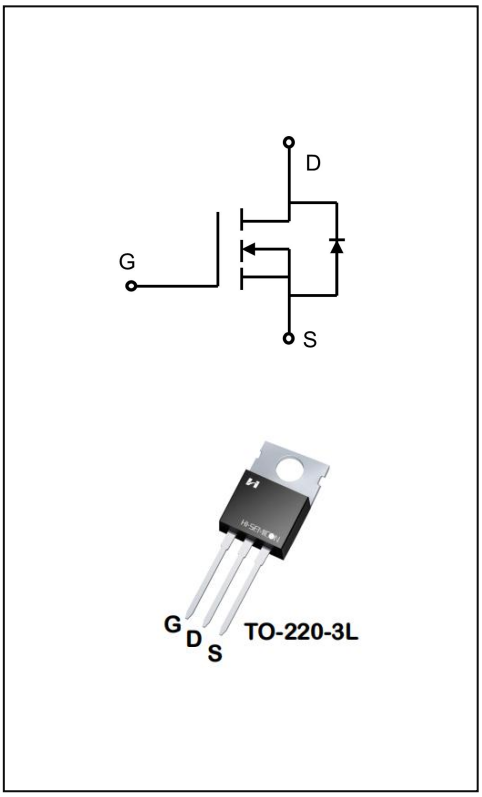
110A, 60V N-CHANNEL POWER MOSFET



GENERAL DESCRIPTION

The SFP110N06 uses advanced Process technology and design to provide excellent $R_{DS(pn)}$ with low gate charge.
It can be used in a wide variety applications.

Features

◆V_{DS}=60V,I_D=110A
◆$R_{DS(on)}$
TYP:7.0mΩ@V_{GS}=10V I_D=60A

Applications

◆Power faction correction (PFC)
◆Switched mode power supplies (SMPS)
◆Uninterruptible power supply (UPS)
◆LED lighting power

ORDERING INFORMATION

Part No.	Package	Marking	Material	Packing
SFP110N06	TO-220-3L	SFP110N06	Pb Free	Tube

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	T_C = 25°C	I_D	110	A
	T_C = 100°C		77	
Drain Current Pulsed(Note 1)		I_{DM}	440	A
Power Dissipation(T_C=25°C)		P_D	108	W
-Derate above 25°C			0.72	W/℃
Single Pulsed Avalanche Energy (Note 2)		E_{AS}	653	mJ
Operation Junction Temperature Range		T_J	-55～+150	°C
Storage Temperature Range		T_{stg}	-55～+150	°C
Maximum lead temperature for soldering purposes,1/8" from case for 5 seconds		TL	300	℃

THERMAL CHARACTERISTICS

Characteristics	Symbol	MAX	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.65	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V, I_D=250μA	60	--	--	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	--	--	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=20V, V_{DS}=0V	--	--	100	nA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=-20V, V_{DS}=0V	--	--	-100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}= V_{DS}, I_D=250μA	2.0	--	4.0	V
Static Drain- Source On State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=60A	--	7.0	8.0	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V	--	2699	--	pF
Output Capacitance	C_{oss}	V_{GS}=0V	--	1016	--	
Reverse Transfer Capacitance	C_{rss}	f=1.0MHZ	--	487	--	
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=28V; V_{GS}=15V	--	52	--	ns
Turn-on Rise Time	t_r	R_G=25Ω; I_D=42A	--	142	--	
Turn-off Delay Time	$t_{d(off)}$		--	355	--	
Turn-off Fall Time	t_f		--	230	--	

Total Gate Charge	Q_g	V_{DS}=28V, I_D=42A	--	115	--	nc
Gate-Source Charge	Q_{gs}	V_{GS}=15V	--	13	--	
Gate-Drain Charge	Q_{gd}		--	55	--	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction Diode in the MOSFET	--	--	110	A
Pulsed Source Current	I_{SM}		--	--	440	
Diode Forward Voltage	V_{SD}	I_S=40A,V_{GS}=0V	--	--	1.2	V
Reverse Recovery Time	T_{rr}	I_F=180A,V_{GS}=0V, dIF/dt=100A/μS	--	100	--	ns
Reverse Recovery Charge	Q_{rr}		--	0.33	--	μC

