

RTK10N65F

RTK10N65F – 650V 10A N-channel Si Power MOSFET

Features

- Proprietary New Planar Technology
- $R_{DS(ON)}$ (Typ)= 0.81Ω @ $V_{GS}=10V$
- 100% UIS Tested

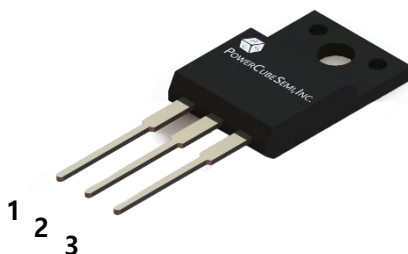
Applications

- Power Factor Correction, PFC
- Switched Mode Power Supplies
- LED Driver

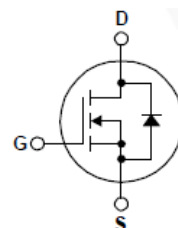
Part Number	Package	Note
RTK10N65F	TO-220F	

Pin Description

- 1 : Gate
2 : Drain
3 : Source



PKG type : TO-220F



Absolute Maximum Ratings $T_C=25^\circ\text{C}$ Unless Otherwise Noted

Symbol	Parameter		Value	Unit
V_{DSS}	Drain to Source Voltage		650	V
V_{GSS}	Gate to Source Voltage		± 30	
I_D	Continuous Drain Current ($V_{GS}=10V$)	$T_C=25^\circ\text{C}$	10	A
I_{DM}	Pulsed Drain Current	$T_C=25^\circ\text{C}$	40	A
P_D	Power dissipation	$T_C=25^\circ\text{C}$	42	W
E_{AS}	Avalanche Energy, Single Pulsed		500	mJ
T_J	Maximum Junction Temperature		-55 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to 150	$^\circ\text{C}$

Static Characteristics

$T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	650	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 650V, V_{GS} = 0V$	-	-	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
$R_{DS(on)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 5A$	-	0.81	0.95	Ω

Dynamic Characteristics

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
C_{iss}	Input capacitance	$V_{DS} = 25V, V_{GS} = 0V, f = 1\text{MHz}$	-	1642	-	pF
C_{oss}	Output capacitance		-	128	-	
C_{rss}	Reverse transfer capacitance		-	7	-	
$t_{d(on)}$	Turn-on Delay time	$V_{DS} = 320V, I_D = 10A, V_{GS} = 10V, R_G = 25\Omega$	-	28	-	ns
T_r	Turn-on Rise time		-	23	-	
$t_{d(off)}$	Turn-off Delay time		-	54	-	
T_f	Turn-off Fall time		-	25	-	

Gate Charge Characteristics

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
$Q_{g(tot)}$	Total gate charge at 10V	$V_{DS} = 520V, I_D = 10A, V_{GS(on)} = 10V$	-	33	-	nC
Q_{gs}	Gate to source gate charge		-	9	-	
Q_{gd}	Gate to drain "Miller" charge		-	12	-	



Diode Characteristics

Symbol	Parameter	Test Condition	Numerical		Unit
			Typ.	Max.	
I_{SD}	Continuous Source Current		-	10	A
I_{SM}	Pulsed Source Current		-	40	
V_{SD}	Drain to source diode forward voltage	$I_{SD}=10A$, $V_{GS} = 0V$	-	1.5	V
T_{rr}	Reverse recovery time	$I_F=10A$, $V_R=325V$, $dI_F/dt=100A/\mu s$	540	-	ns
Q_{rr}	Reverse recovery charge		3.3	-	μC

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.13	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	110	$^{\circ}C/W$

