

SK04N80B-TF

800V N-CHANNEL MOSFET

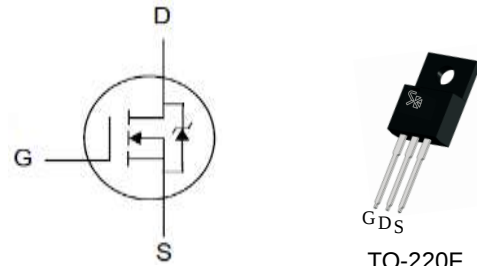
Description

- High Reliability Capability

BV_{DSS}	$R_{DS(ON),typ.}$	I_D
800V	3.7Ω	4A

Features

- $BV_{DSS} \geq 800V$
- $I_D = 4A$
- $R_{DS(ON)} \leq 4\Omega @ V_{GS}=10V$
- Low Gate Charge Minimize Switching Loss



Package No to Scale

Applications

- LED power supplies
- Cell Phone Charger
- Standby Power

Ordering Information

Part Number	Package
SK04N80B-TF	TO-220F

Absolute Maximum Ratings

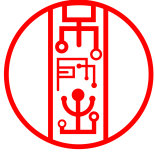
$T_A=25^{\circ}C$ unless otherwise specified

Symbol	Parameter		SK04N80B-TF	Unit
V_{DSS}	Drain-to-Source Voltage		800	V
V_{GSS}	Gate-to-Source Voltage		±30	V
I_D	Continuous Drain Current		4	A
P_D	Power Dissipation ^[2]	$T_C= 25^{\circ}C$	30	W
T_J & T_{STG}	Operating and Storage Temperature Range		-55 to +150	°C

Caution: Stresses greater than those listed in the “Absolute Maximum Ratings” may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	SK04N80B-TF	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	4.17	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	100	



Electrical Characteristics

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

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	800	--	--	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	--	--	1	μA	$V_{DS}=800V, V_{GS}=0V$
I_{GSS}	Gate-to-Source Leakage Current	--	--	+100	nA	$V_{GS}=+30V, V_{DS}=0V$
		--	--	-100		$V_{GS}=-30V, V_{DS}=0V$

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

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	3.7	4.0	Ω	$V_{GS}=10V, I_D=2A$
$V_{GS(TH)}$	Gate Threshold Voltage	2.0	--	4.0	V	$V_{DS}=V_{GS}, I_D=250\mu A$
gfs	Forward Transconductance	--	3	--	S	$V_{DS}=30V, I_D=2A$

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Rg	Gate Resistance	--	2.5	--	Ω	
C_{iss}	Input Capacitance	--	500	--	pF	$V_{GS}=0V, V_{DS}=25V, f=1MHz$
C_{rss}	Reverse Transfer Capacitance	--	6	--		
C_{oss}	Output Capacitance	--	55	--		
Q_g	Total Gate Charge	--	14	--	nC	$V_{DS}=400V, I_D=4A, V_{GS}=10V$
Q_{gs}	Gate-to-Source Charge	--	2	--		
Q_{gd}	Gate-to-Drain (Miller) Charge	--	7	--		

Source-Drain Body Diode Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	--	0.8	1.4	V	$I_S=2A, V_{GS}=0V$

Note: [1] Current may be limited by junction temperature.
[2] The power dissipation is limited by 150°C junction temperature.

