

RTK10N80C

RTK10N80C – 800V 10A N-channel Si Power MOSFET

Features

- Proprietary New Planar Technology
- $R_{DS(ON)}$ (Typ)= 1.0Ω @ $V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

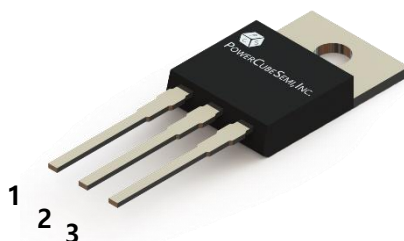
Applications

- ATX Power
- LCD Panel Power

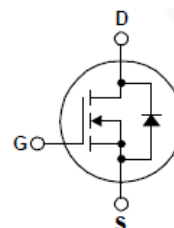
Pin Description

- 1 : Gate
2 : Drain
3 : Source

Part Number	Package	Note
RTK10N80C	TO-220	



PKG type : TO-220



Absolute Maximum Ratings $T_C=25^\circ\text{C}$ 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 ($V_{GS}=10V$)	$T_C=25^\circ\text{C}$	10	A
I_{DM}	Pulsed Drain Current	$T_C=25^\circ\text{C}$	30	A
P_D	Power dissipation	$T_C=25^\circ\text{C}$	160	W
E_{AS}	Avalanche Energy, Single Pulsed		460	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	$V_{GS} = 0V, I_D = 250\mu A$	800	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 800V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
$R_{DS(on)}$	Static Drain-Source on state resistance	$V_{GS} = 10V, I_D = 4A$	-	1.0	1.15	Ω

Dynamic Characteristics

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
C_{iss}	Input capacitance	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$	-	2900	-	pF
C_{oss}	Output capacitance		-	200	-	
C_{rss}	Reverse transfer capacitance		-	25	-	
$t_{d(on)}$	Turn-on Delay time	$V_{DS} = 400V, I_D = 10A, V_{GS} = 10V, R_G = 4.7\Omega$	-	19	-	ns
T_r	Turn-on Rise time		-	10	-	
$t_{d(off)}$	Turn-off Delay time		-	68	-	
T_f	Turn-off Fall time		-	23	-	

Gate Charge Characteristics

Symbol	Parameter	Test Condition	Numerical			Unit
			Min	Typ.	Max.	
$Q_{g(tot)}$	Total gate charge at 10V	$V_{DS} = 640V, I_D = 10A, V_{GS(on)} = 10V$	-	60	-	nC
Q_{gs}	Gate to source gate charge		-	13	-	
Q_{gd}	Gate to drain "Miller" charge		-	22	-	

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	$I_F=10A, V_{GS}=0V,$ $dI_F/dt=100A/\mu s$	200	-	ns
Q_{rr}	Reverse recovery charge		2.2	-	μC

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.54	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62.5	$^{\circ}C/W$

