	t _f			20	40	

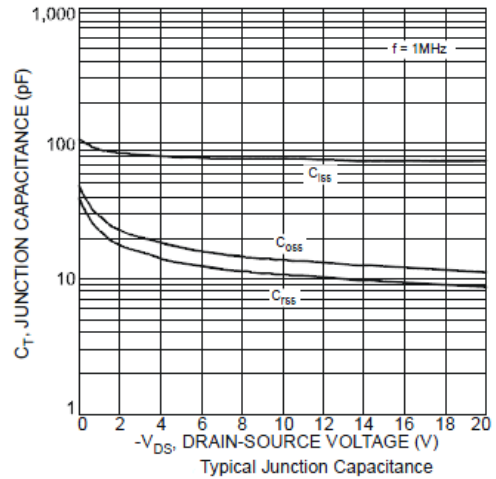
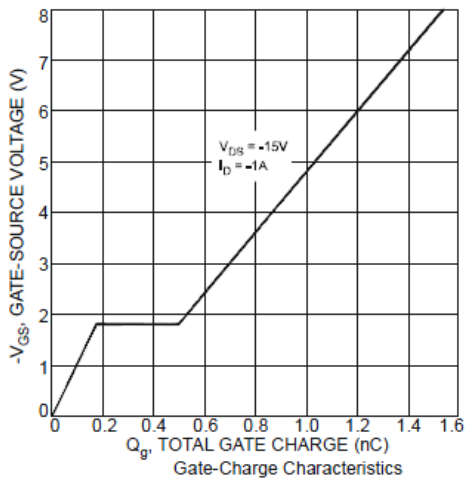
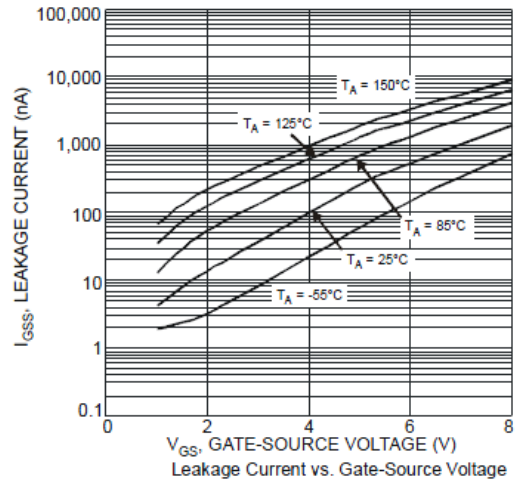
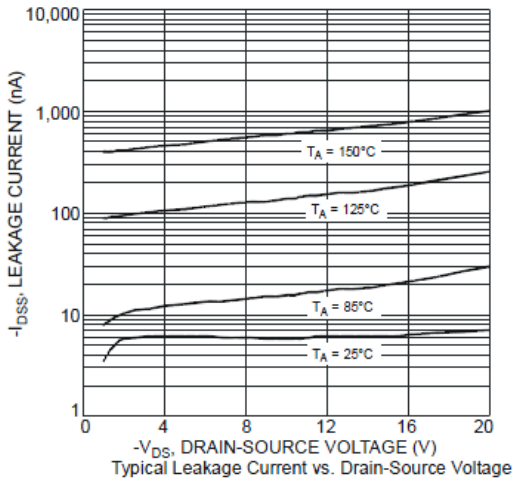
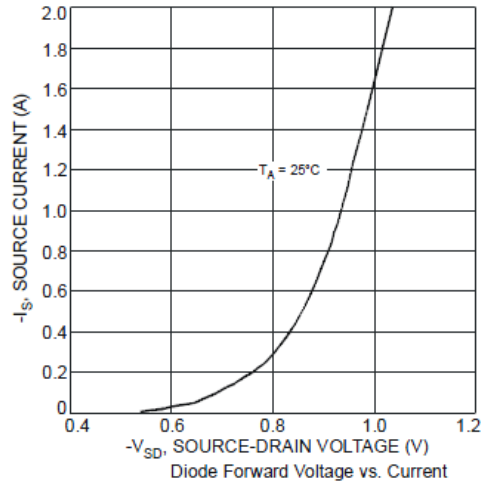
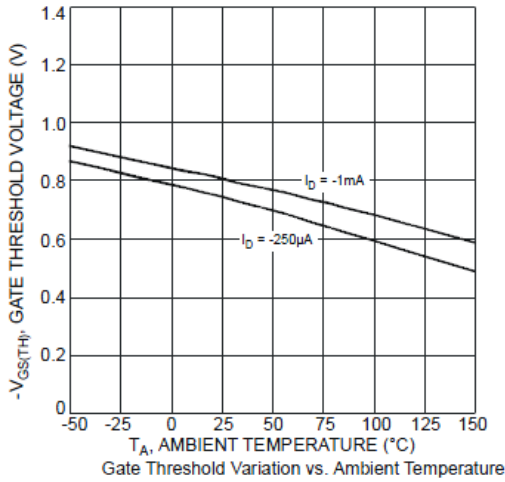