Typical Characteristics

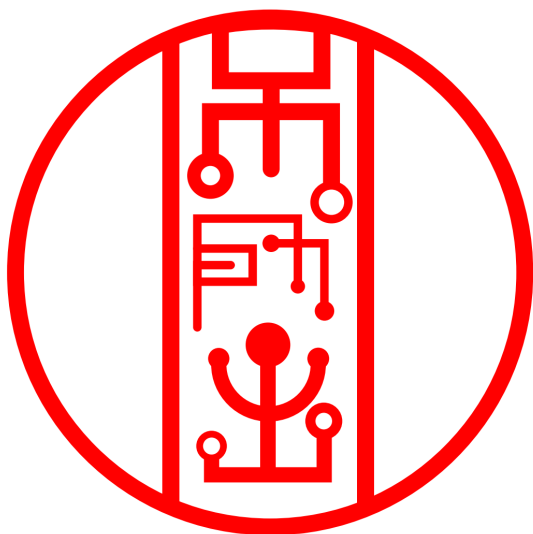


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

Figure 2. Transfer Characteristics

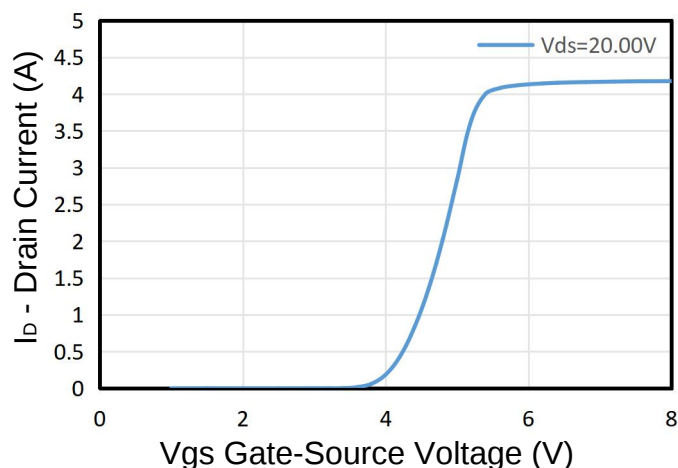


Figure 4. Body Diode Forward Voltage Variation with Source Current

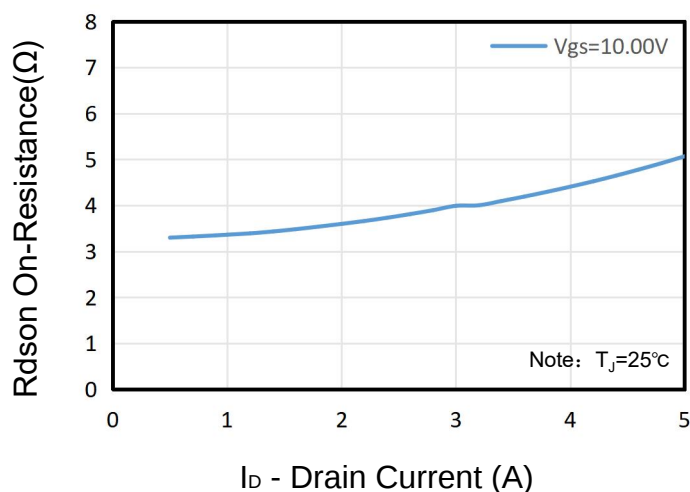
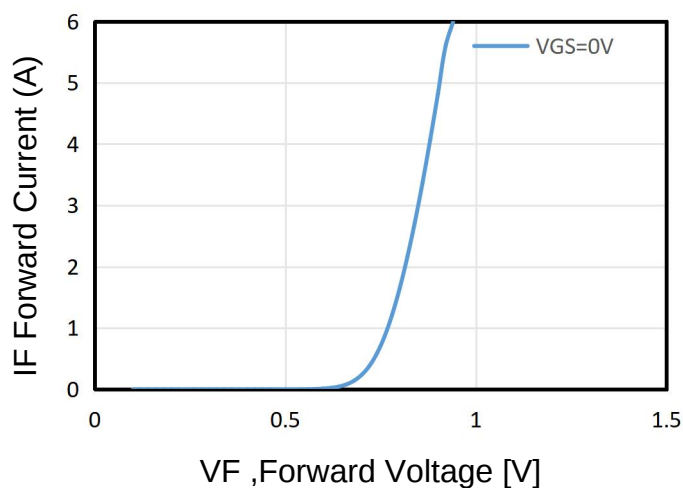
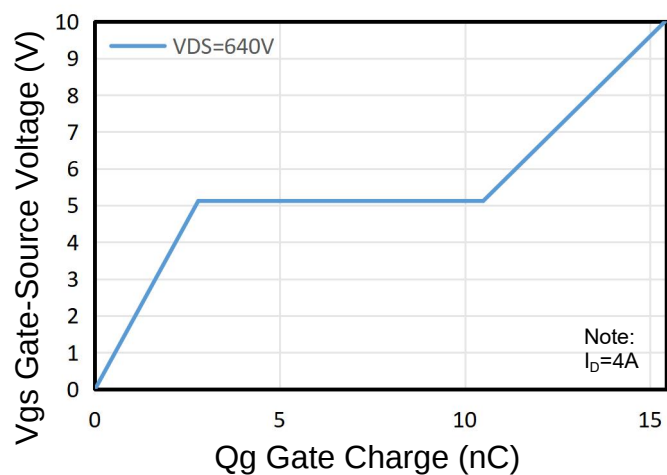
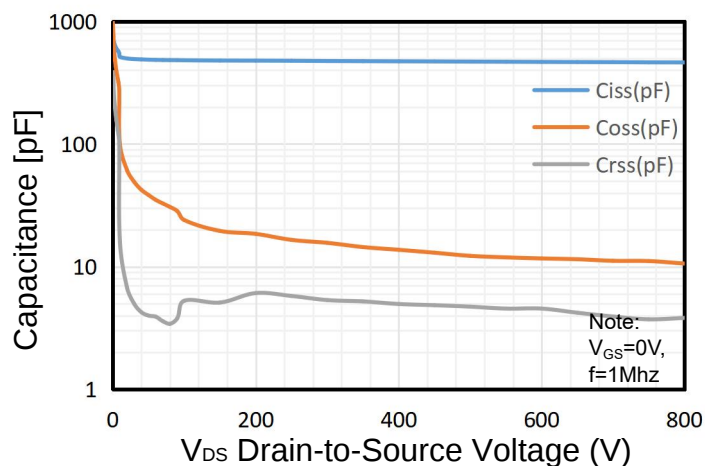
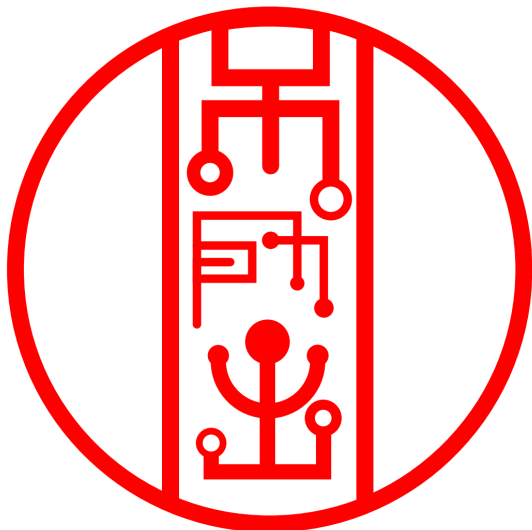


