RTK7N80F

RTK7N80F – 800V 7A N-channel Si Power MOSFET

PowerCubeSemi, Inc.
Potential · Convergence · Smart

Features

- Proprietary New Planar Technology
- $R_{DS(ON)}$ (Typ)= 1.3Ω @ V_{GS}=10V
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

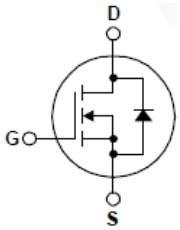
Applications

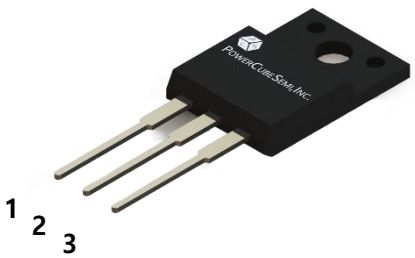
- Adaptor
- LCD Panel Power
- Other Applications

Part Number	Package	Note
RTK7N80F	TO-220F	

Pin Description

1 : Gate
2 : Drain
3 : Source





Halogen-Free

RoHS

PKG type : TO-220F

Absolute Maximum Ratings T_C=25℃ Unless Otherwise Noted

Symbol	Parameter		Value	Unit
V_{DSS}	Drain to Source Voltage		800	V
V_{GSS}	Gate to Source Voltage		±30	
I_D	Continuous Drain Current (V_{GS}=10V)	T_C=25℃	7.0	A
I_{DM}	Pulsed Drain Current	T_C=25℃	14	A
P_D	Power dissipation TO-220F	T_C=25℃	75	W
E_{AS}	Avalanche Energy, Single Pulsed		570	mJ
T_J	Maximum Junction Temperature		-55 to 150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃

Static Characteristics

T_J=25℃ unless otherwise specified

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	800	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 800V, V_{GS} = 0V	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_D = 250μA	3.0	-	5.0	V
$R_{DS(ON)}$	Static Drain-Source on state resistance	V_{GS} = 10V, I_D = 3.5A	-	1.3	1.8	Ω

Dynamic Characteristics

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
C_{iss}	Input capacitance	V_{DS}=25V, V_{GS}=0V, f=1㎒	-	1288	-	pF
C_{oss}	Output capacitance		-	129	-	
C_{rss}	Reverse transfer capacitance		-	11	-	
$t_{d(on)}$	Turn-on Delay time	V_{DS}=400V, I_D=7A, V_{GS}=10V, R_G=25Ω	-	40	-	ns
T_r	Turn-on Rise time		-	105	-	
$t_{d(off)}$	Turn-off Delay time		-	55	-	
T_f	Turn-off Fall time		-	65	-	

Gate Charge Characteristics

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
$Q_{g(tot)}$	Total gate charge at 10V	V_{DS}=640V, I_D=7A, $V_{GS(on)}$=10V	-	39	-	nC
Q_{gs}	Gate to source gate charge		-	7.9	-	
Q_{gd}	Gate to drain "Miller" charge		-	21	-	

Diode Characteristics

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_{SD}	Continuous Source Current		-	7.0	A
I_{SM}	Pulsed Source Current		-	28	
V_{SD}	Drain to source diode forward voltage	I_{SD}=7A, V_{GS} = 0V	-	1.5	V
T_{rr}	Reverse recovery time	I_F=12A, V_R=325V, dI_F/dt=100A/μs	640	-	ns
Q_{rr}	Reverse recovery charge		6.0	-	μC

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.50	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	120	℃/W