Typical Characteristics

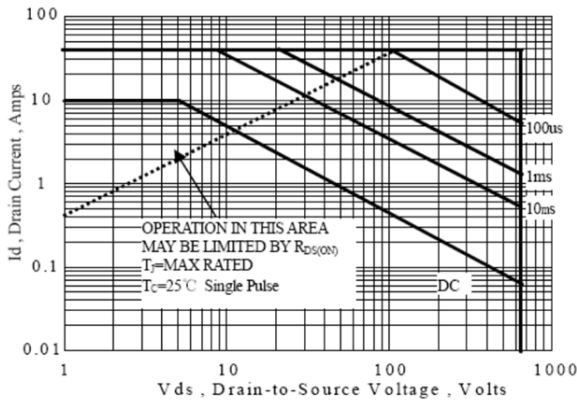


Figure 1. Maximum Forward Bias Safe Operating Area

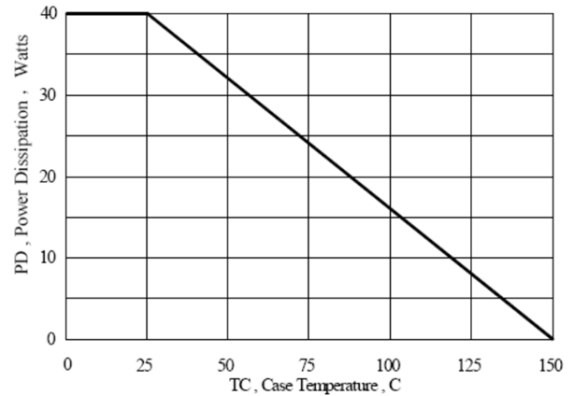


Figure 2. Maximum Power Dissipation vs. Case Temperature

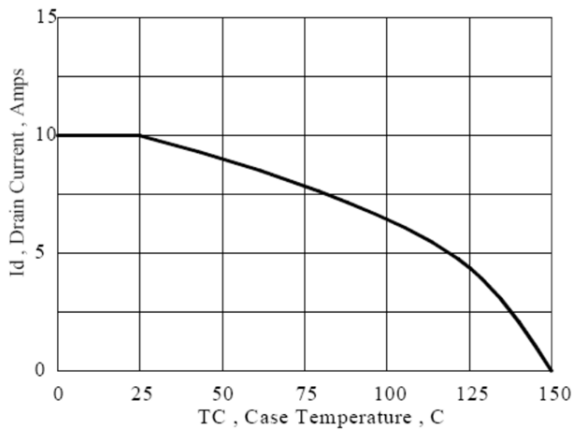


Figure 3. Maximum Continuous Drain Current vs. Case Temperature

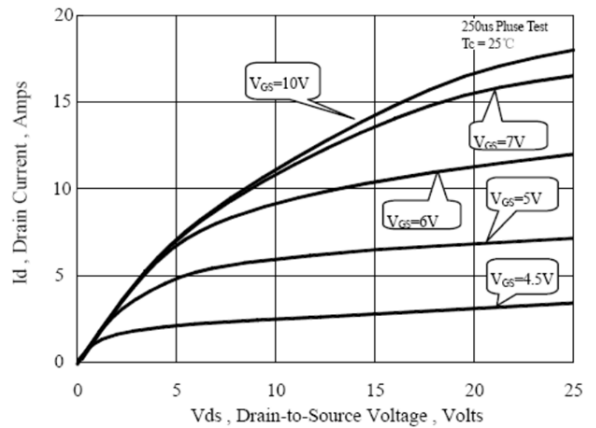


