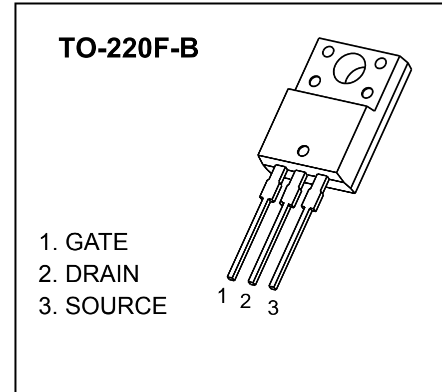
TO-220F-B Plastic-Encapsulate MOSFETS

PF07N65M1 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$HMD	I_D
650V	1.0Ω@10V	7A



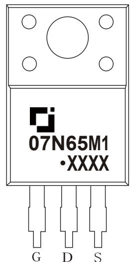
GENERAL DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain-to-source diode fast recovery time. Desighed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

FEATURES

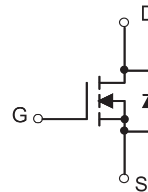
- High Current Rating
- Lower $R_{DS(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified
- Fast Switching Capability

MARKING



07N65M1 = Device code.
Solid dot = Green molding compound device, if none, the normal device.
XXXX = Code.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (T_J =25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D ①	7	A
Pulsed Drain Current	I_{DM} ②	28	A
Single Pulsed Avalanche Energy	E_{AS} ③	223	mJ
Maximum Power Dissipation	P_D ①	50	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	62.5	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$ ①	2.5	℃/W
Operating Junction and Storage Temperature Range	T_J ,T_{stg}	-55~+150	℃

MOSFET ELECTRICAL CHARACTERISTICS

T_J=25 ℃ unless otherwise specified

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA		650			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =520V, V_{GS} =0V	T_J =25℃			1.0	μA
			T_J =125℃			100	
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±30V				±100	nA
On characteristics ④							
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA		2.0	3.1	4.0	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =3.5A			1.0	1.2	Ω
Dynamic characteristics ⑤							
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V, f =1MHz			1060		pF
Output capacitance	C_{oss}				99		
Reverse transfer capacitance	C_{rss}				8		
Gate resistance	R_g	f =1MHz			4		Ω
Switching characteristics ⑤							
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=520V, I_D=7A			25		nC
Gate-source charge	Q_{gs}				5		
Gate-drain charge	Q_{gd}				10		
Turn-on delay time	$t_{d(on)}$	V_{DD}=60V,V_{GS}=10V, R_G=25Ω , ID=7A			19		ns
Turn-on rise time	t_r				61		
Turn-off delay time	$t_{d(off)}$				69		
Turn-off fall time	t_f				27		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ④	V_{GS} =0V, I_S=7A				0.9	V
Continuous drain-source diode forward current	I_S ①					7	A
Pulsed drain-source diode forward current	I_{SM} ②					28	A

Notes:

1.T_C=25℃ Limited only by maximum temperature allowed.

2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: V_{DD}=50V,V_{GS}=10V, L=10mH, R_g=25Ω Starting T_J = 25℃.

4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.