Typical Characteristics

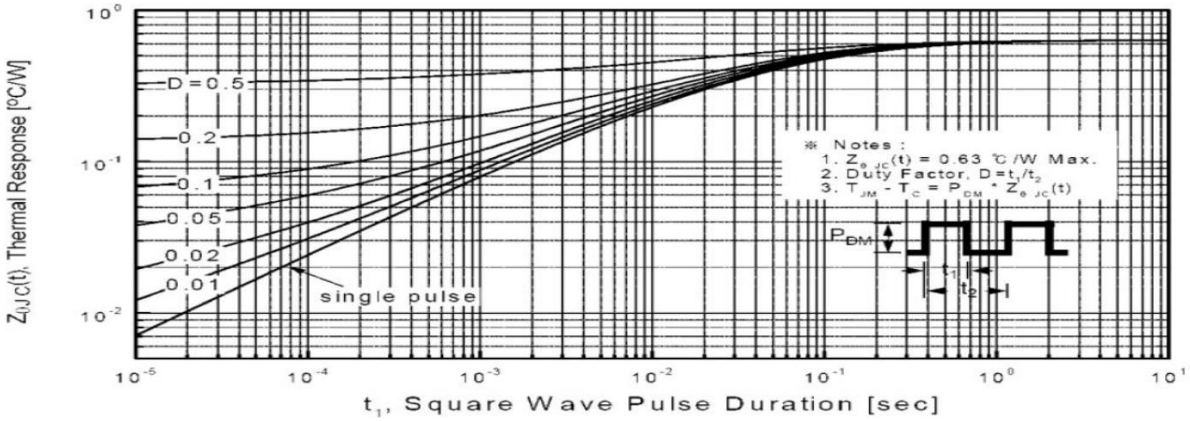


Figure 1. Transient Thermal Response Curve

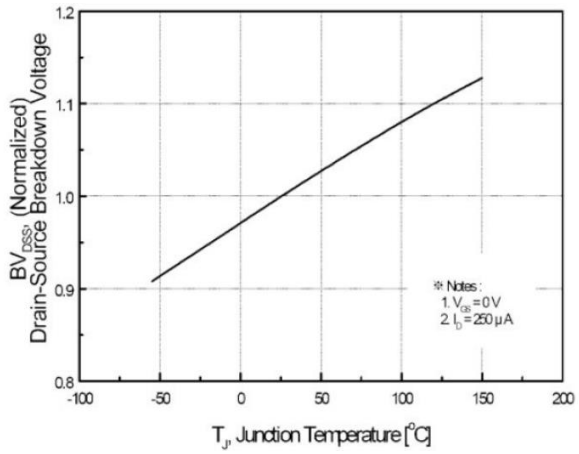


Figure 2. Breakdown Voltage Variation vs. T_C

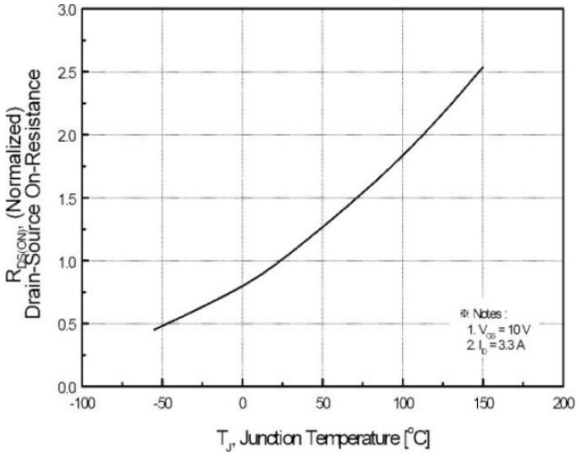


Figure 3. On-Resistance Variation vs. T_C

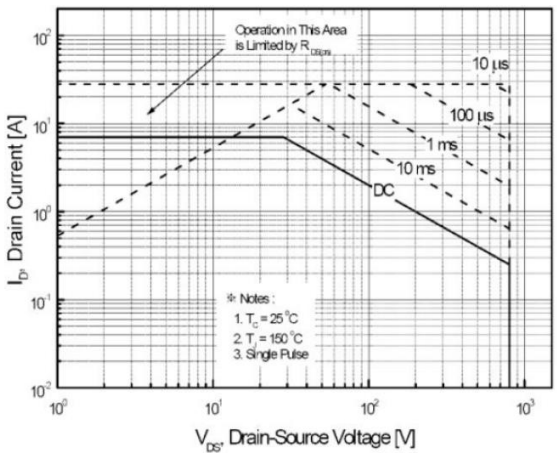


Figure 4. Maximum Safe Operating Area

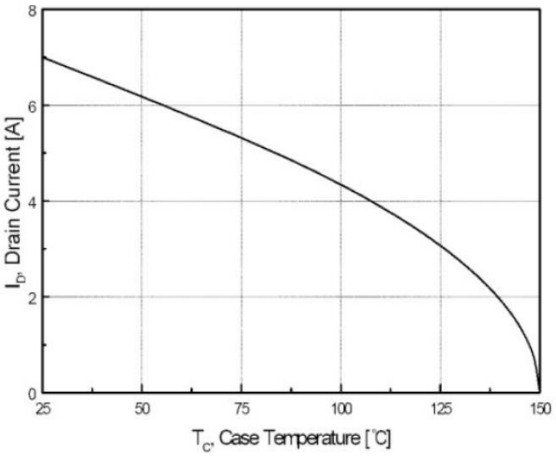


Figure 5. Maximum Drain Current vs. T_C