Figure 4. Typical Output Characteristics

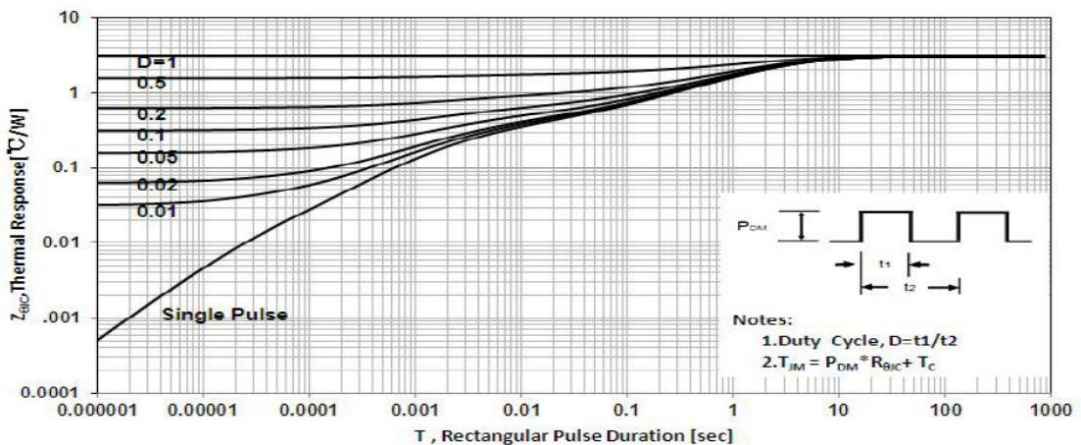


Figure 5. Maximum Effective Thermal Impedance, Junction to Case

Typical Characteristics

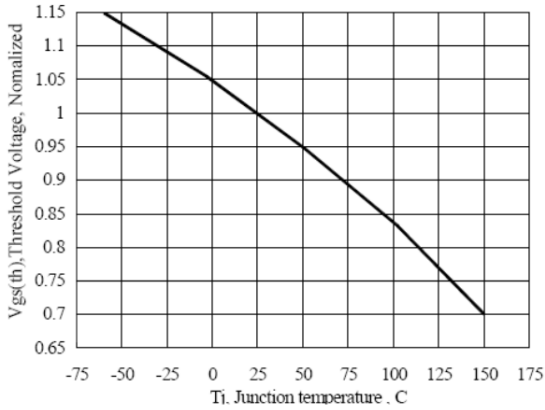


Figure 6. Typical Threshold Voltage vs. Junction Temperature

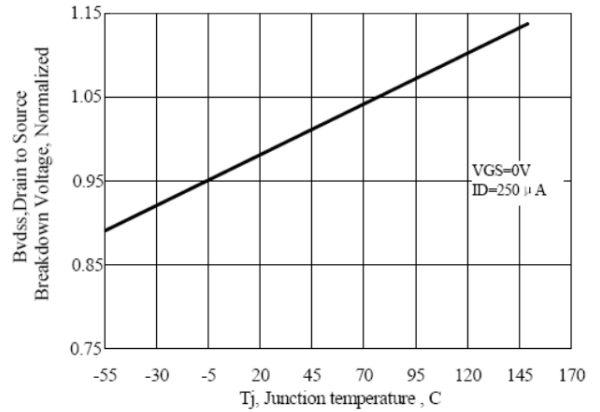


