18N65F

N-Channel Enhancement Mode MOSFET

V_{DSS}	650 V
I_D	18 A
$R_{DS(ON)}$	0.41 Ω

FEATURES

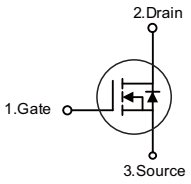
- $R_{DS(ON)}$ = 0.41Ω (Typ.) @ V_{GS} = 10V, I_D =9A
- Fast Switching
- Improved dv/dt Capability
- 100% Avalanche Tested

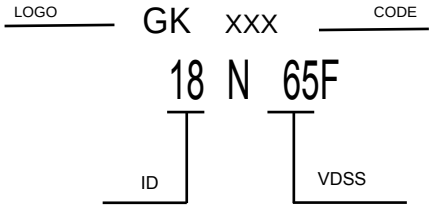
ITO-220AB

GK XXX
18N65F

APPLICATION

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS)
- Power Factor Correction (PFC)





MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings

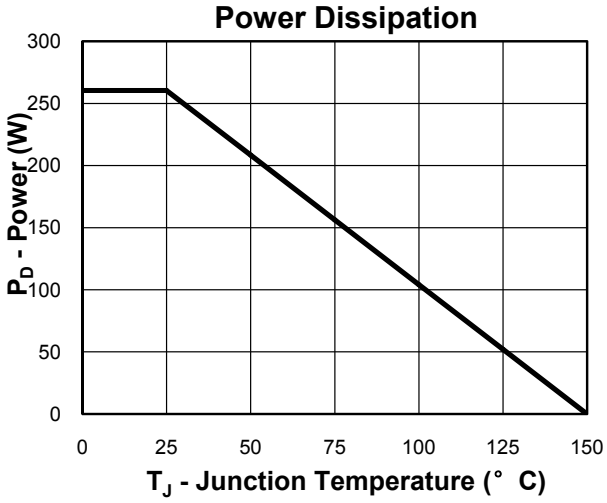
Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		650	V
V_{GSS}	Gate-Source Voltage		±30	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_C=25°C	18	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	72	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	18	A
		T_C=100°C	11.5	
P_D	Maximum Power Dissipation	T_C=25°C	260	W
		T_C=100°C	104	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.48	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ③	Avalanche Energy, Single Pulsed		500	mJ

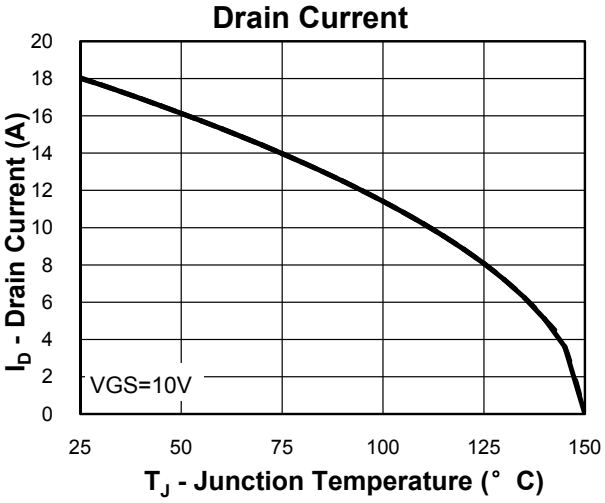
Electrical Characteristics (T_C=25℃ unless otherwise specified)