1.Pluse width limited by maximum junction temperature

2.L=1mH V_{DD}=50V, R_G=25Ω, starting T_J=25°C

3.Pulse Test: Pulse width ≤300μs, Duty cycle≤1%

4.Essentially independent of operating temperature

Typical Performance Characteristics

Figure 1. Output Characteristics (T_J= 25ºC)

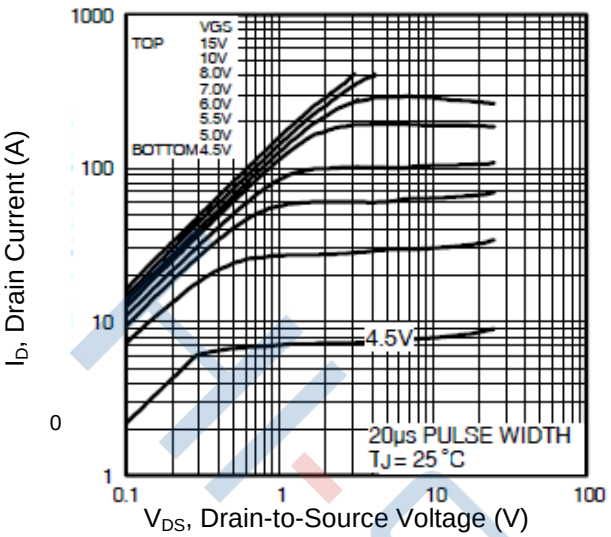


Figure 2. Body Diode Forward Voltage