Typical Characteristics

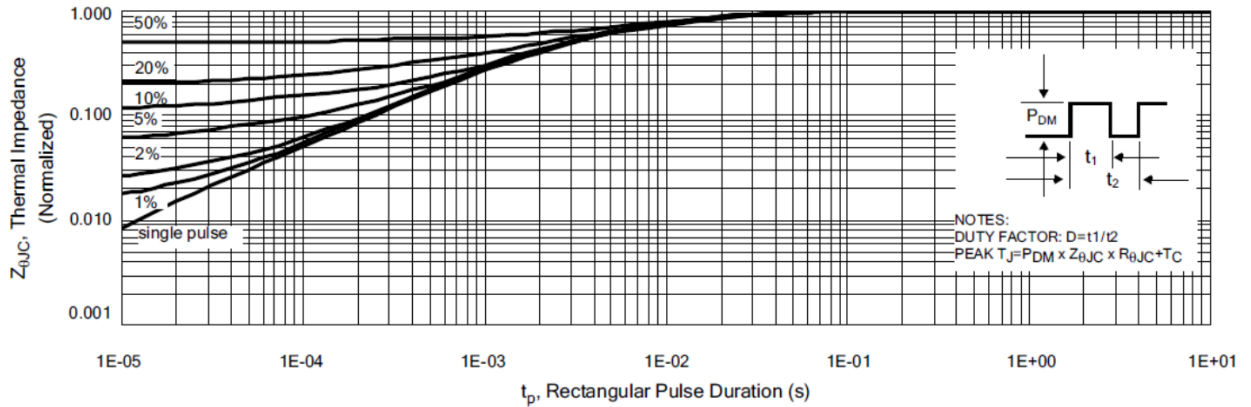


Figure 1. Maximum Effective Thermal Impedance, Junction to Case

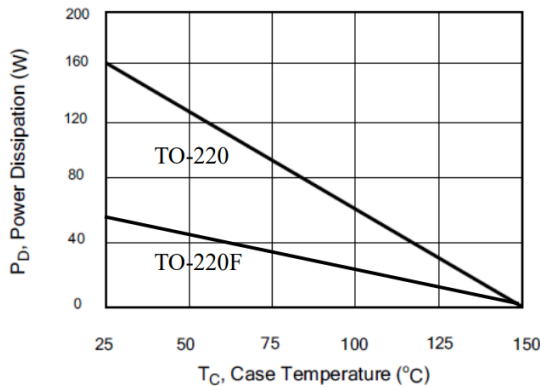


Figure 2. Maximum Power Dissipation vs. Case Temperature

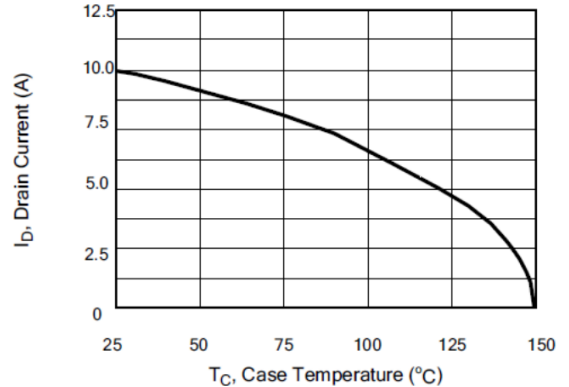


Figure 3. Maximum Continuous Drain Current vs. Case Temperature

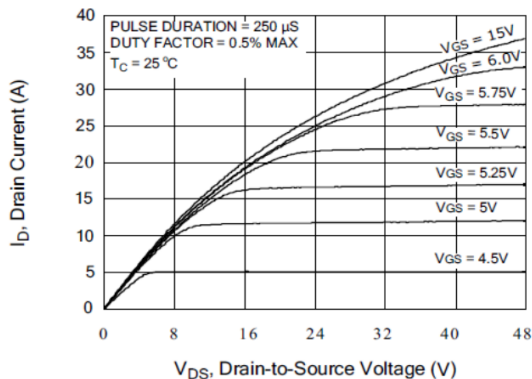


Figure 4. Typical Output Characteristics

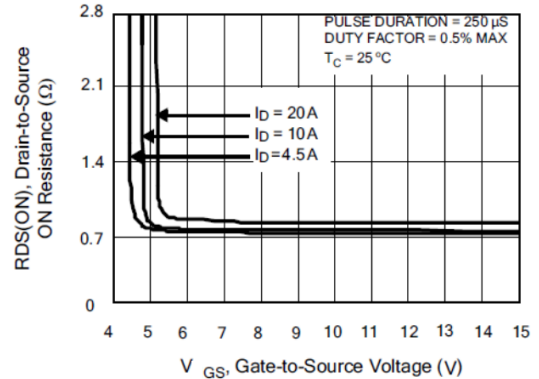


Figure 5. Typical Drain to Source On-Resistance vs. Gate Voltage and Drain Current

Typical Characteristics (Cont.)