Figure 5. Capacitance Characteristics

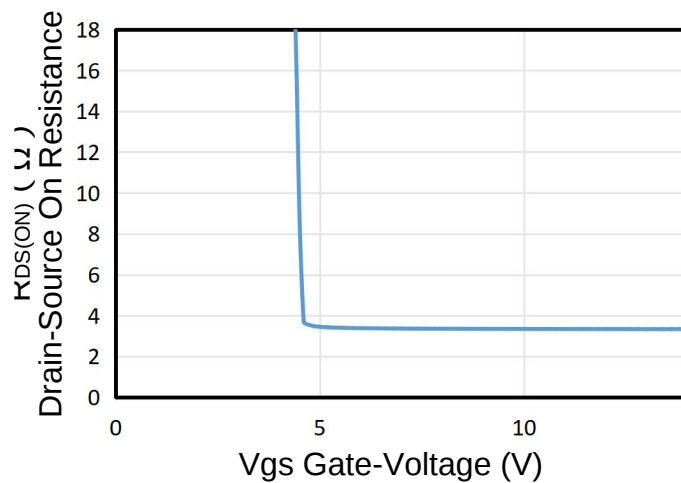
Figure 6. Gate Charge Characteristics

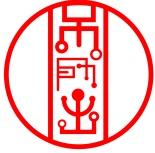


Typical Characteristics



**Figure 8. On-Resistance
vs Gate Voltage**

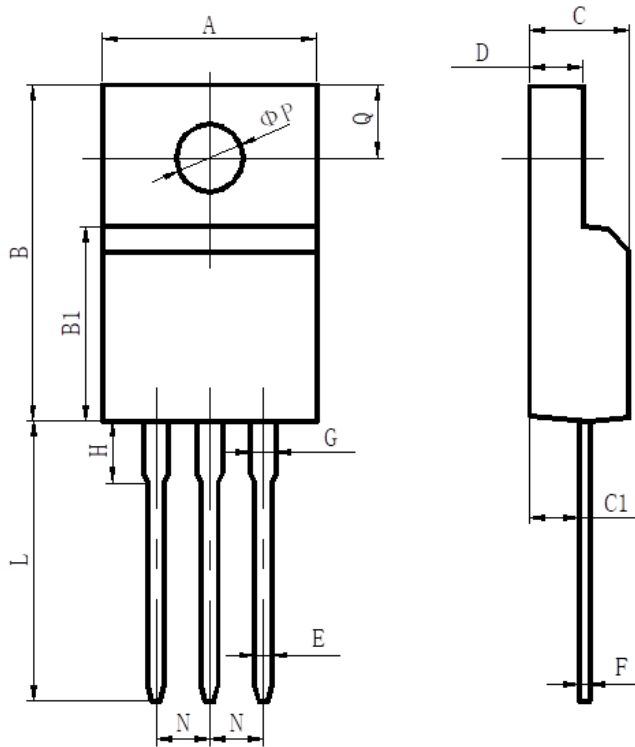




SK04N80B-TF

Package Outline

TO-220F



	Unit (mm)	
	MIN	MAX
A	9.70	10.30
B	15.50	16.10
B1	8.99	9.39
C	4.40	4.80
C1	2.15	2.55
D	2.50	2.90
E	0.70	0.90
F	0.40	0.60
G	1.12	1.42
H	3.40	3.80
L	12.6	13.6
N	2.34	2.74
Q	3.15	3.55
ΦP	3.00	3.30