Typical Characteristics

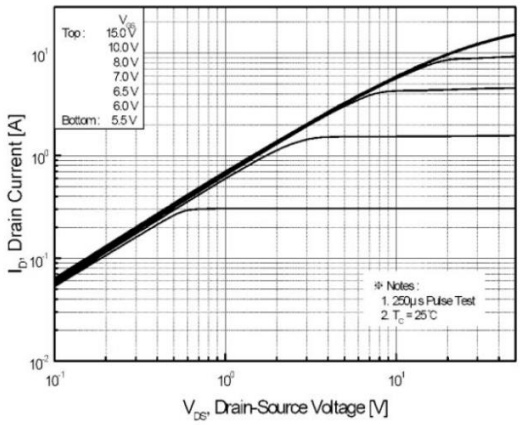


Figure 6. Output Characteristics

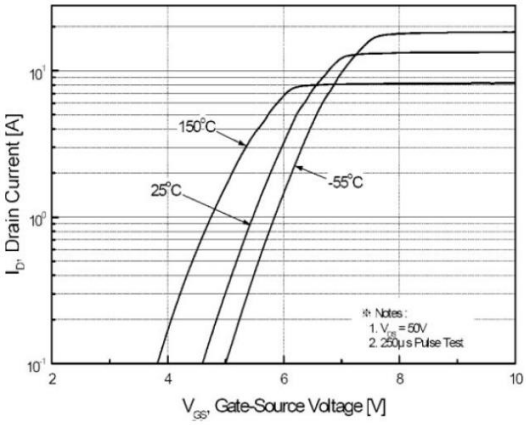


Figure 7. Transfer characteristics

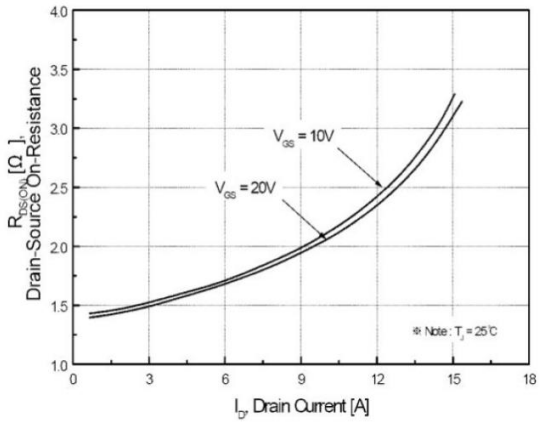


Figure 8. On-Resistance Variation vs. Drain Current and Gate Voltage

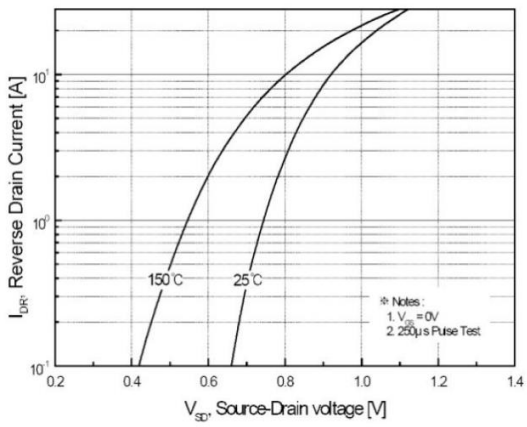


Figure 9. Body Diode Forward Voltage Variation vs. Source Current and Temperature