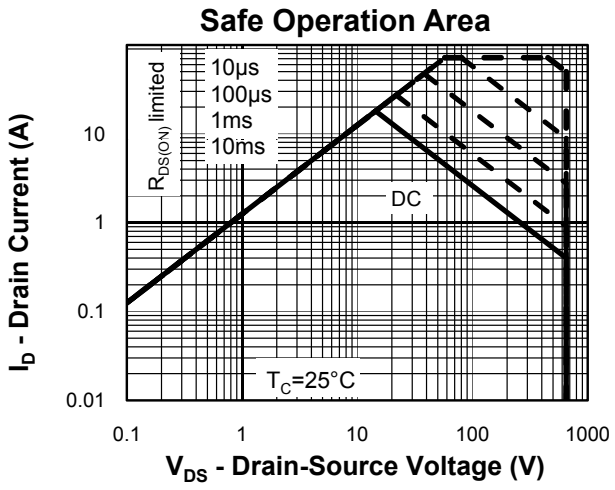
Symbol	Parameter	Test Condition	18N65F			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	650			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=650V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	3		5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±30V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$④	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=10A		410	500	mΩ
Diode Characteristics						
V_{SD}④	Diode Forward Voltage	I_{SD}=10A, V_{GS}=0V			1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=18A, dI_{SD}/dt=100A/μs		560		ns
Q_{rr}	Reverse Recovery Charge			4.3		μC
Dynamic Characteristics⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		2.8		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=300V, Frequency=1.0MHz		4350		pF
C_{oss}	Output Capacitance			410		
C_{rss}	Reverse Transfer Capacitance			110		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=300V, R_L=100Ω, I_{DS}=18A, V_{GEN}=10V, R_G=4.7Ω		47		ns
t_r	Turn-on Rise Time			81		
$t_{d(OFF)}$	Turn-off Delay Time			95		
t_f	Turn-off Fall Time			52		
Gate Charge Characteristics⑤						
Q_g	Total Gate Charge	V_{DS}=520V, V_{GS}=10V, I_{DS}=18A		128		nC
Q_{gs}	Gate-Source Charge			43		
Q_{gd}	Gate-Drain Charge			52		

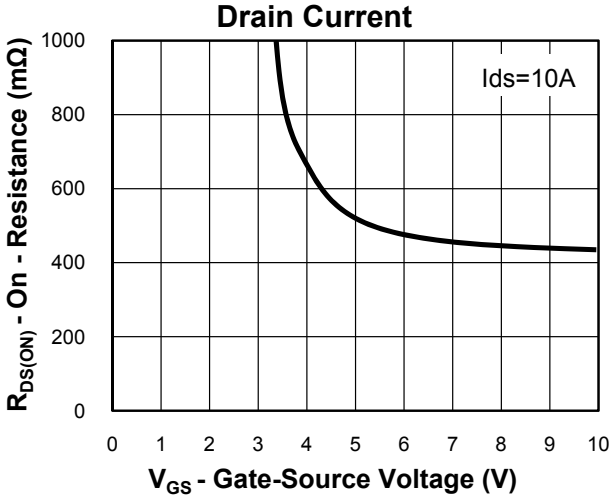
Notes: ①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③Limited by T_{Jmax}, I_{AS} =10A, V_{DD} = 100V, R_G = 50Ω , Starting T_J = 25°C.
④Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑤Guaranteed by design, not subject to production testing.

