

SK09N150-T7

1500V N-CHANNEL MOSFET

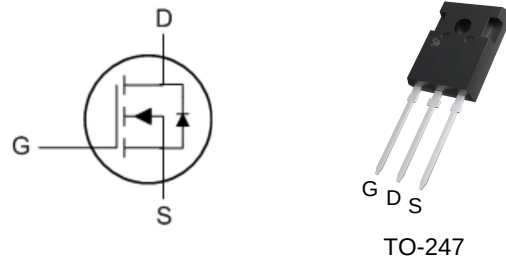
Description

- High speed switch
- Extremely low threshold voltage
- Ultra High Voltage
- Low On-Resistance

BV_{DSS}	$R_{DS(ON),max.}$	I_D
1500V	4.2Ω	9A

Features

- $BV_{DSS} \geq 1500V$
- $I_D = 9A$
- $R_{DS(ON)} \leq 4.2\Omega @ V_{GS}=10V$



Package No to Scale

Applications

- Portable appliances
- Hard switched and high frequency circuits
- Power management
- Uninterruptible power supply

Ordering Information

Part Number	Package
SK09N150-T7	TO-247

Absolute Maximum Ratings

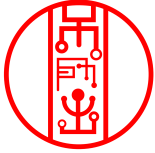
$T_A=25^{\circ}C$ unless otherwise specified

Symbol	Parameter		SK09N150-T7	Unit
V_{DSS}	Drain-to-Source Voltage		1500	V
V_{GSS}	Gate-to-Source Voltage		±30	V
I_D	Continuous Drain Current		9	A
P_D	Power Dissipation ^[2]	$T_C = 25^{\circ}C$	320	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	SK09N150-T7	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.39	°C/W



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	1500	--	--	V	$V_{GS}=0V, I_D=250\mu A$
I_{DSS}	Drain-to-Source Leakage Current	--	--	1	μA	$V_{DS}=1500V, V_{GS}=0V$
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	--	--	4.2	Ω	$V_{GS}=10V, I_D=5.4A$
$V_{GS(TH)}$	Gate Threshold Voltage	2.5	3.5	4.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
gfs	Forward Transconductance	--	6	--	S	$V_{DS}=15V, I_D=4A$

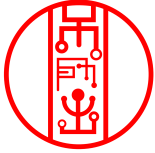
Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Rg	Gate Resistance	--	1.2	--	Ω	
C_{iss}	Input Capacitance	--	3540	--	pF	$V_{GS}=0V,$ $V_{DS}=25V,$ $f=1MHz$
C_{rss}	Reverse Transfer Capacitance	--	21	--		
C_{oss}	Output Capacitance	--	182	--		
Q_g	Total Gate Charge	--	82	--	nC	$V_{DS}=750V,$ $I_D=9A, V_{GS}=10V$
Q_{gs}	Gate-to-Source Charge	--	17	--		
Q_{gd}	Gate-to-Drain (Miller) Charge	--	34.5	--		

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	--	0.87	1.5	V	$I_S=9A, V_{GS}=0V$