Figure 7. Typical Breakdown Voltage vs. Junction Temperature

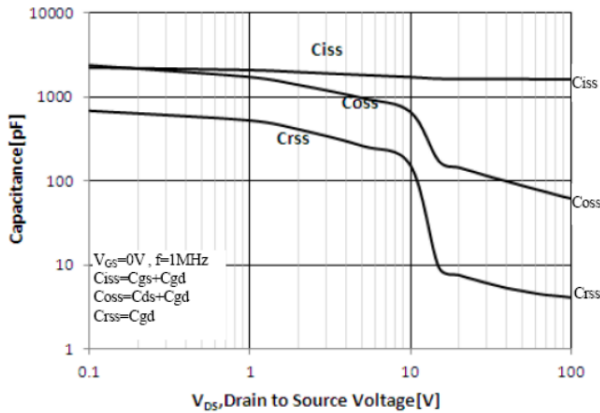


Figure 8. Typical Capacitance vs. Drain to Source Voltage

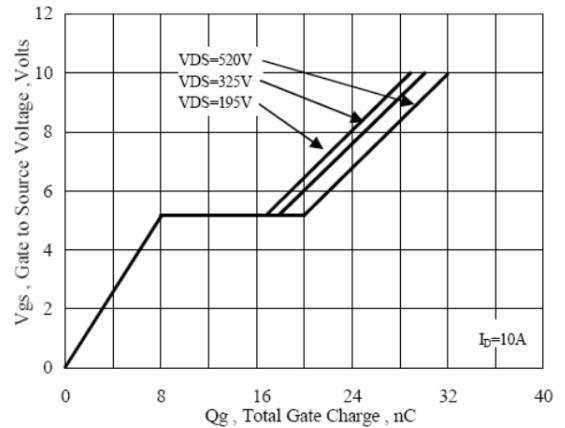
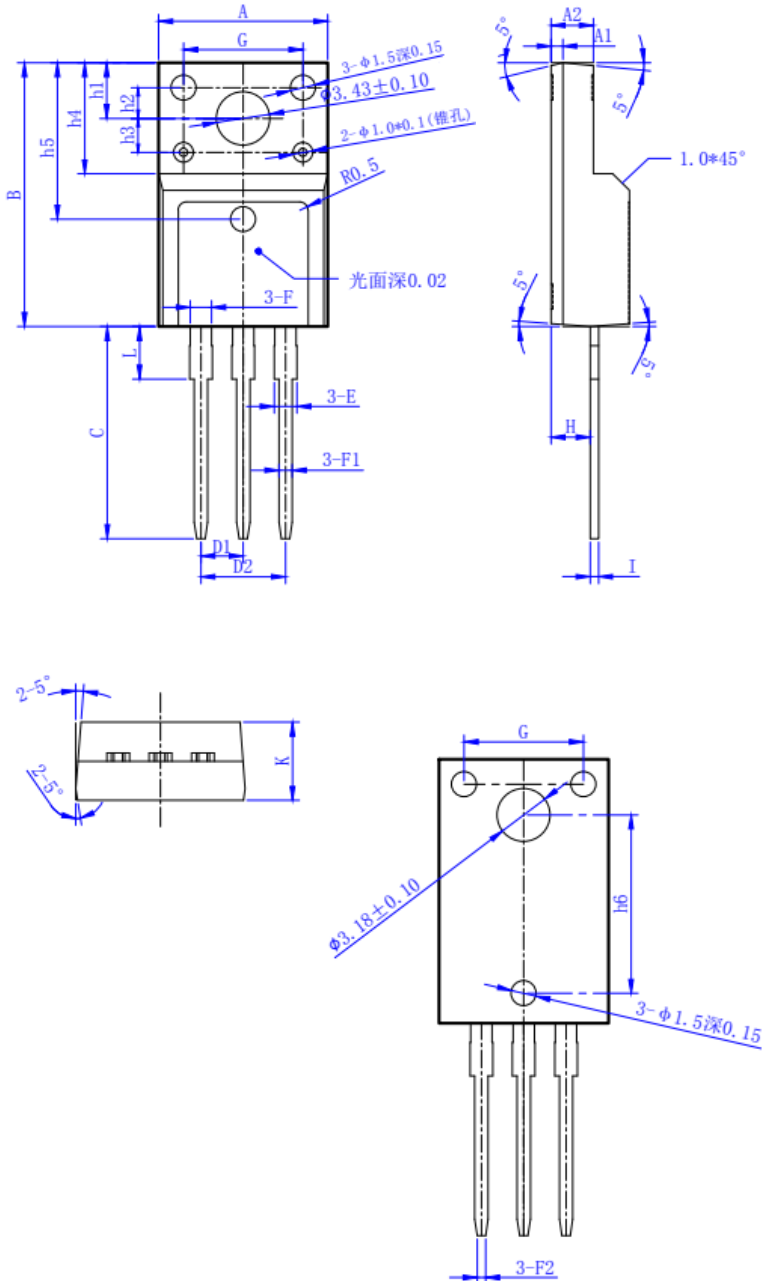


Figure 9. Typical Gate Charge vs. Gate to Source Voltage

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