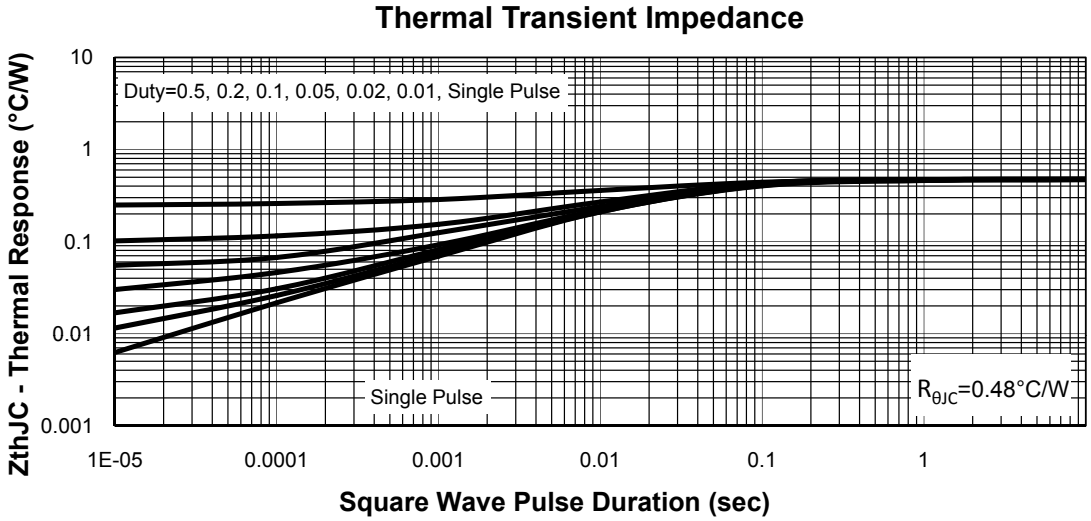
RATING AND CHARACTERISTIC CURVES











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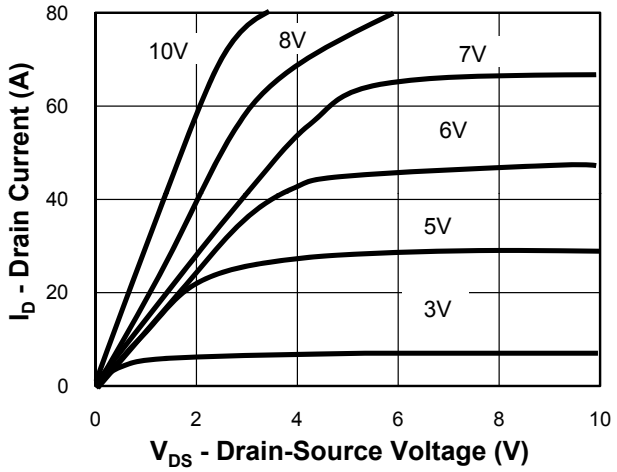
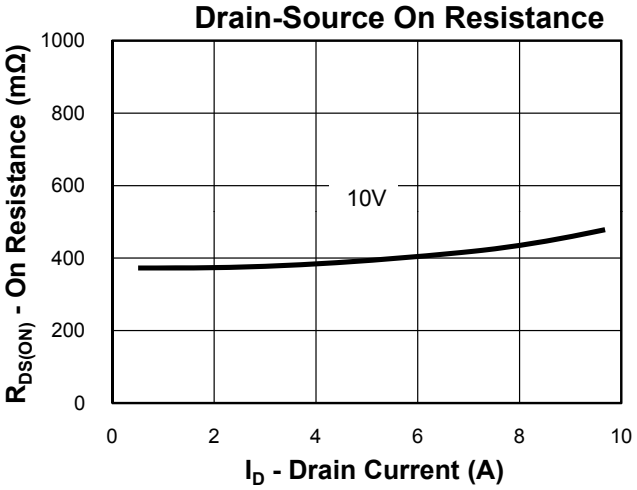
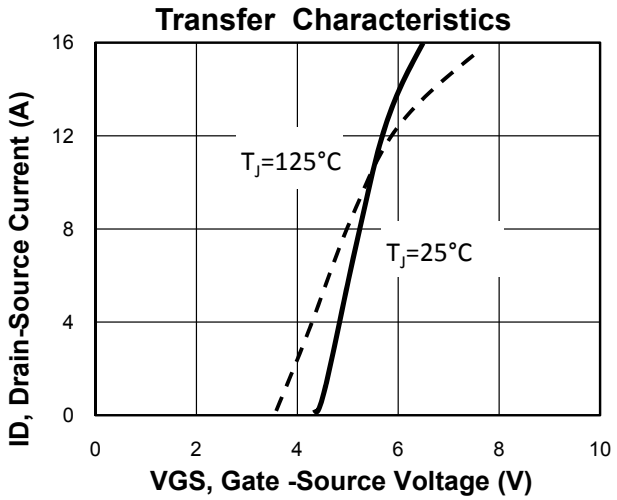
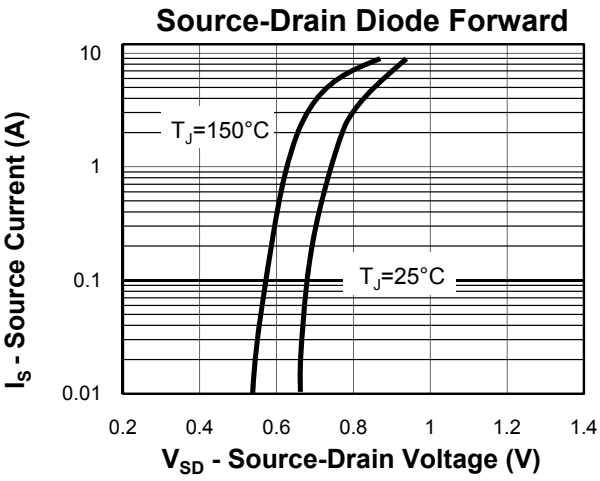
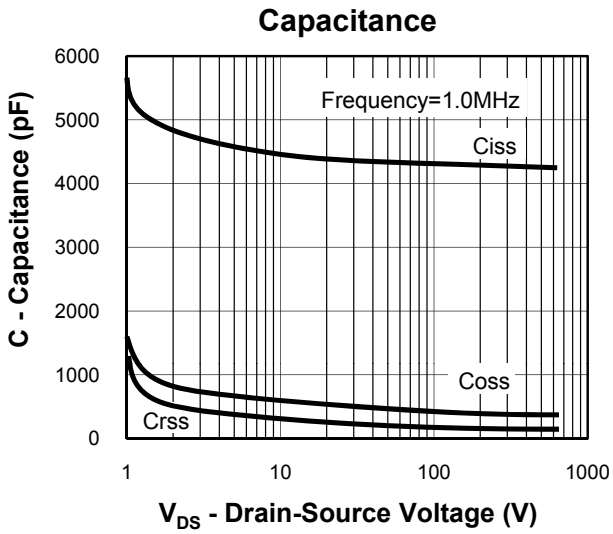
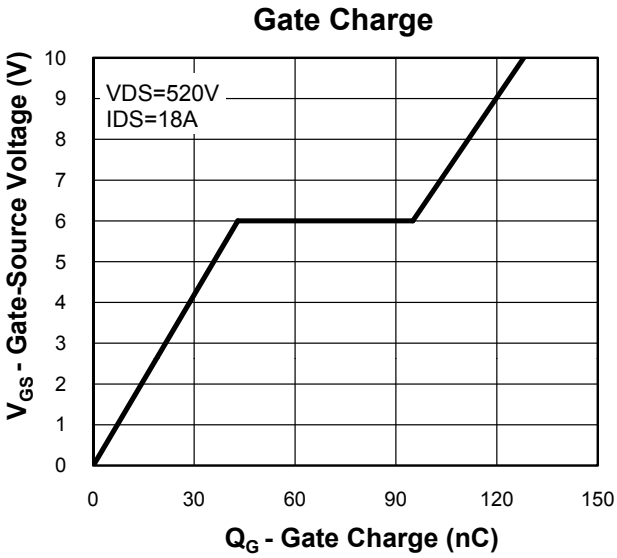








