

150V N-Ch Power MOSFET

Feature

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

Application

- ◇ Synchronous Rectification in SMPS
- ◇ Hard Switching and High Speed Circuit
- ◇ Power Tools
- ◇ UPS
- ◇ Motor Control

V_{DS}		150	V
$R_{DS(on),typ}$	TO-263	5.75	mΩ
$R_{DS(on),typ}$	TO-247	5.92	mΩ
$R_{DS(on),typ}$	TO-220	6.0	mΩ
I_D		170	A

Part Number	Package	Marking
HGB072N15S	TO-263	GB072N15S
HGK072N15S	TO-247	GK072N15S
HGP072N15S	TO-220	GP072N15S

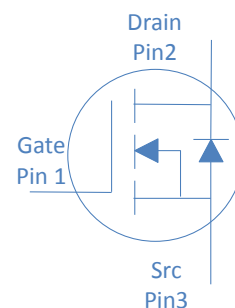
TO-263



TO-220



TO-247



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

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current	I_D	$T_C=25^{\circ}\text{C}$	170	A
		$T_C=100^{\circ}\text{C}$	120	
Drain to Source Voltage	V_{DS}	-	150	V
Gate to Source Voltage	V_{GS}	-	± 20	V
Pulsed Drain Current	I_{DM}	-	550	A
Avalanche Energy, Single Pulse	E_{AS}	$L=0.4\text{mH}, T_C=25^{\circ}\text{C}$	1620	mJ
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$	429	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 175	$^{\circ}\text{C}$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.35	$^{\circ}\text{C}/\text{W}$
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	60	$^{\circ}\text{C}/\text{W}$

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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	150	-	-	V	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2	3	4		
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=150V, T_j=25^\circ\text{C}$	-	-	1	μA	
		$V_{GS}=0V, V_{DS}=150V, T_j=100^\circ\text{C}$	-	-	100		
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA	
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	TO-263	-	5.8	6.9	m Ω
			TO-247	-	5.9	7.1	
			TO-220	-	6.0	7.2	
Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$	-	120	-	S	
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}$ Open, $f=1\text{MHz}$	-	0.7	-	Ω	

Dynamic Characteristics

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=75V, f=1\text{MHz}$	-	7200	-	pF
Output Capacitance	C_{oss}		-	525	-	
Reverse Transfer Capacitance	C_{rss}		-	20	-	
Total Gate Charge	Q_g	$V_{DD}=75V, I_D=20A, V_{GS}=10V$	-	110	-	nC
Gate to Source Charge	Q_{gs}		-	23	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	16	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=75V, I_D=20A, V_{GS}=10V,$ $R_G=10\Omega,$	-	TBD	-	ns
Rise time	t_r		-	TBD	-	
Turn off Delay Time	$t_{d(off)}$		-	TBD	-	
Fall Time	t_f		-	TBD	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=20A$	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	$V_R=75V, I_F=30A, di_F/dt=100A/\mu s$	-	TBD	-	ns
Reverse Recovery Charge	Q_{rr}		-	TBD	-	nC