N-CHANNEL POWER MOSFET MEM7N60

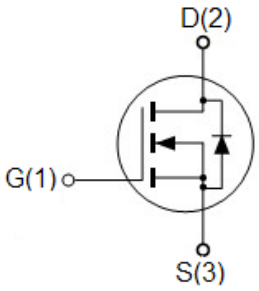
General Description

- Switching regulator application.
- High voltage and high speed.
- Switching application.

Features

- 600V，7A
- RDS(ON)=1.2Ω@V_{GS}=10V
- LOW CRSS
- FAST SWITCHING
- PACKAGE ： TO220-F

Pin Configuration



MEM7N60A3G

Maximum Ratings(Ta=25℃)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	600V	V
Gate-Source Voltage		V_{GSS}	±30	V
Drain Current	T_A=25℃	I_D	7	A
	T_A=100℃		3.6	
Pulsed Drain Current[1,2]		I_{DM}	24	A
Total Power Dissipation	T_A=25℃	Pd	50	W
Operating Temperature Range		T_{Opr}	-55-150	℃
Storage Temperature Range		T_{stg}	-55-150	℃

Thermal Characteristics

Parameter	Symbol	TYP.	MAX.	Unit
Thermal Resistance,Junction-to-Case	RθJC	2.5	3	℃/W

Electrical Characteristics

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	600	650	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	2.1	2.8	4.4	V
Gate-Body Leakage	I_{GSS}	V_{DS}=0V，V_{GS}=30V	-	0.8	100	nA
		V_{DS}=0V，V_{GS}=-30V	-	-4	-100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=600V V_{GS}=0V	-	0.2	20	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3A	-	0.82	1.2	Ω
Forward Transconductance	g_{FS}	V_{DS} =15V, I_D= 3A	-	2	10	S
Drain-Source Diode Forward Continuous Current	Is	V_{GS}=0V	-	-	7	A
Source-drain (diode forward) voltage	V_{SD}	V_{GS}=0V,I_S=7A		0.80	1.4	V
Dynamic Characteristics						
Input Capacitance	Ciss	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	-	1260	-	pF
Output Capacitance	Coss		-	152	-	
Reverse Transfer Capacitance	Crss		-	24	-	
Switching Characteristics						
Turn-On Delay Time	td(on)	V_{DD} = 300 V, R_G = 10Ω V_{GS} = 10V, I_D = 7A	-	27.5	-	ns
Rise Time	tr		-	8.2	-	
Turn-Off Delay Time	td(off)		-	48.8	-	
Fall-Time	tf		-	12.1	-	
Total Gate Charge	Qg	V_{DS} = 300V, V_{GS} = 10V, I_D = 7A		31.4	-	nc
Gate-Source Charge	Qgs		-	8.2	-	
Gate-Drain Charge	Qgd		-	12.2	-	

1、Repetitive rating, pulse width limited by junction temperature.

2、Pulse width <300us , duty cycle <2%.

3、I_{SD}≤6.0A di/dt≤100A/us,V_{DD}≤BV_{DSS}, T_J≤=150℃.

4、L=1.2mH,V_{DD}=50V,I_D=6.9A,R_G=25Ω,Starting T_J=25℃.

