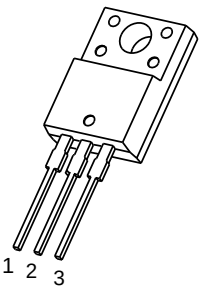
TO-220F-B Plastic-Encapsulate MOSFETS

CJPF07N65M1E N-Channel Power MOSFET

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

TO-220F-B



1. GATE
2. DRAIN
3. SOURCE

1 2 3

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. Designed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

FEATURE

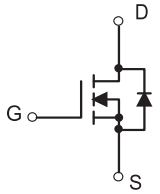
- High Current Rating
- Low Gate Charge
- Lower $R_{DS(on)}$
- Low Reverse Transfer Capacitance
- Fast Switching Capability
- Tighter V_{SD} Specifications
- Avalanche Energy Specified

MARKING



07N65M1E= Device code.
Solid dot = Green molding compound device, if none, the normal device
XXXX = Code

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Limit	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} ①②	28	A
Single Pulsed Avalanche Energy	E_{AS} ③	220	mJ
Power Dissipation	P_D ①	62.5	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$ ⑥	62.5	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$ ①	2.0	℃/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}=650V, 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 characteristics④							
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA		2.0	3.2	4.0	V
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =3.5A			1.0	1.5	Ω
Dynamic characteristics ⑤							
Input capacitance	C_{iss}	V_{DS} =50V,V_{GS} =0V,f =1MHz			1090		pF
Output capacitance	C_{oss}				64		
Reverse transfer capacitance	C_{rss}				8		
Gate resistance	R_g	f =1MHz			3		Ω
Switching characteristics ⑤							
Total gate charge	Q_g	V_{DS} =50V,V_{GS} =10V,I_D =7A			27		nC
Gate-source charge	Q_{gs}				5		
Gate-drain charge	Q_{gd}				11		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=10V, R_G=10Ω, I_D =7A			13		ns
Turn-on rise time	t_r				19		
Turn-off delay time	$t_{d(off)}$				34		
Turn-off fall time	t_f				22		
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD}④	V_{GS} =0V,I_S =7A				1.2	V
Maximum continuous drain-source diode forward current	I_S①					7	A
Maximum pulsed drain-source diode forward current	I_{SM}①②					28	A

Notes :

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

2.P_W≤10μs, Duty cycle≤1%.

3.EAS condition: VDD=50V,VGS=10V, L=10mH, Rg=25Ω Starting T_J = 25℃.

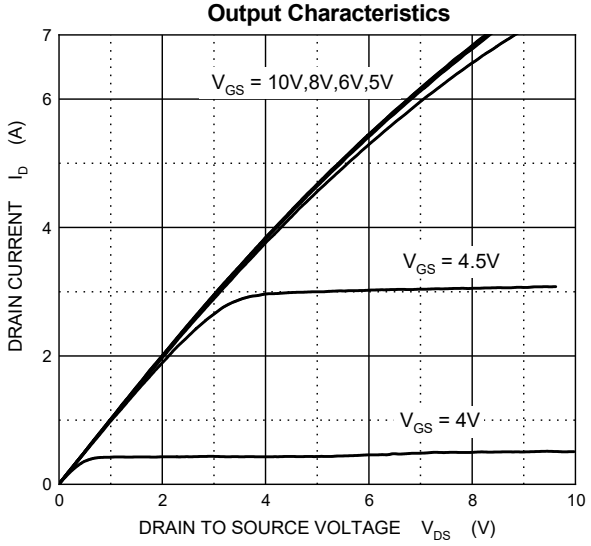
4.Pulse Test : Pulse Width≤300μs, duty cycle ≤2%.

5.Guaranteed by design, not subject to production.

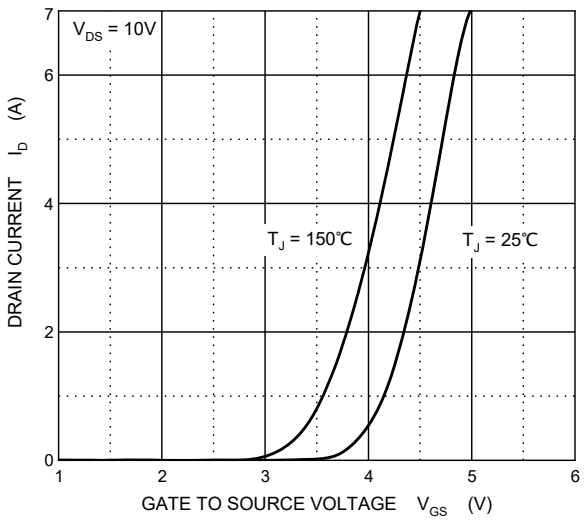
6.The value of $R_{\theta JA}$ is measured with the device in a still air environment with T_a=25℃.

