120V N-Ch Power MOSFET

8.3 mΩ
TO-220 8.6 mΩ
I_D (Sillicon Limited)

Part Number 100[illegible] Package Marking
TO-263 GB100N12S
HGP100N12S TO-220 GP100N12S

Absolute Maximum Ratings at T_j=25 (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
				V
		-	±20	
Pulsed Drain Current	I_{DM}	-	300	
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25	320	mJ
Power Dissipation	P_D	T_C=25	214	
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.7	/W
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	50	/W

Electrical Characteristics at T_j=25 (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=250μA		120	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA		2	3	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=120V, T_j=25		-	-	1	μA
		V_{GS}=0V, V_{DS}=120V, T_j=100		-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V		-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	TO-263	-	8.3	9.7	mΩ
			TO-220	-	8.6	10	
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A		-	65	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz		-	3.5	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=60V, f=1MHz	-	4470	-	pF
Output Capacitance	C_{oss}		-	235	-	
Reverse Transfer Capacitance	C_{rss}		-	9.5	-	
Total Gate Charge	Q_g	V_{DD}=60V, I_D=20A, V_{GS}=10V	-	56	-	nC
Gate to Source Charge	Q_{gs}		-	18	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	6	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=60V, I_D=20A, V_{GS}=10V, R_G=10Ω,	-	16	-	ns
Rise time	t_r		-	21	-	
Turn off Delay Time	$t_{d(off)}$		-	38	-	
Fall Time	t_f		-	19	-	

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=60V, I_F=20A, dI_F/dt=500A/μs	-	70	-	ns
Reverse Recovery Charge	Q_{rr}		-	600	-	nC

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

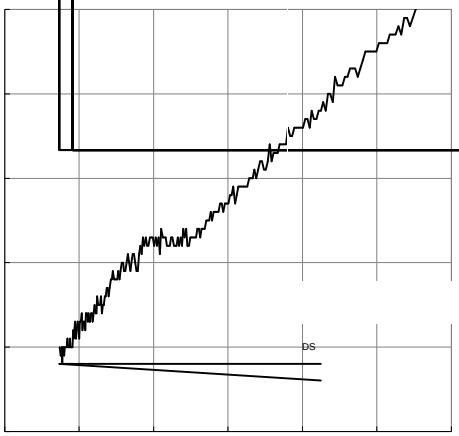


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

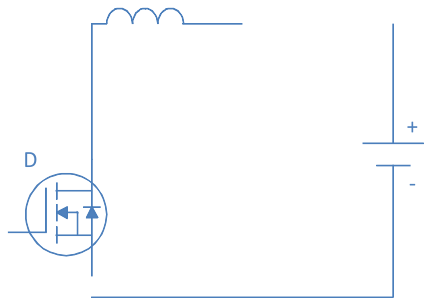
Figure 9. Maximum Safe Operating Area

Figure 10. Maximun Drain Current vs. Case Temperature

Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

Inductive switching Test	

Gate Charge Test	

Uclamped Inductive Switching (UIS) Test	
	

Diode Recovery Test	

Package Outline

TO-220, 3 leads

Dimentions in mm unless otherwise specified

Symbol	Min	Nom	Max
A	9.66	9.97	10.28
A2	9.80	10.00	10.20
B	15.60	15.70	15.80
C	12.70	13.48	14.27
D	4.30	4.50	4.70
E	9.00	9.20	9.40
F		2.54	
G1	1.32	1.52	1.72
G2	0.70	0.82	0.95
G3	0.45	0.52	0.60
H	3.50	3.60	3.70
I	2.70	2.80	2.90
J	15.70	15.97	16.25
K	2.20	2.40	2.60
L	1.15	1.27	1.40
N	6.40	6.60	6.80

TO-263, 2 leads

Dimentions in mm unless otherwise specified

Symbol	Min	Nom	Max
A	9.66	9.97	10.28
B	1.02	1.17	1.32
C	8.59	9.00	9.40
D1	1.14	1.27	1.40
D2	0.70	0.83	0.95
D3		5.08	
E	15.09	15.24	15.39
F	1.15	1.28	1.40
G	4.30	4.50	4.70
H	2.29	2.54	2.79
I		0.25	
K	1.30	1.45	1.60
a1	0.45	0.55	0.65
a2(degree)	0°		8°