Typical performance characteristics

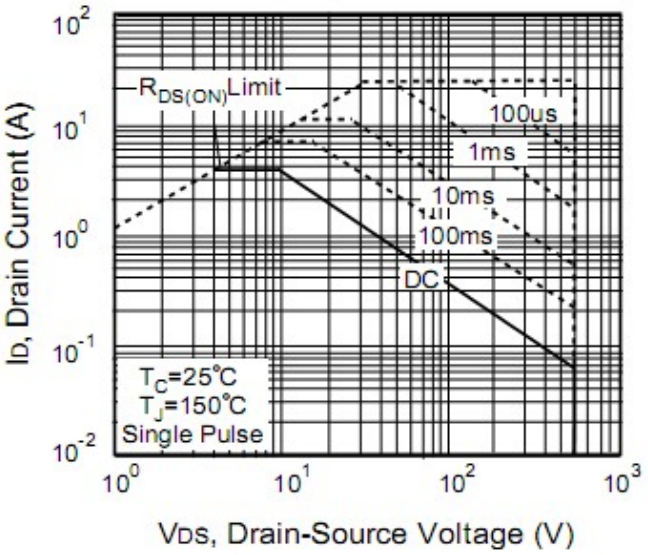


Figure 1 Maximum Safe Operating Area

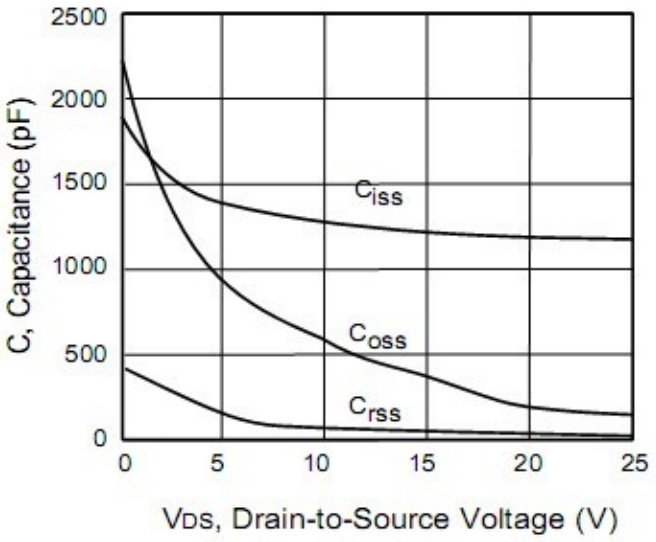


Figure 2. Capacitance Characteristics

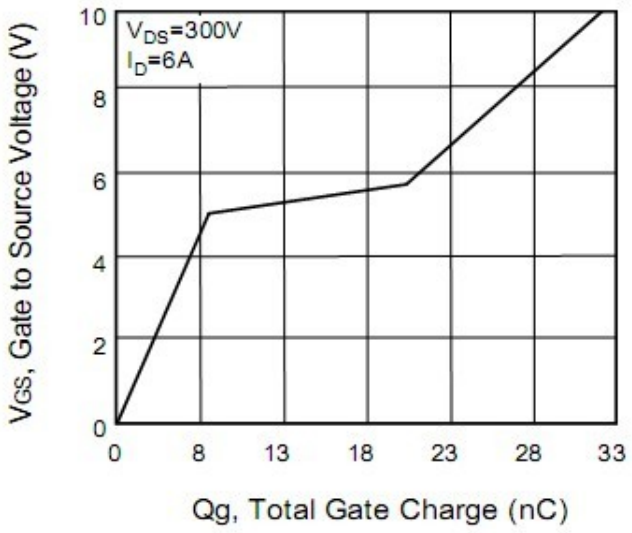


Figure 3. Gate Charge Characteristics

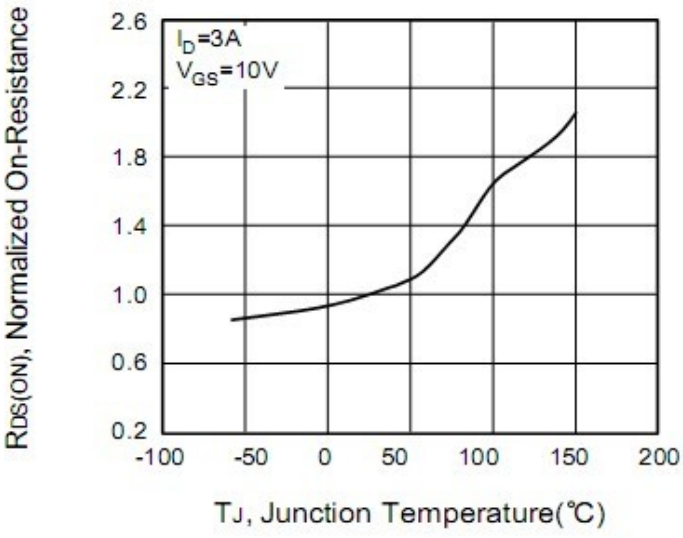
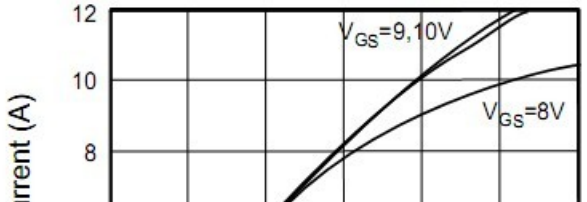