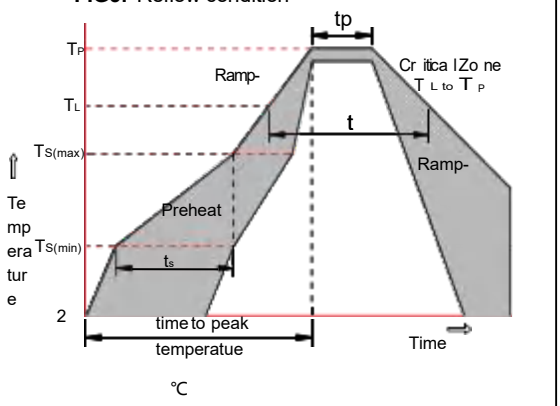




Soldering parameters

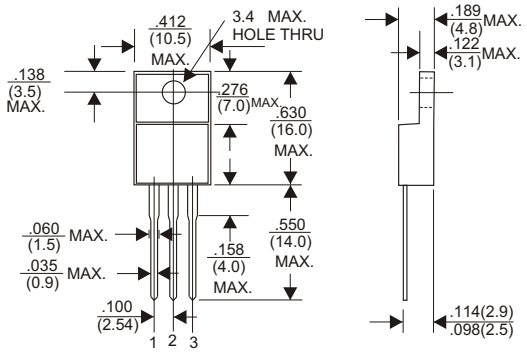
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition



Package Dimensions & Suggested Pad Layout

ITO-220AB(FULLYINSULATED)



Dimensions in inches and (millimeters)