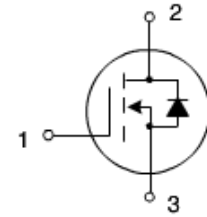


GDF7N65
N-Channel MOSFET
650V, 7A, R_{DS(ON)}<1.4Ω

General Description and Features

- Superior Avalanche Rugged Technology
- Robust Gate Oxide Technology
- Excellent Switching Characteristics
- Low Gate Charge
- Extended Safe Operating Area
- Lower RDS(ON): 1.13 Ω (Typical) @ VGS = 10V
- 100% Avalanche Tested
- Improved dv/dt Capability
- RoHS Compliant
- JEDEC Qualification



1.栅极 2.漏极 3.源极



ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)

Symbol	Parameter	Value	Unit
BV_{DSS}	Drain-Source Voltage	650	V
BV_{GSS}	Gate-Source Voltage	±30	V
I_D	Drain Current continuous Tc=25°C	7	A
I_{DM}	Drain Current - pulse	28	A
P_D	Power Dissipation	Tc=25°C	46
		Derated above 25°C	0.37
T_J, T_{STG}	Operating and Storage Temperature Range	-55~+150	°C
T_L	Maximum Lead Temperature for Soldering	260	°C

Thermal Characteristics

Symbol	Parameter	TO-220F	Unit
R_{θJC}	Thermal Resistance ,Junction to Case	2.55	°C/W
R_{θJA}	Thermal Resistance ,Junction to Ambient	62.5	°C/W

Electrical Characteristics(Tc=25°C unless otherwise specified)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
Off state characteristics						
BV_{DSS}	Drain to Source breakdown Voltage	I _D =250μA, V _{GS} =0V	650			V
I_{DSS}	Zero Gate Voltage Drain Current	V _{DS} =650V, V _{GS} =0V, T _c =25°C			1	μA
I_{GSS}	Gate to Source Leakage Current	V _{GS} =±30V, V _{DS} =0V			±100	nA



On state characteristics						
V_{GS(th)}	Gate to Source Threshold Voltage	$I_D=250\mu A, V_{GS}=V_{DS}$	2.0		4.0	V
R_{DS(on)}	Drain to Source On-Resistance	$I_D=3.5A, V_{GS}=10V$		1.13	1.4	Ω
G_{fs}	Forward Transconductance	$V_{DS}=15V, I_D=3.5A$		8		S
Dynamic characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		1200	1600	pF
C_{oss}	Output Capacitance			100	150	pF
C_{rss}	Reverse Transfer Capacitance			18	24	pF
Switching characteristics						
t_{d(on)}	Turn-On Delay Time	$V_{DD}=325V, I_D=7A$ $V_{GS}=10V, R_G=25\Omega$ (Note 1,2)		35	80	ns
t_r	Rise Time			79	165	ns
t_{d(off)}	Turn-Off Delay Time			80	160	ns
t_f	Fall Time			52	120	ns
Q_g	Total Gate Charge	$V_{DD}=520V, I_D=7A$ $V_{GS}=10V$ (Note 1,2)		30	—	nC
Q_{gs}	Gate to Emitter Charge			6.5	—	nC
Q_{gd}	Gate to Collector Charge			13	—	nC
Source Drain Diode Characteristics						
Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_S	Maximum Continuous Drain-Source Diode Forward Current				7	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current				28	A
V_{SD}	Drain to Source Diode Forward Voltage	$I_S=7A, V_{GS}=0V$			1.4	V
t_{rr}	Diode Reverse Recovery Time	$I_S=7A, V_{GS}=0V$ $di/dt=100A/\mu S$		320		nS
Q_{rr}	Diode Reverse Recovery Charge				2.4	

Note:

1.Pulse Test:Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$

2.Essentially Independent of operating Temperature Typical Characteristics

Ratings and Characteristic Curves

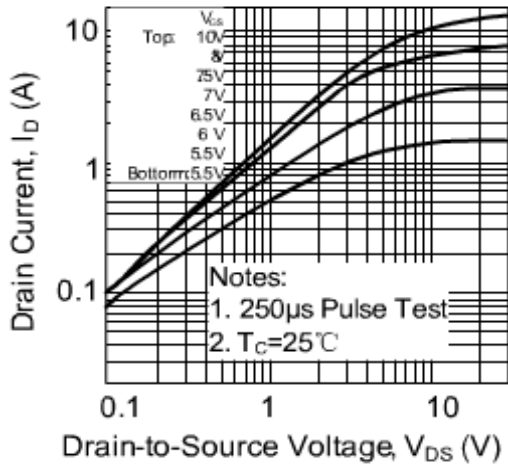


Fig.1 Output Characteristics

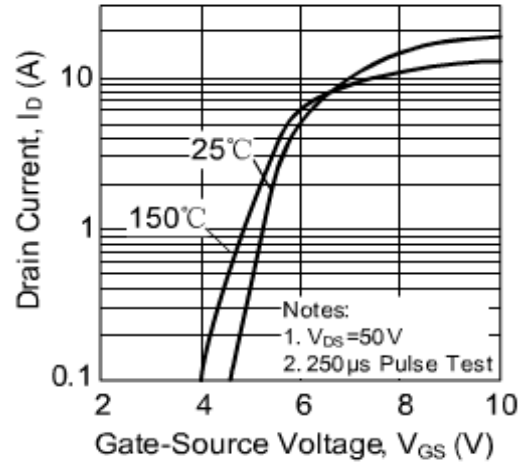


Fig.2 Transfer Characteristics

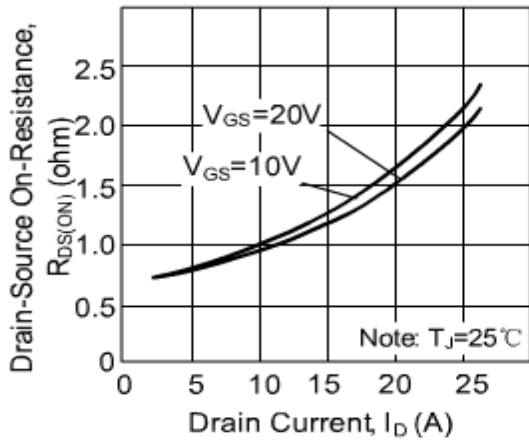


Fig.3 On-Resistance Variation vs. Drain Current and Gate Voltage

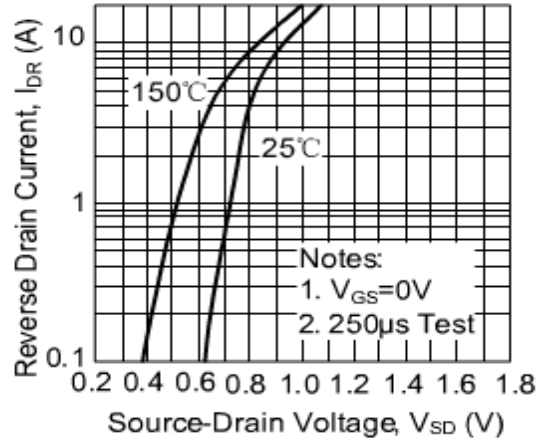


Fig.4 Body Diode Forward Voltage vs. Source Current and Temperature

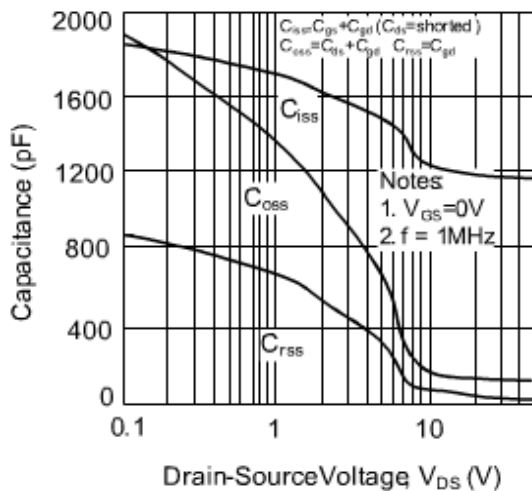