Typical Characteristics





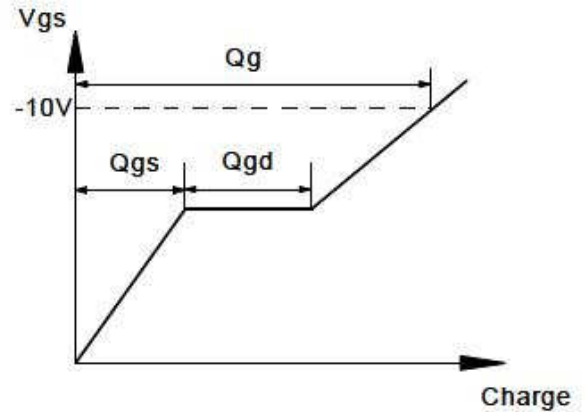
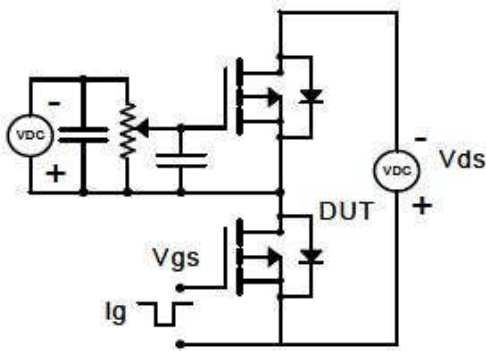
Typical Characteristics



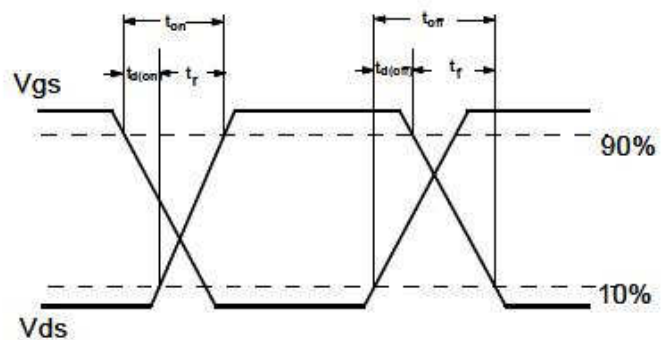
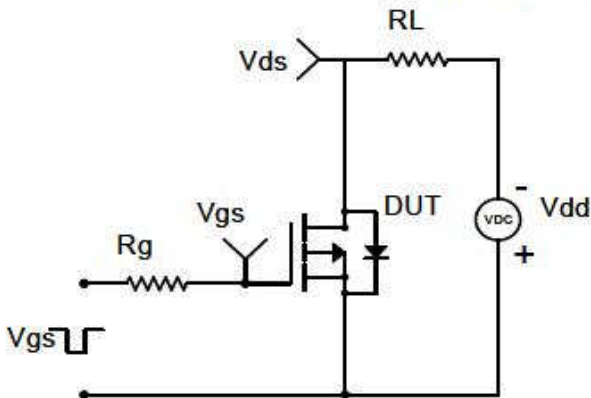