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



Typical Characteristics

Figure 1. On-Region Characteristics

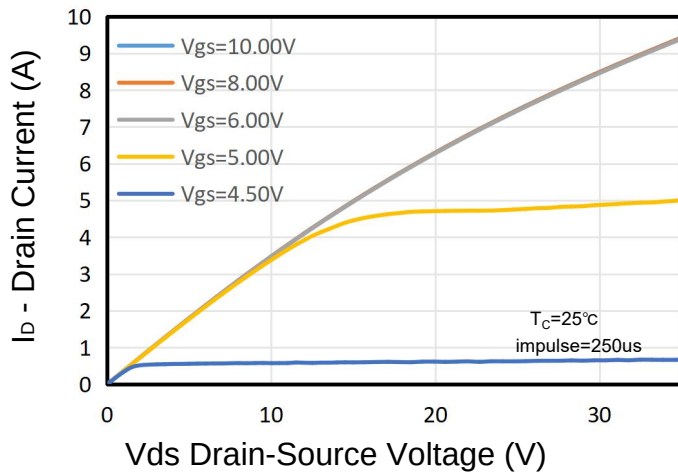


Figure 2. Transfer Characteristics

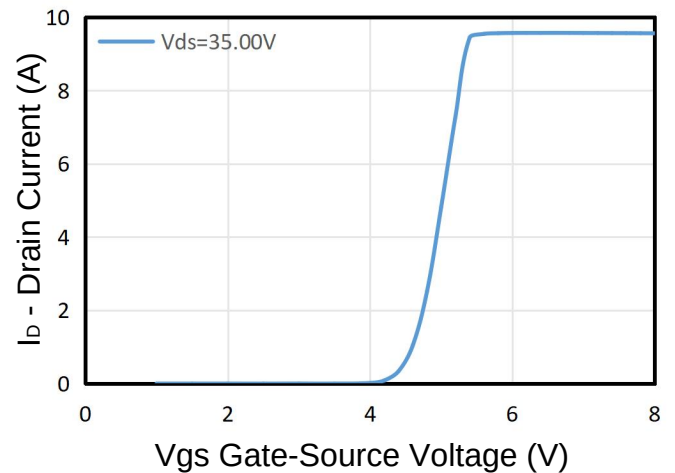


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

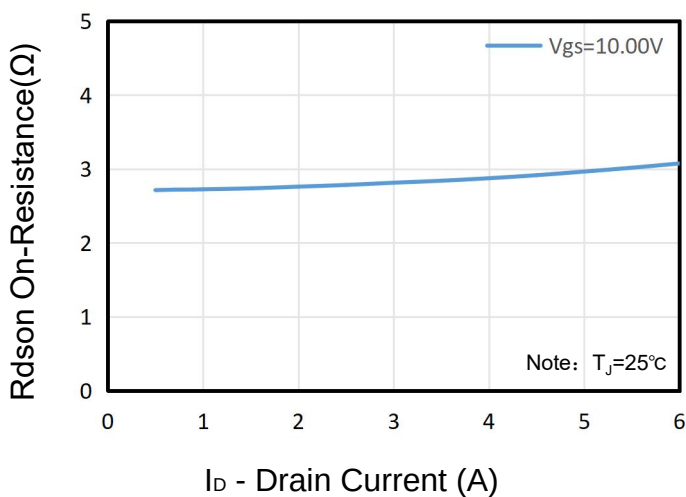


Figure 4. Body Diode Forward Voltage Variation with Source Current

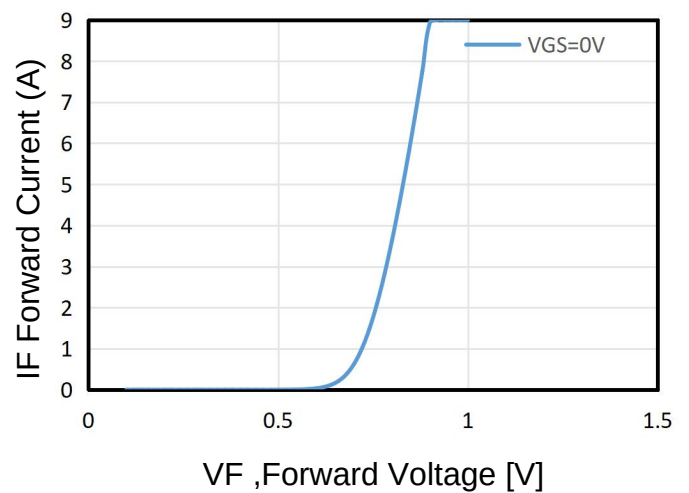


Figure 5. Capacitance Characteristics

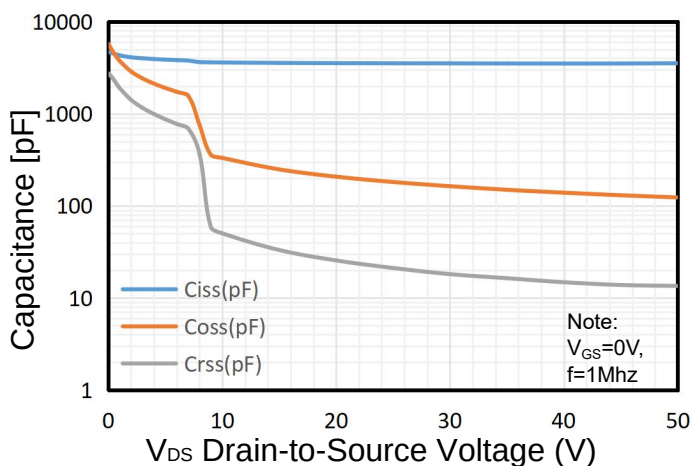
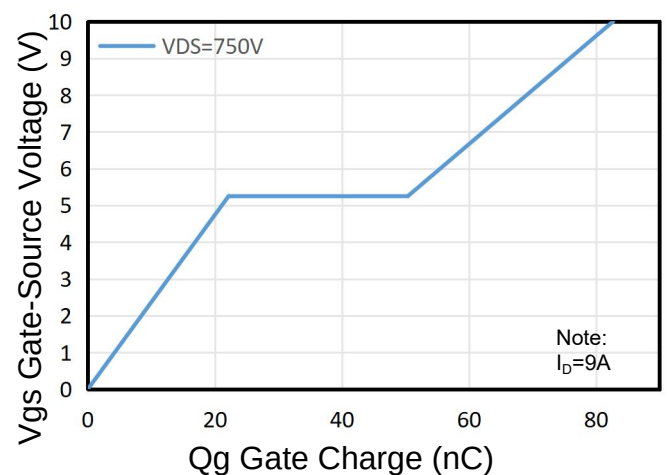
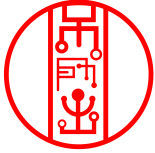