Typical Characteristics (T_J = 25℃, unless otherwise specified)

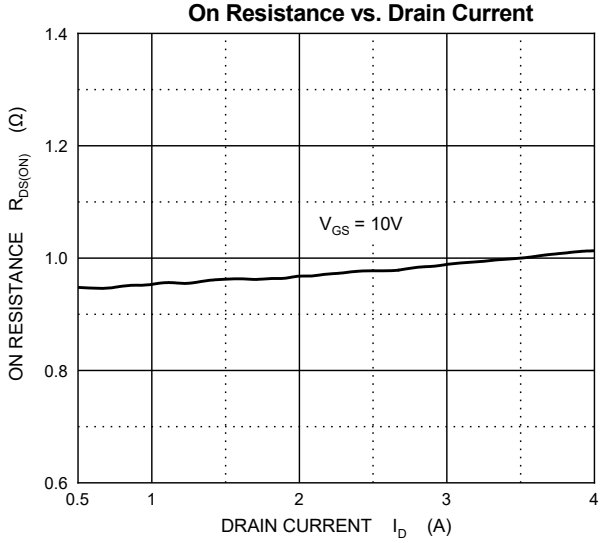
Output Characteristics



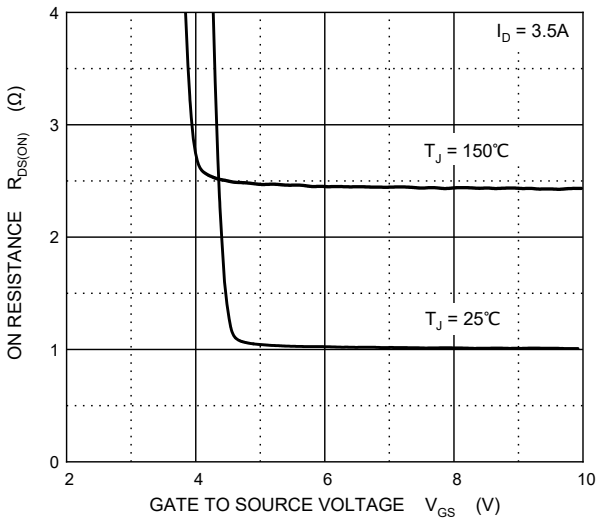
Transfer Characteristics



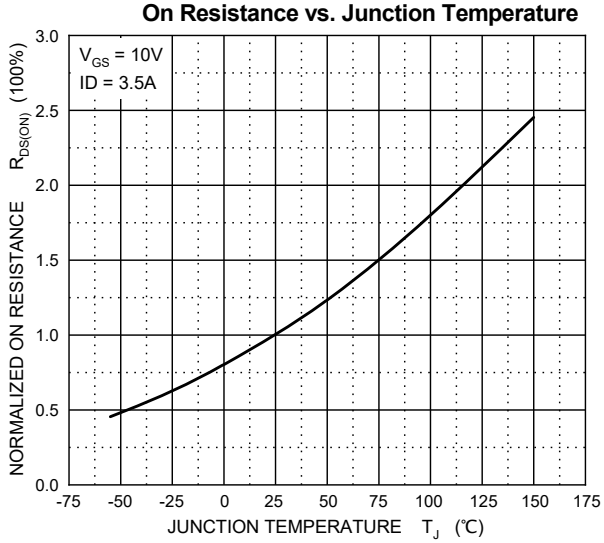
On Resistance vs. Drain Current



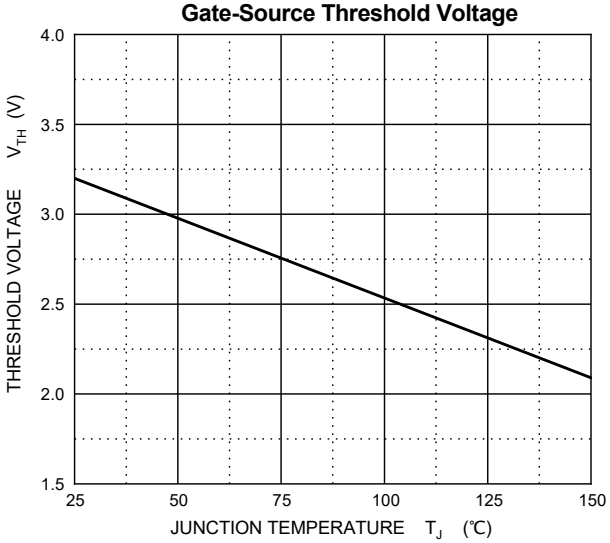
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