Typical Characteristics

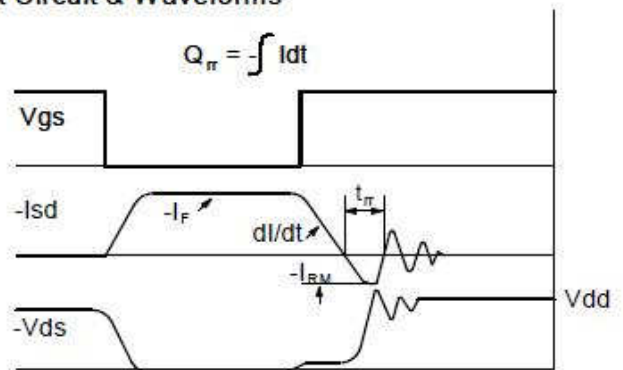
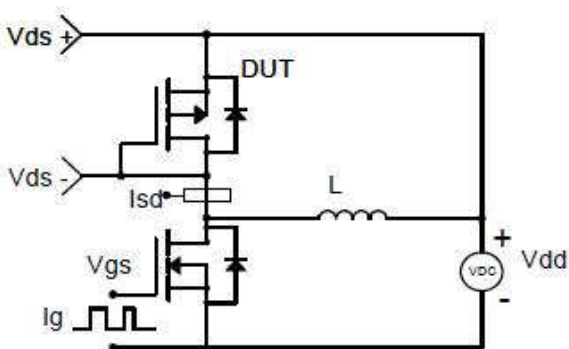
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

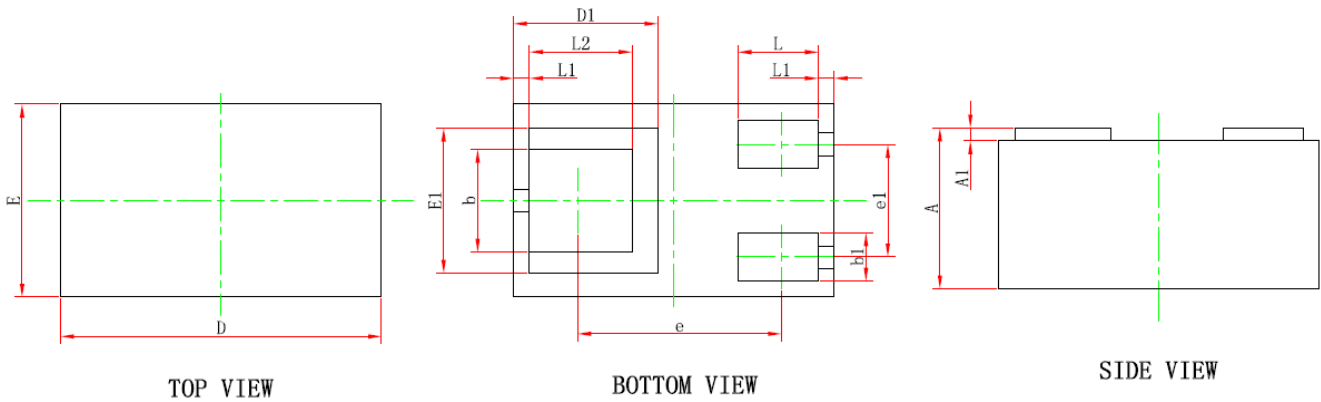


Diode Recovery Test Circuit & Waveforms





Package Information (DFN1.0X0.6-3L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.550	0.018	0.022
A1	0.010	0.100	0.000	0.004
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
D1	0.450REF.		0.018REF.	
E1	0.450REF.		0.018REF.	
b	0.270	0.370	0.011	0.015
b1	0.100	0.200	0.004	0.008
e	0.635REF.		0.025REF.	
e1	0.300	0.400	0.012	0.016
L	0.200	0.300	0.008	0.012
L1	0.050REF.		0.002REF.	
L2	0.270	0.370	0.011	0.015

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 2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)
 Tel : 886 2) 2651 3928
 Fax : 886 2) 2786 8483
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