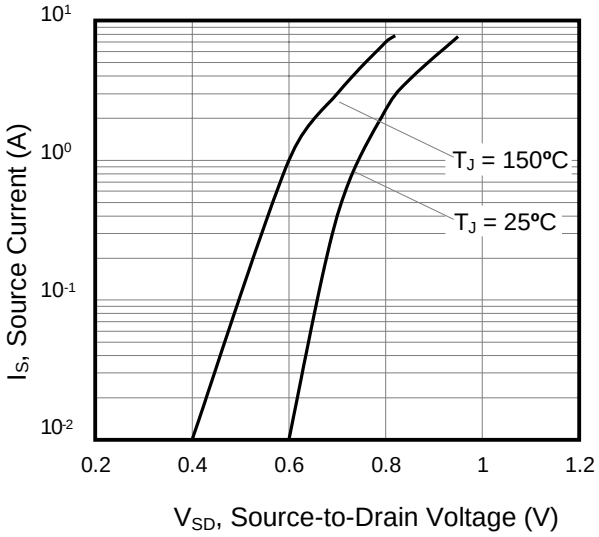


Figure 3. Drain Current vs. Temperature

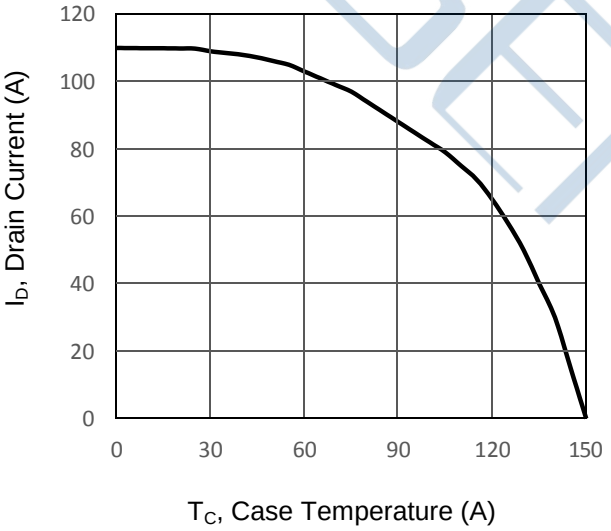


Figure 4. BV_{DSS} Variation vs. Temperature

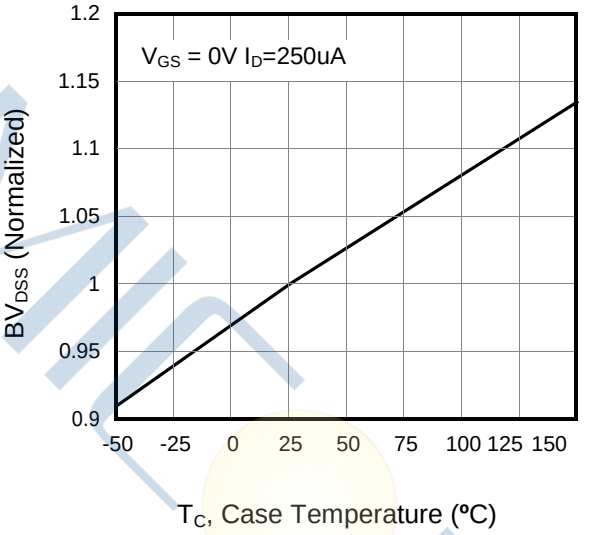


Figure 5. Transfer Characteristics

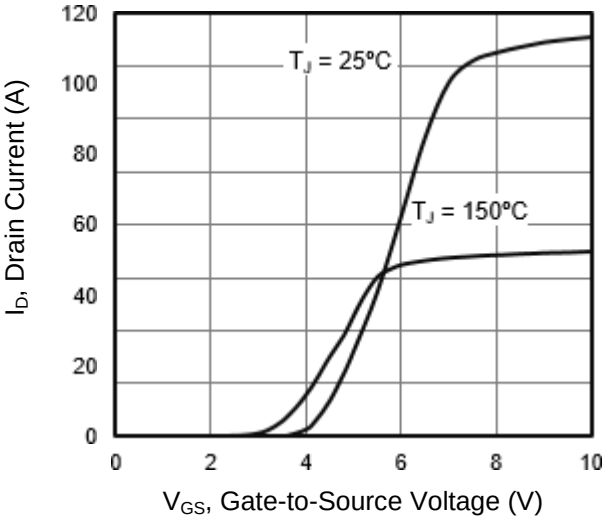
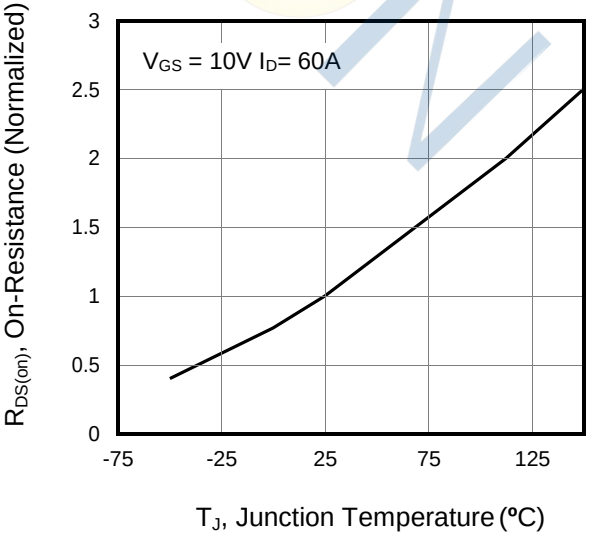