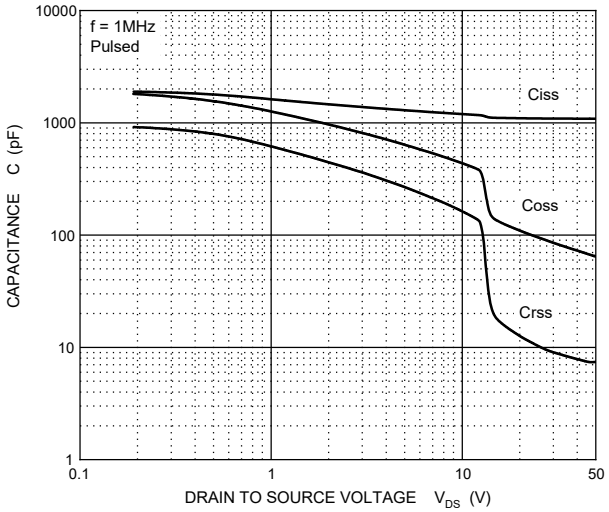


Gate-Source Threshold Voltage

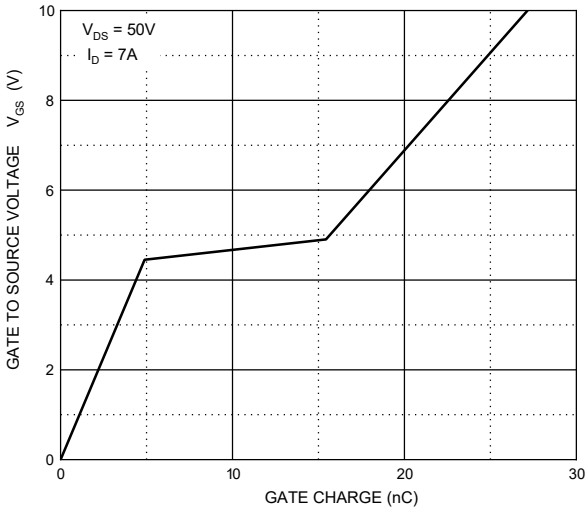


Typical Characteristics (T_J = 25℃, unless otherwise specified)