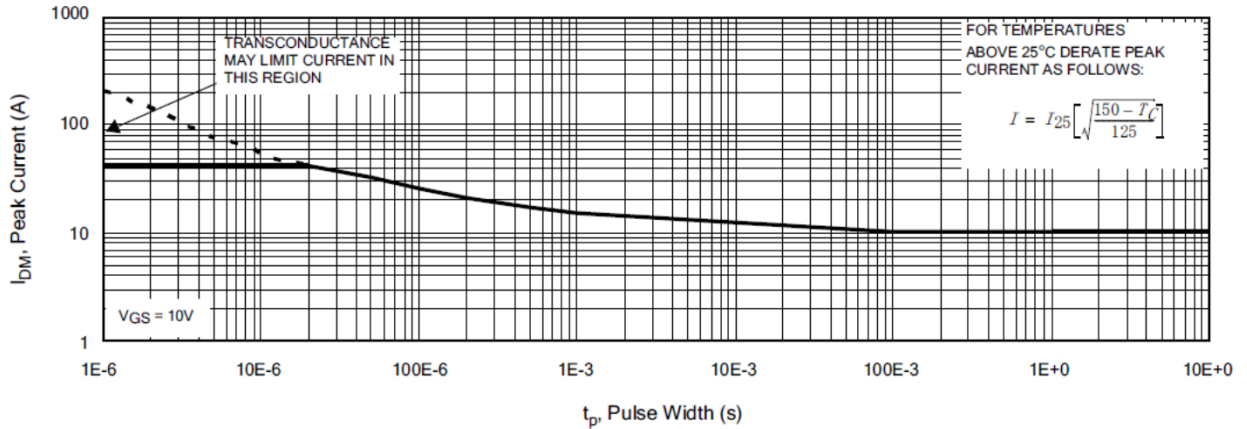


Figure 6. Maximum Peak Current Capability

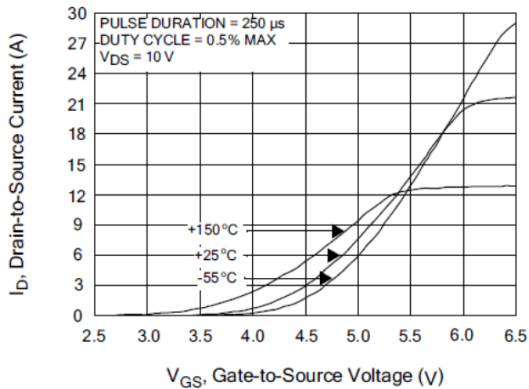


Figure 7. Typical Transfer Characteristics

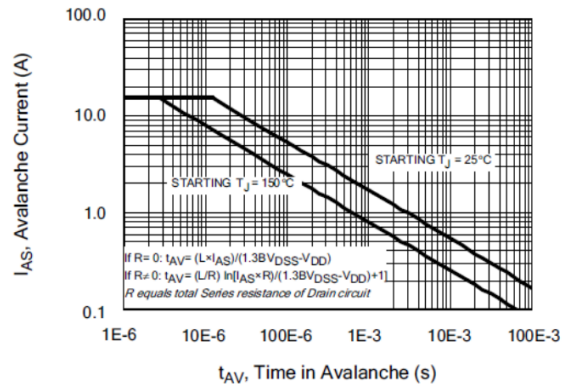


Figure 8. Unclamped Inductive Switching Capability

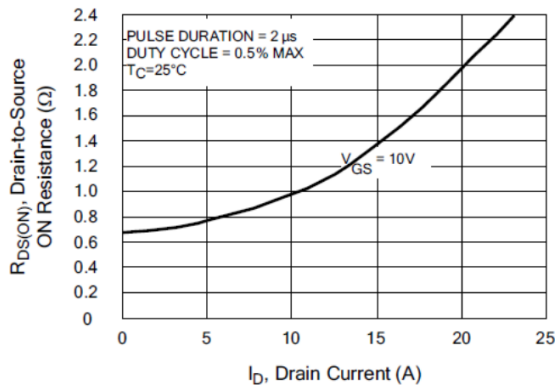


Figure 9. Typical Drain to Source On-Resistance vs. Drain Current

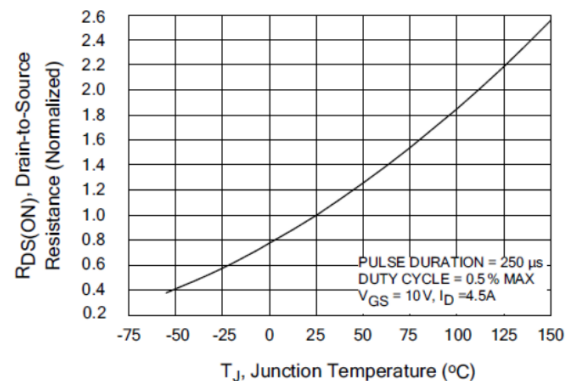


Figure 10. Typical Drain to Source On-Resistance vs. Junction Temperature

Typical Characteristics

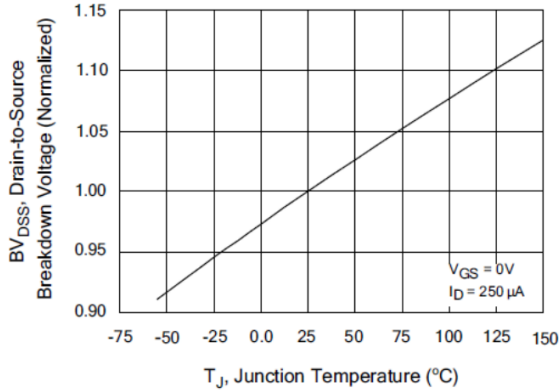