Figure 6. On-Resistance vs. Temperature



Typical Performance Characteristics

Figure 7. Capacitance

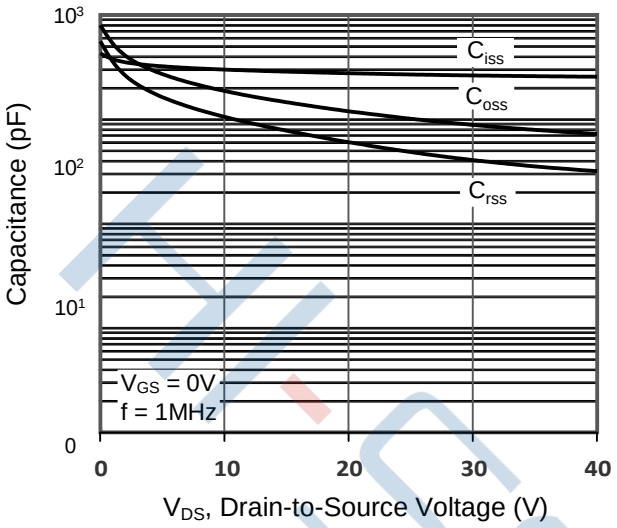


Figure 8. Gate Charge

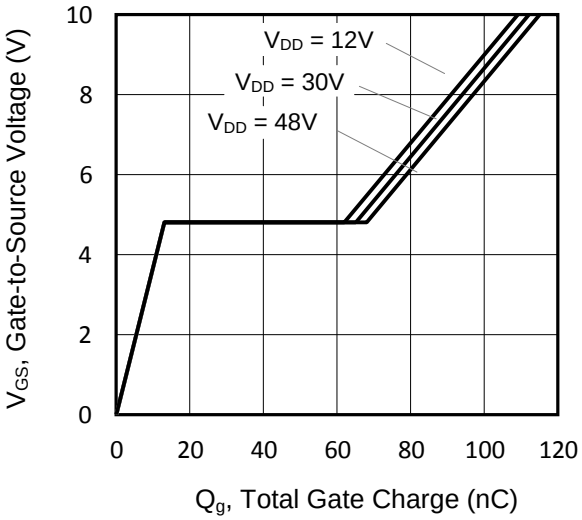
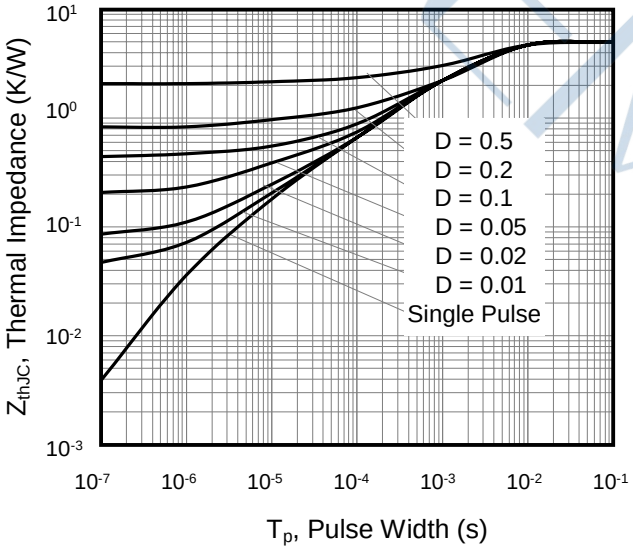