Figure 6. Gate Charge Characteristics





Typical Characteristics

Figure 7. Vds Drain-Source Voltage vs Gate Voltage

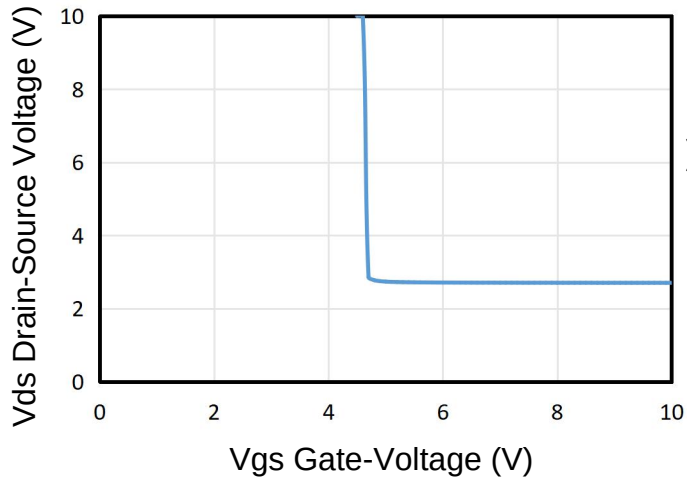
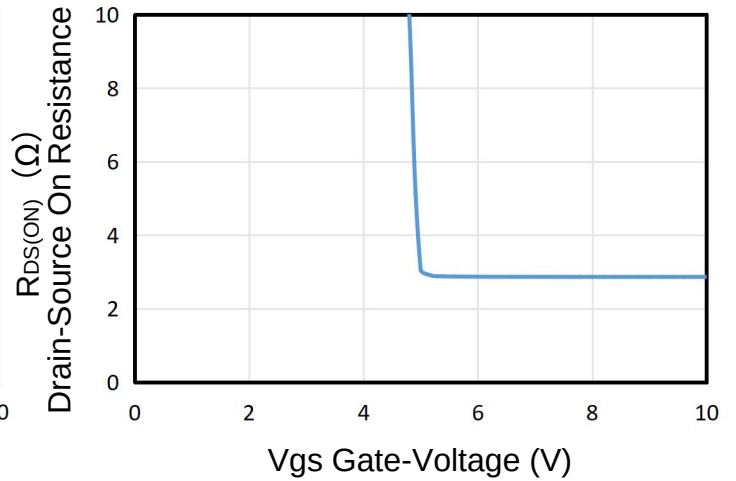
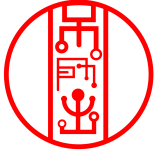


Figure 8. On-Resistance vs Gate Voltage

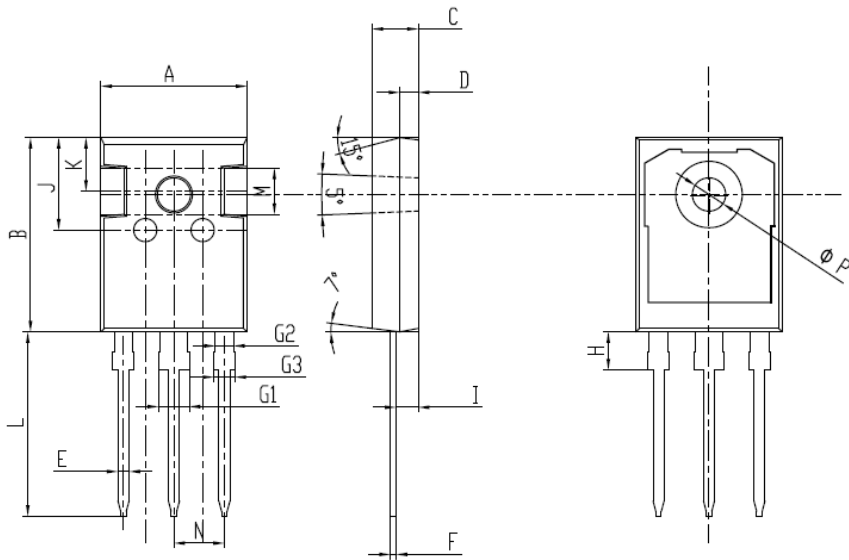




SK09N150-T7

Package Outline

TO-247



	(mm)	
	MIN	MAX
A	15.70	15.90
B	20.90	21.10
C	4.90	5.10
D	1.90	2.10
E	1.10	1.30
F	0.45	0.75
G1	3.00	3.20
G2	1.85	2.15
G3	2.00	2.20
H	4.00	4.30
I	2.30	2.50
J	9.90	10.10
K	5.70	5.90
L	19.80	20.20
M	4.85	5.15
N	5.286	5.586
ϕP	3.40	3.60