Figure 4. Normalized On-Resistance Variation with Temperature



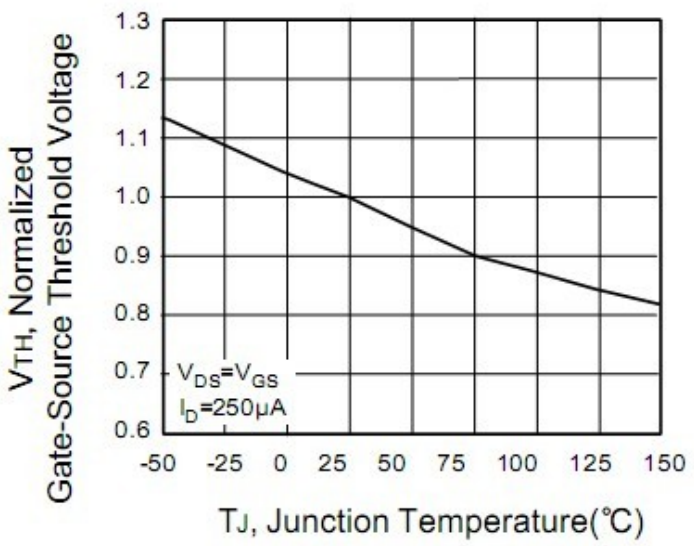


Figure 5. Gate Threshold Variation with Temperature

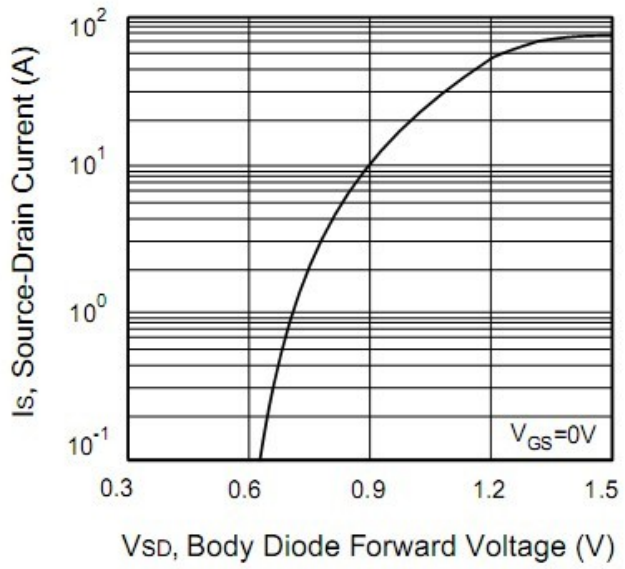