Figure 9. Transient Thermal Impedance TO-220



Test Circuit

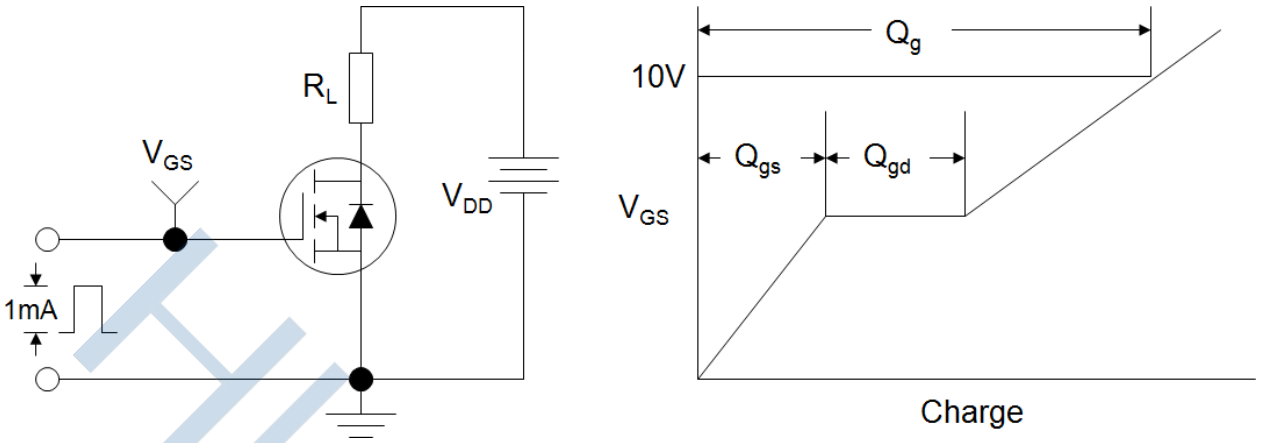


Figure B：Resistive Switching Test Circuit and Waveform

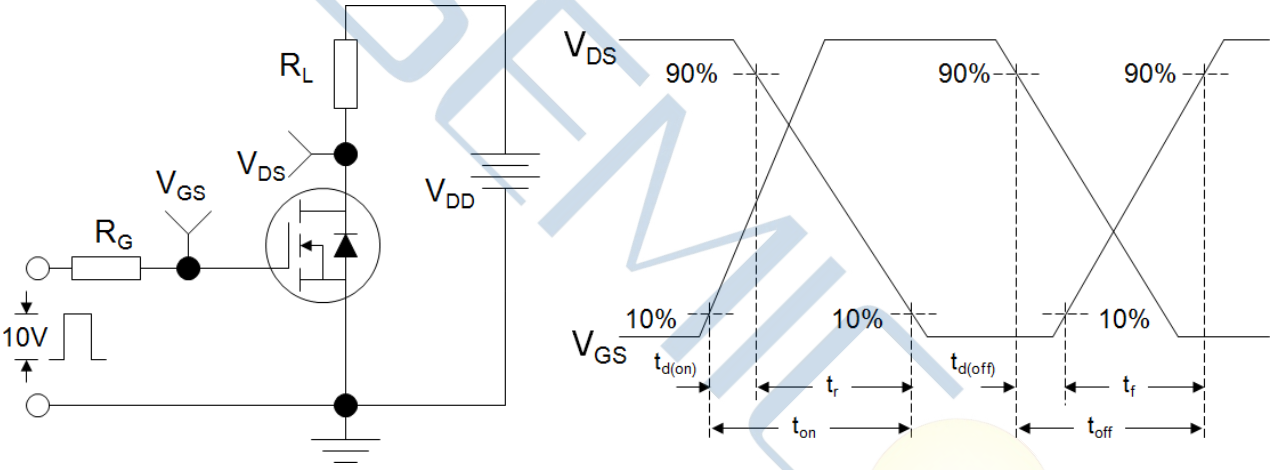
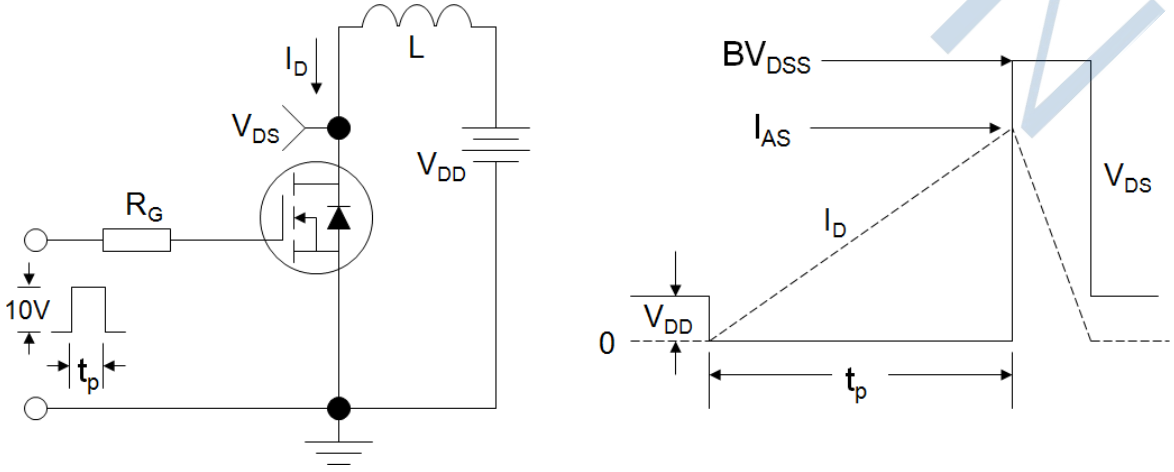
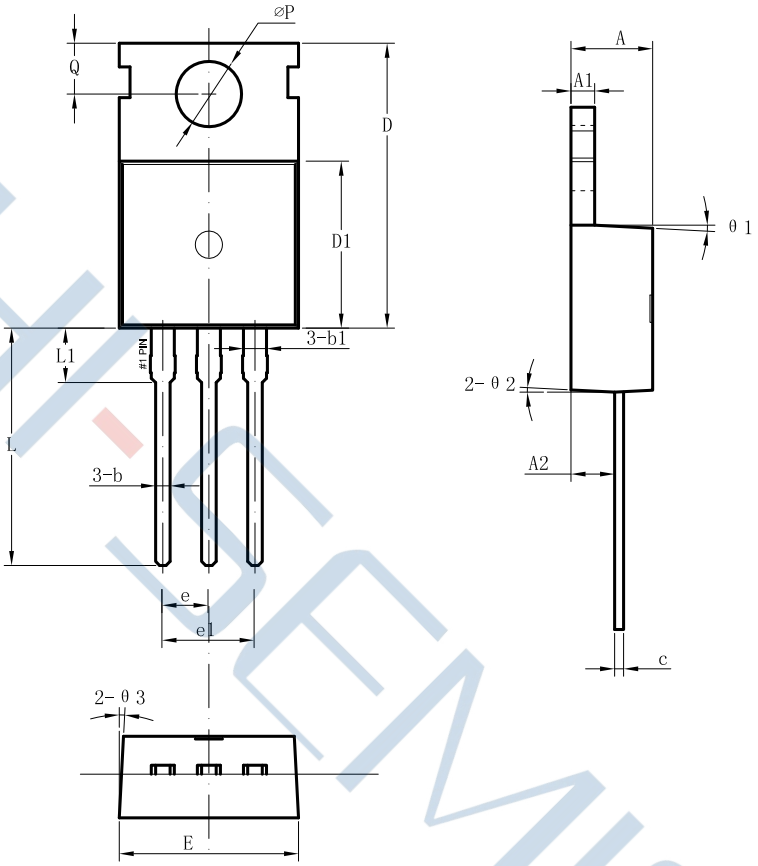


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



Package Dimensions of TO-220-3L

Unit:mm



符号	机械尺寸/mm		
	最小值	典型值	最大值
A	4.30	4.50	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.95
b1		1.27	
c	0.40	0.50	0.65
D	15.20	15.70	16.20
D1	9.00	9.20	9.40
E	9.70	10.0	10.10
e		2.54	
e1		5.08	
L	12.60	13.08	13.60
L1		3.00	
ΦP	3.50	3.60	3.80
Q	2.60	2.80	3.00
θ1		3°	
θ2		3°	
θ3		3°	

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