Figure 11. Typical Breakdown Voltage vs. Junction Temperature

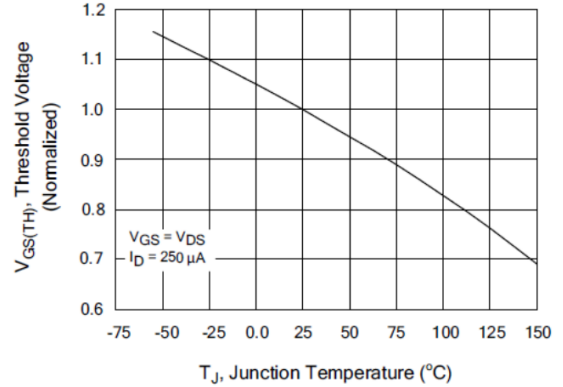


Figure 12. Typical Threshold Voltage vs. Junction Temperature

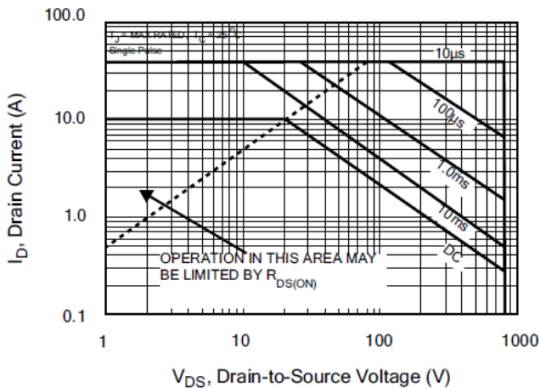


Figure 13. Maximum Forward Bias Safe Operating Area

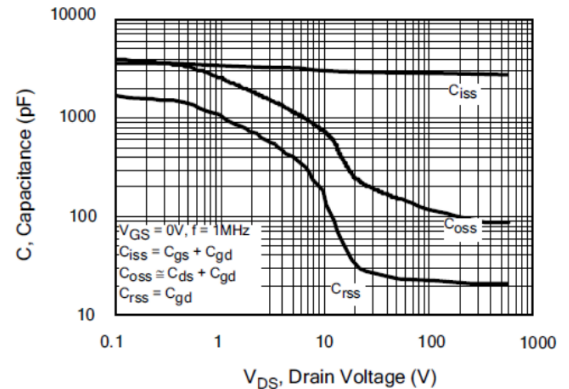


Figure 14. Typical Capacitance vs. Drain to Source Voltage

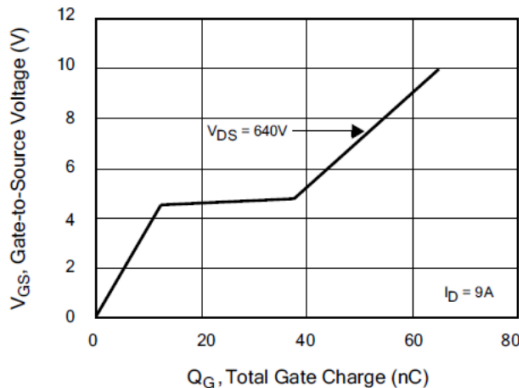


Figure 15. Typical Gate Charge vs. Gate to Source Voltage

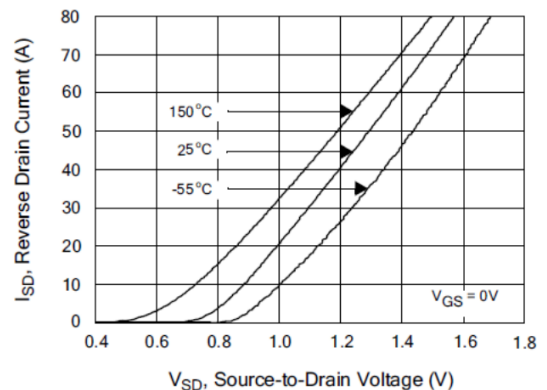
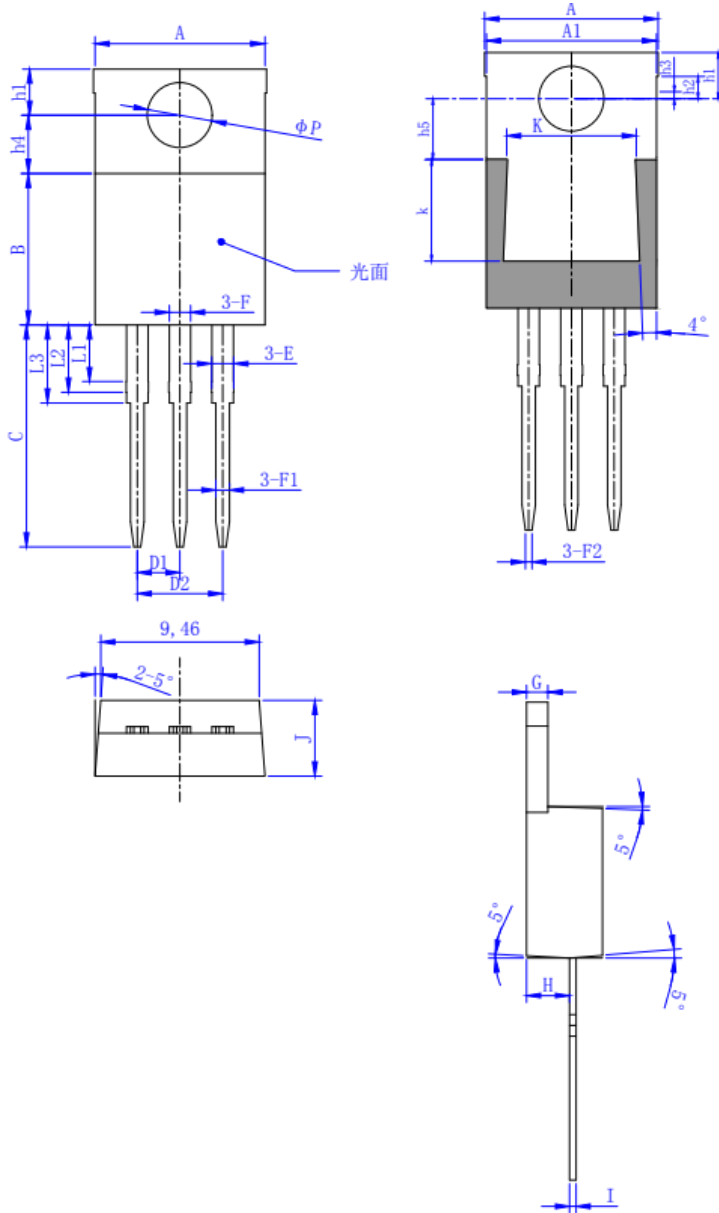


Figure 16. Typical Body Diode Transfer Characteristics

Package Outline

Unit : mm



SYMBOL	DIMENSIONS		
	MIN	NOM	MAX
A	10.1	10.3	10.5
A1	10.0	10.1	10.2
B	8.8	9.0	9.2
C	13.0	13.3	13.5
D1	2.54 BSC		
D2	5.08 BSC		
E	1.27	1.32	1.40
F	1.25	1.27	1.30
F1	0.75	0.80	0.85
F2	0.35	0.40	0.45
G	1.26	1.27	1.28
H	2.40	2.55	2.70
h1	2.70	2.74	2.80
h2	1.27	1.32	1.37
h3	0.40	0.42	0.45
h4	3.40	3.45	3.50
h5	3.60	3.63	3.65
I	0.35	0.38	0.45
J	4.45	4.50	4.60
K	7.60	7.70	7.80
k	6.00	6.03	6.05
L1	3.30	3.40	3.5
L2	3.90	4.00	4.10
L3	4.50	4.60	4.70
ΦP	3.75	3.80	3.90