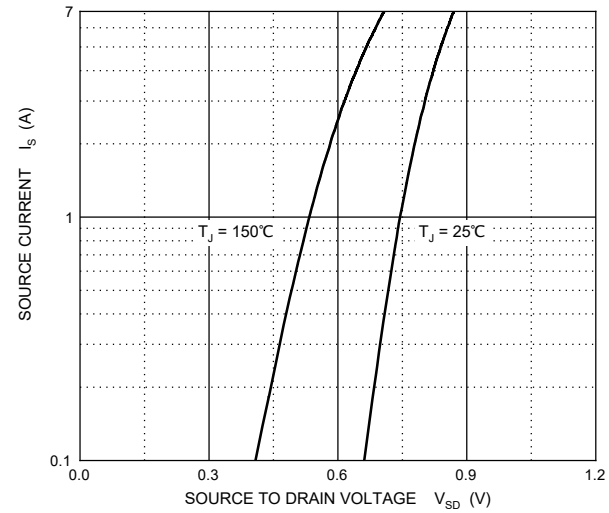
Typical Capacitances



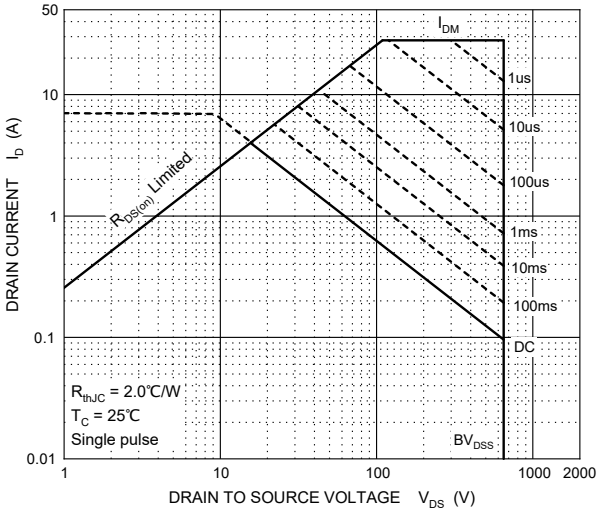
Gate Charge



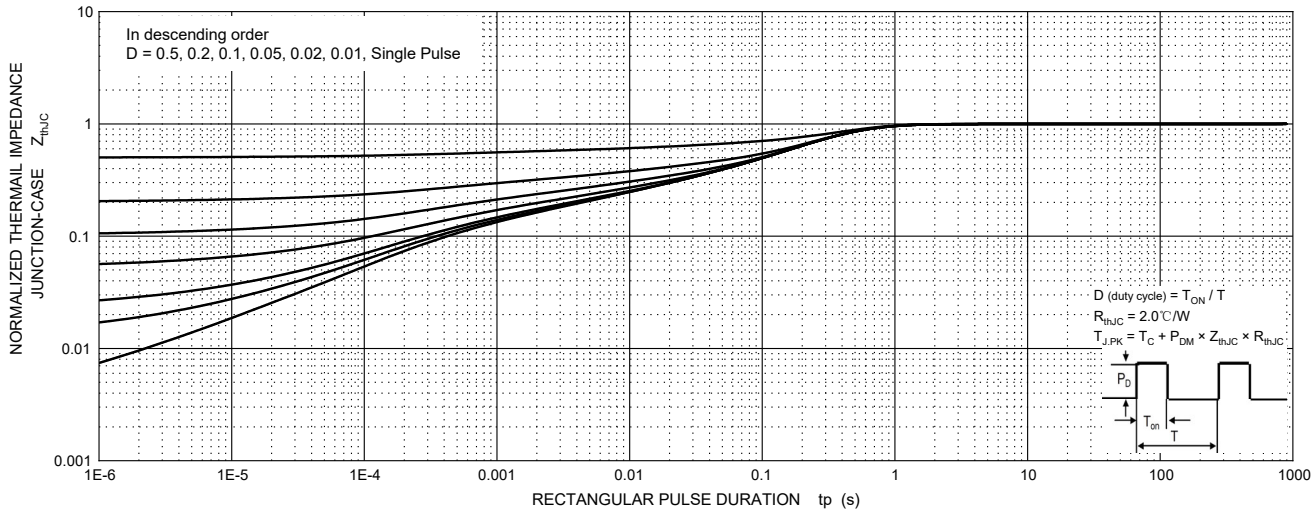
Source-Drain Diode Forward Characteristics



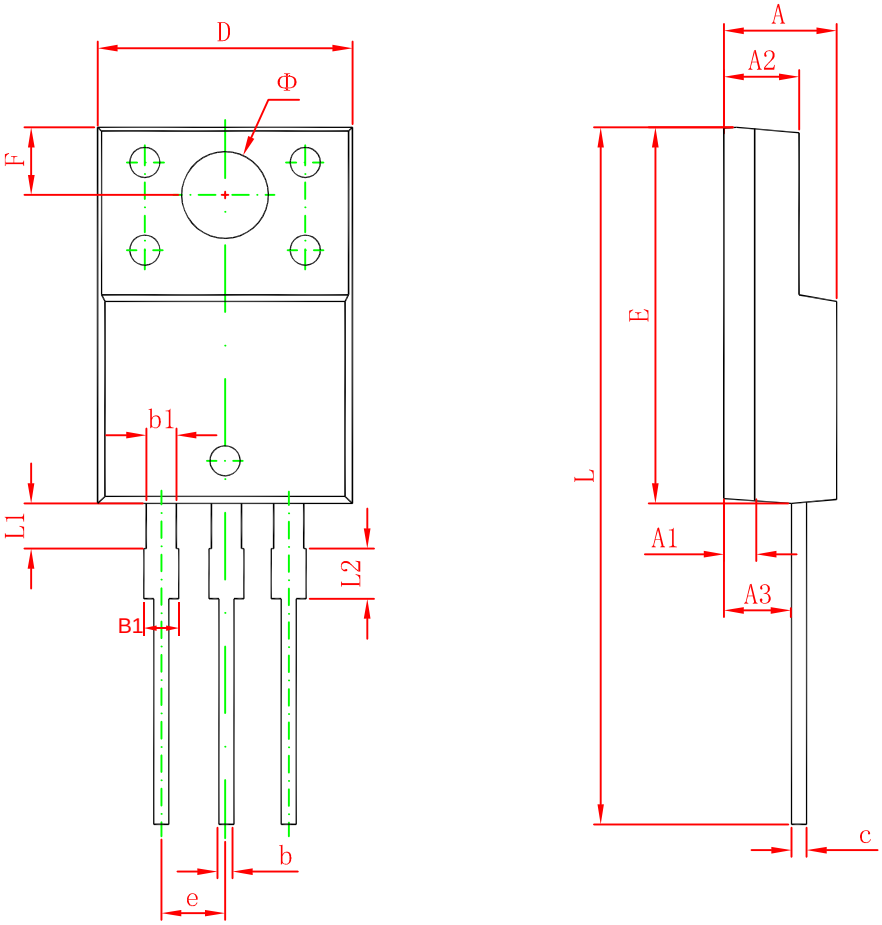
Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Case



TO-220F-B Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.200 REF.		0.047 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.710	0.910	0.028	0.036
b1	1.100	1.350	0.043	0.053
B1	1.150	1.400	0.045	0.055
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
Φ	3.300	3.700	0.130	0.146
L	28.000	28.400	1.102	1.118
L1	2.100	2.400	0.082	0.094
L2	1.300	1.700	0.051	0.066