Fig.5 Capacitance Characteristics

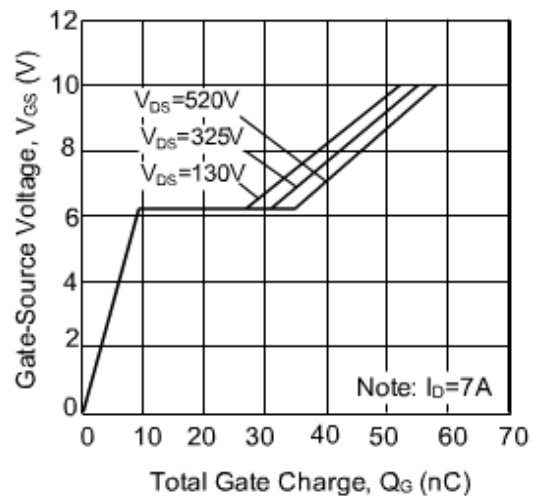


Fig.6 Gate Charge Characteristics

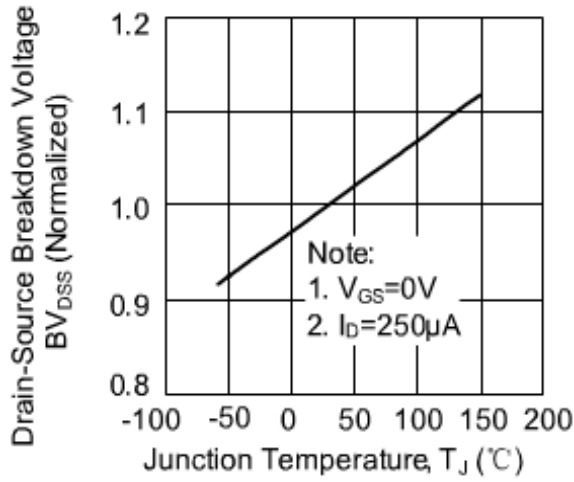


Fig.7 Breakdown Voltage Variation vs. Temperature

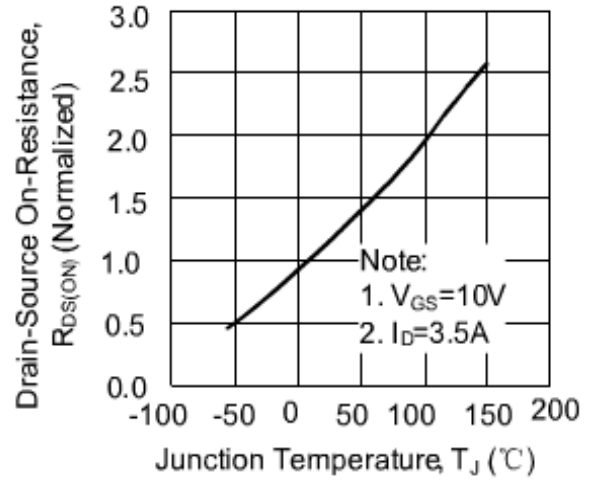


Fig.8 On-Resistance Variation vs. Temperature

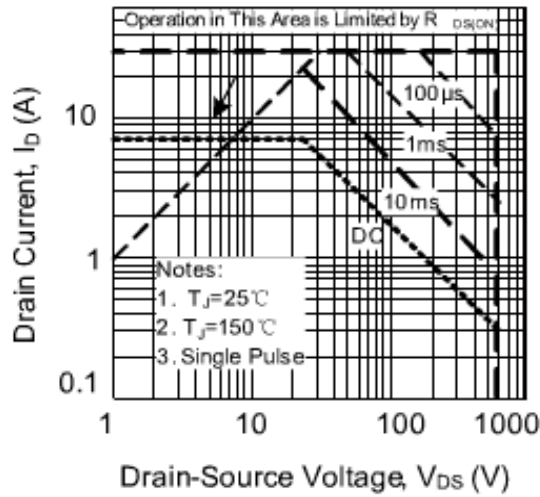


Fig.9 Maximum Safe Operating Area

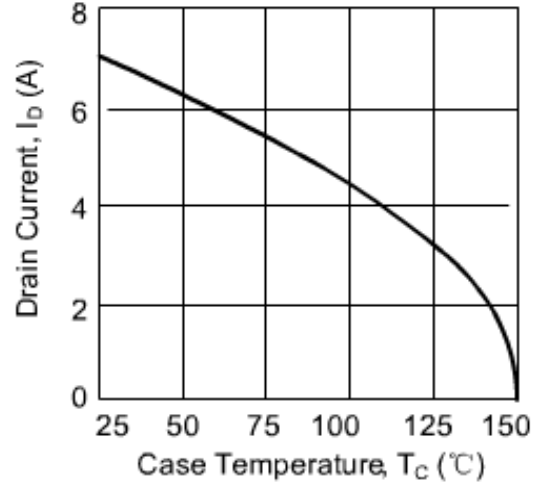


Fig.10 Maximum Drain Current vs. Case Temperature

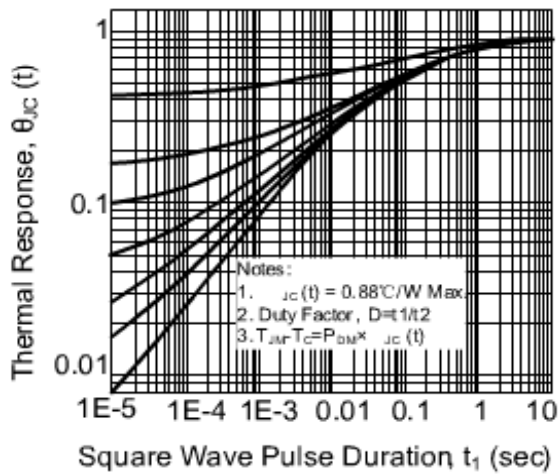
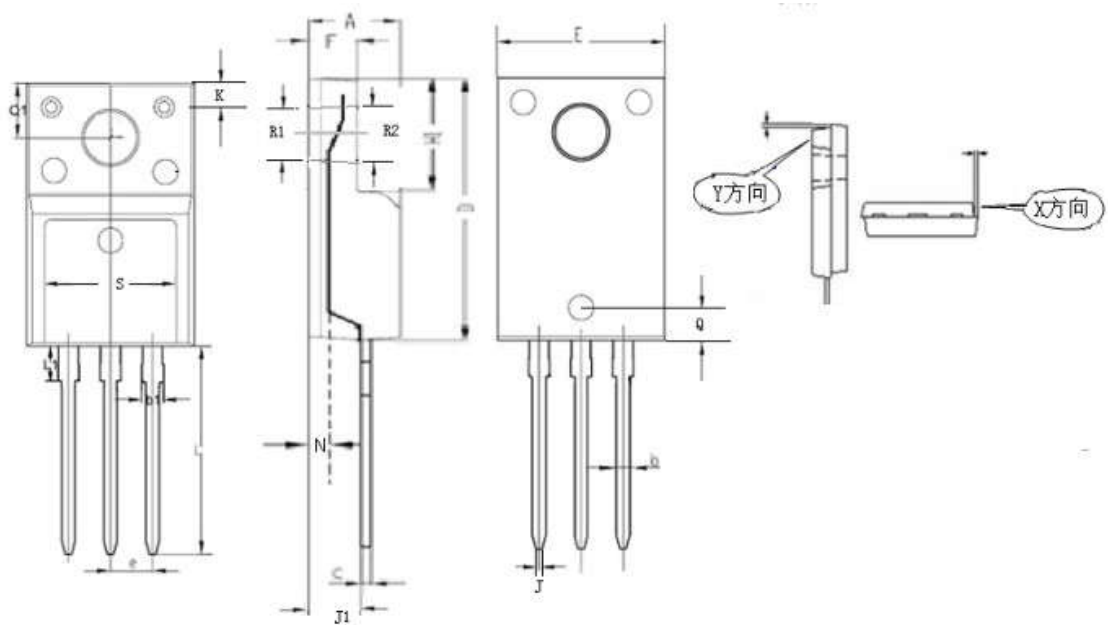


Fig.11 Transient Thermal Response Curve

TO-220F POD



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	0.178	0.194	4.53	4.93	
b	0.028	0.036	0.71	0.91	
C	0.018	0.024	0.45	0.6	
D	0.617	0.633	15.67	16.07	
E	0.392	0.408	9.96	10.36	
e	0.100 TYP.		2.54TYP.		
H1	0.256	0.272	6.5	6.9	
J1	0.101	0.117	2.56	2.96	
L	0.503	0.519	12.78	13.18	
φQ	0.117	0.133	2.98	3.38	
b1	0.045	0.055	1.15	1.39	
L1	0.114	0.13	2.9	3.3	
Q1	0.122	0.138	3.1	3.5	
N	0.016	0.024	0.4	0.6	
F	0.092	0.108	2.34	2.74	
J	0.013	0.017	0.32	0.43	
K	0.047	0.071	1.20	1.80	
R1	0.121	0.129	3.08	3.28	
R2	0.126	0.136	3.20	3.45	
Q	0.075	0.083	1.90	2.10	
S	0.311	0.319	7.90	8.10	
X	0	0.005	0	0.127	