Figure 7. Body Diode Forward Voltage Variation with Source Current

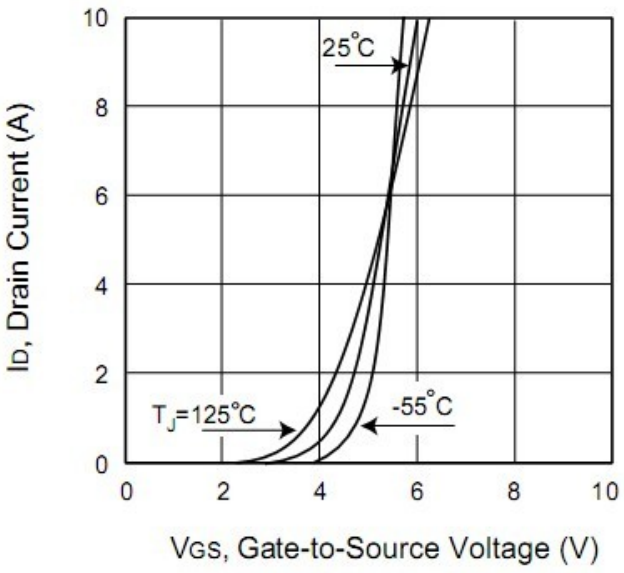


Figure 8. Transfer Characteristics

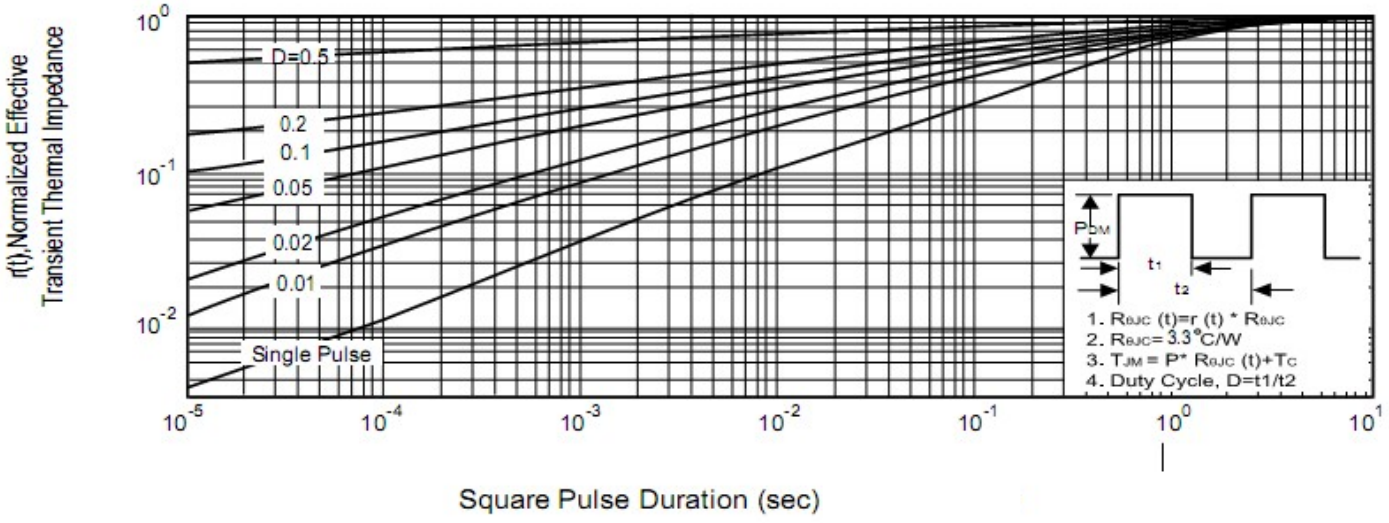
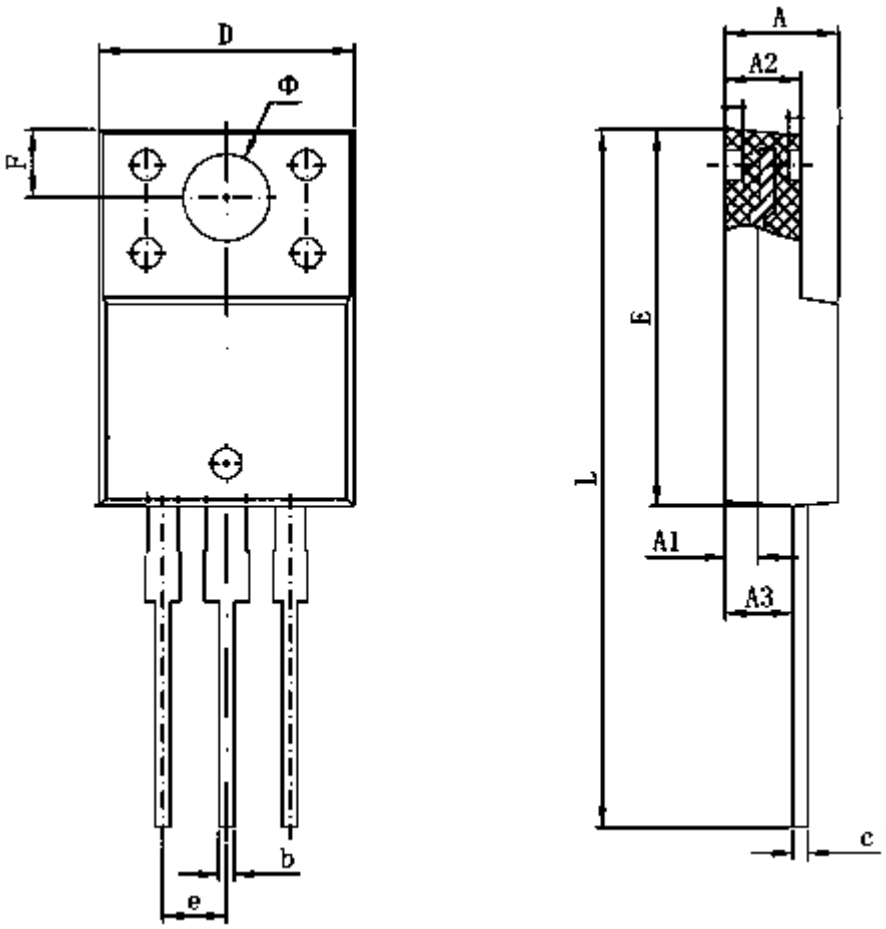


