

40V N-Ch Power MOSFET

Features:

- ◇ High Speed Power Switching, Logic Level
- ◇ Enhanced Body diode dv/dt capability
- ◇ Enhanced Avalanche Ruggedness
- ◇ 100% UIS Tested, 100% Rg Tested
- ◇ Lead Free, Halogen Free

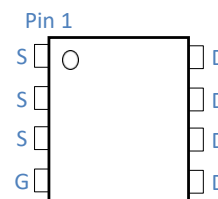
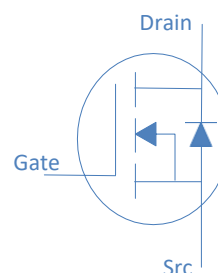
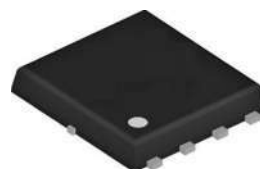
Application:

- ◇ Synchronous Rectification in SMPS
- ◇ Hard Switching and High Speed Circuit
- ◇ DC/DC in Telecoms and Industrial

V_{DS}		40	V
$R_{DS(on),typ}$	$V_{GS}=10V$	1.3	m Ω
$R_{DS(on),typ}$	$V_{GS}=4.5V$	2.2	m Ω
I_D (Silicon Limited)		160	A
I_D (Package Limited)		100	A

Part Number	Package	Marking
KPRGN014N04AL	DFN5*6	GN014N04AL

DFN5*6



Absolute Maximum Ratings at $T_J=25^{\circ}C$ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current(Silicon Limited)	I_D	$T_C=25^{\circ}C$	160	A
		$T_C=100^{\circ}C$	101	
		$T_C=25^{\circ}C$	100	
Continuous Drain Current(Package Limited)				
Drain to Source Voltage	V_{DS}	-	40	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	560	A
Avalanche Energy, Single Pulse	E_{AS}	$L=0.1mH, T_C=25^{\circ}C$	101	mJ
Power Dissipation	P_D	$T_C=25^{\circ}C$	74	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 150	$^{\circ}C$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	55	$^{\circ}C/W$
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.7	$^{\circ}C/W$

Electrical Characteristics at $T_j=25^{\circ}\text{C}$ (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.7	3	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=40V, T_j=25^{\circ}\text{C}$	-	-	1	μA
		$V_{GS}=0V, V_{DS}=40V, T_j=100^{\circ}\text{C}$	-	-	100	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	1.3	1.55	$m\Omega$
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=20A$	-	2.2	2.65	$m\Omega$
Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$	-	70	-	S
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}$ Open, $f=1\text{MHz}$	-	1.6	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=20V, f=1\text{MHz}$	-	2648	-	pF
Output Capacitance	C_{oss}		-	1047	-	
Reverse Transfer Capacitance	C_{rss}		-	125	-	
Total Gate Charge	$Q_g(10V)$	$V_{DD}=20V, I_D=20A, V_{GS}=10V$	-	54	-	nC
Total Gate Charge	$Q_g(4.5V)$		-	30	-	
Gate to Source Charge	Q_{gs}		-	8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	15	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=20V, I_D=20A, V_{GS}=10V$	-	14	-	ns
Rise time	t_r		-	10	-	
Turn off Delay Time	$t_{d(off)}$		-	31	-	
Fall Time	t_f		-	10	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=20A$	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	$V_R=20V, I_F=20A, dI_F/dt=100A/\mu s$	-	42	-	ns
Reverse Recovery Charge	Q_{rr}		-	38	-	nC