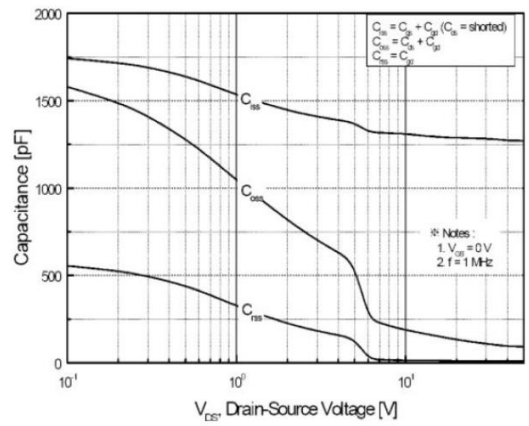


Figure 10. Capacitance Characteristics

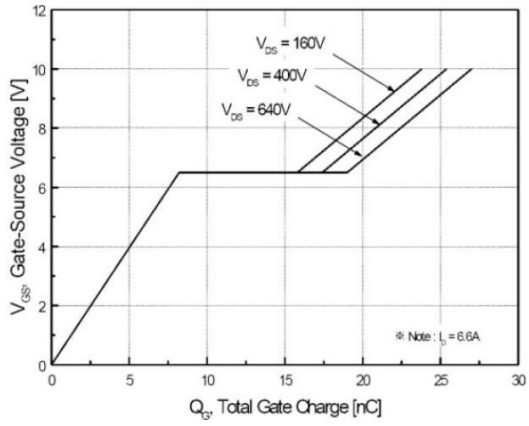
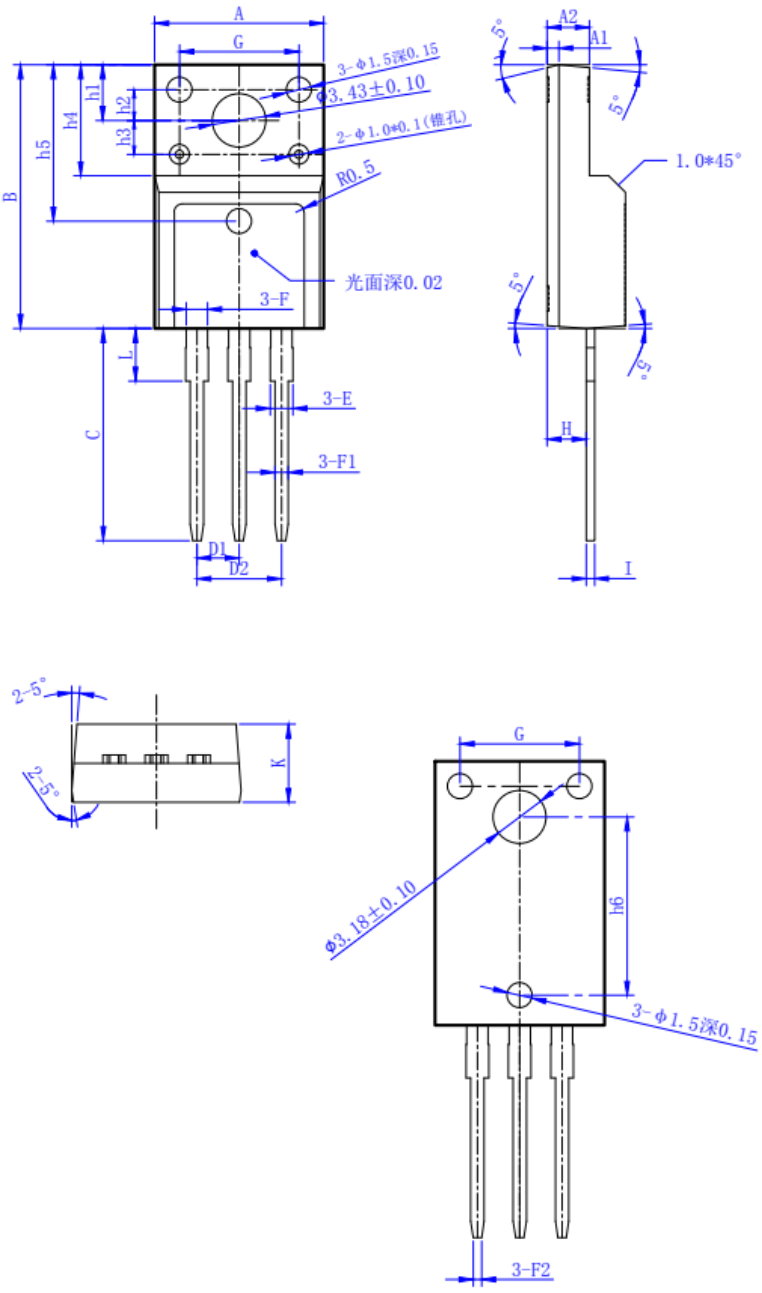


Figure 11. Gate Charge Characteristics

Package Outline

Unit : mm



SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
A	10.00	10.20	10.40
A1	-	0.70	-
A2	2.35	2.55	2.75
B	15.80	15.90	16.00
C	13.00	13.25	13.50
D1	2.54 BSC		
D2	5.08 BSC		
E	1.27	1.32	1.40
F	1.25	1.28	1.30
F1	0.75	0.80	0.85
F2	0.35	0.40	0.50
G	6.90	7.00	7.10
H	2.66	2.76	2.86
h1	3.20	3.30	3.40
h2	1.70	1.80	1.90
h3	2.00	2.10	2.20
h4	6.70	6.79	6.90
h5	9.30	9.41	9.50
h6	10.44	10.54	10.64
I	0.40	0.50	0.60
K	4.60	4.70	4.80
L	2.90	3.00	3.10