Figure 9 Normalized Effective Transient Thermal Impedance With Pulse Duration

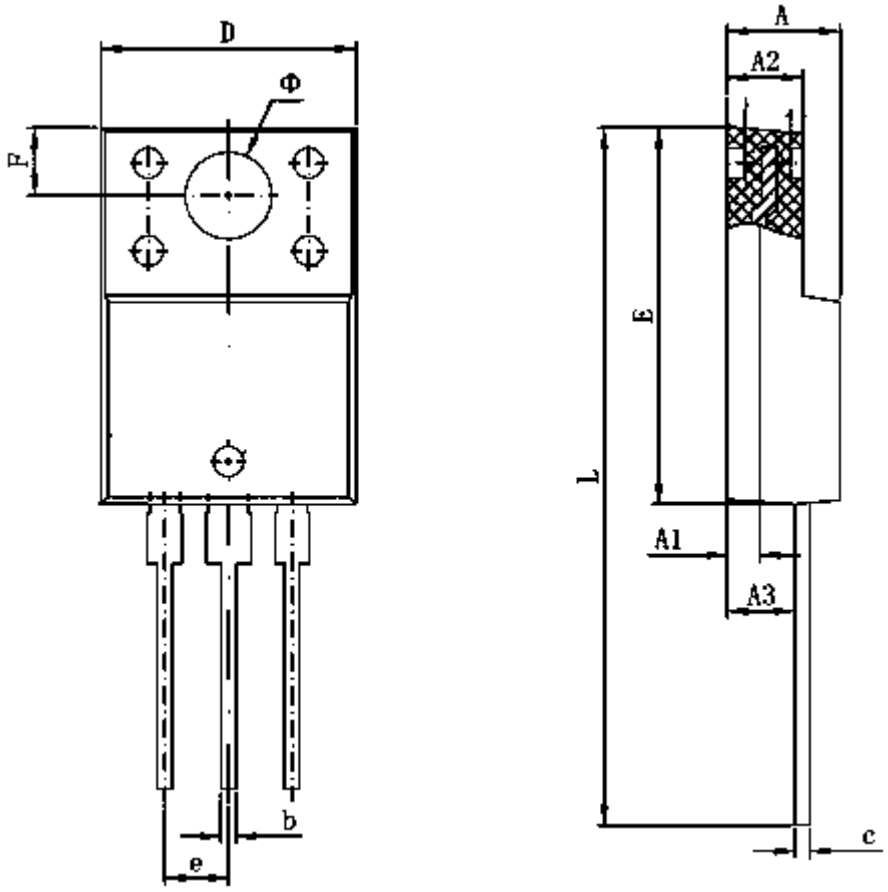
Package Information

- **Package Type:TO-220F（A）**



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	4.5	4.9	0.1771	0.1929
A1	0.75	1.05	0.0295	0.0413
A2	2.35	2.75	0.0925	0.1083
A3	2.65	2.85	0.1043	0.1122
b	0.75	0.85	0.0295	0.0334
c	0.45	0.6	0.0177	0.0236
D	10	10.32	0.3937	0.4063
E	15.65	16.05	0.6161	0.6319
e	2.54REF		0.100REF	
F	3.2	3.4	0.1260	0.1338
Φ	3.08	3.28	0.1212	0.1291
L	28.45	29.25	1.1201	1.1516

- **Package Type:TO-220F（B）**



DIM	Millimeters		Inches	
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A1	0.75	1.05	0.0295	0.0413
A2	2.35	2.75	0.0925	0.1083
A3	2.65	2.9	0.1043	0.1142
b	0.75	0.85	0.0295	0.0334
c	0.45	0.6	0.0177	0.0236
D	10	10.32	0.3937	0.4063
E	15.65	16.15	0.6161	0.6358
e	2.54REF		0.100REF	
F	3.2	3.4	0.1260	0.1338
Φ	3.08	3.28	0.1212	0.1291
L	26.2	29.8	1.0315	1.1732

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