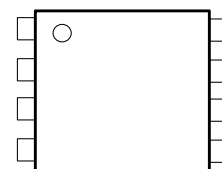
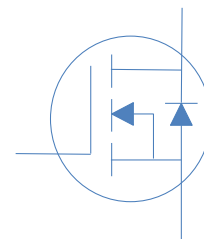
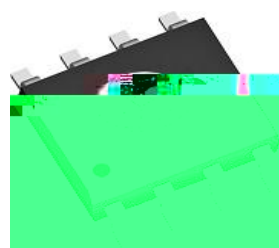


## 100V N-Ch Power MOSFET



$V_{DS}$		100	V
$R_{DS(on),typ}$	$V_{GS}=10V$	9.5	m
$R_{DS(on),typ}$	$V_{GS}=4.5V$	11.5	m
$I_D$		12	A



Part Number	Package	Marking
HGS120N10SL	SOIC-8	GS120N10SL

### Absolute Maximum Ratings at $T_C=5^\circ C$

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current	$I_D$	$T_C=5^\circ C$	12	A
		$T_C=5^\circ C$	8	
Drain to Source Voltage	$V_{DS}$	-	100	V
Gate to Source Voltage	$V_{GS}$	-	20	V
Pulsed Drain Current	$I_{DM}$	-	60	A
Avalanche Energy, Single Pulse	$E_{AS}$	$L=0.1mH, T_C=5^\circ C$	22	mJ
Power Dissipation	$P_D$	$T_C=5^\circ C$	3.1	W
Operating and Storage Temperature	$T_J, T_{stg}$	-	-55 to 150	

### Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Lead	$R_{JL}$	23	
Thermal Resistance Junction-Ambient (steady state)	$R_{JA}$	40	
		75	

**Electrical Characteristics at T<sub>J</sub>5 -**
**a      aa !**
**Static Characteristics**

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250 A$	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250 A$	1.4	1.9	2.4	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=100V, T_J5 -$	-	-	1	A
		$V_{GS}=0V, V_{DS}=100V, T_J5$	-	-	100	
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}5 \quad V_{DS}=0V$	-	-	100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=12A$	-	9.5	12	m
		$V_{GS}=4.5V, I_D=10A$	-	11.5	15	
Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=12A$	-	45	-	S
Gate Resistance	$R_G$	$V_{GS}=0V, V_{DS} \text{ Open}, f=1MHz$	-	1.5	-	

**Dynamic Characteristics**

Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=50V, f=1MHz$	-	2275	-	pF
Output Capacitance	$C_{oss}$		-	162	-	
Reverse Transfer Capacitance	$C_{riss}$		-	7.9	-	
Total Gate Charge	$Q_g(10V)$	$V_{DD}=50V, I_D=14A, V_{GS}=10V$	-	29	-	nC
Total Gate Charge	$Q_g(4.5V)$		-	14	-	
Gate to Source Charge	$Q_{gs}$		-	5	-	
Gate to Drain (Miller) Charge	$Q_{gd}$		-	5	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=14A, V_{GS}=10V, R_G=10 \quad ,$	-	8	-	ns
Rise time	$t_r$		-	3	-	
Turn off Delay Time	$t_{d(off)}$		-	26	-	
Fall Time	$t_f$		-	4	-	

**Reverse Diode Characteristics**

Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_F=12A$	-	0.9	1.2	V
Reverse Recovery Time	$t_{rr}$	$V_R=50V, I_F=12A, di_F/dt=500A/ s$	-	33	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	157	-	nC

Fig 1. Typical Output Characteristics

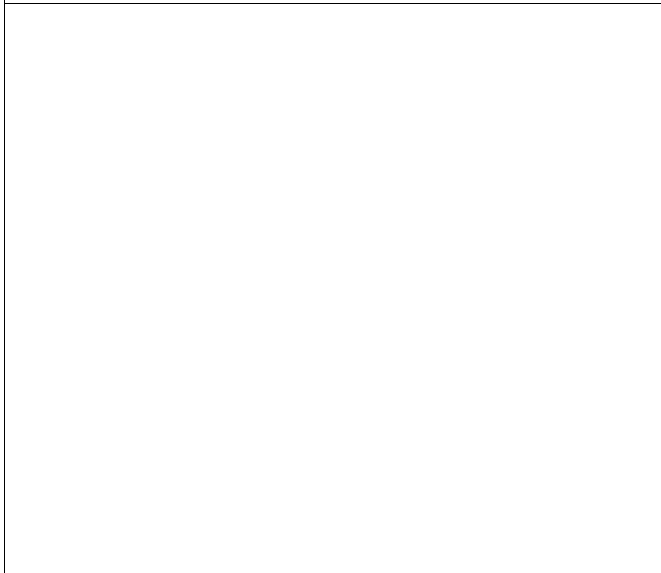


Figure 2. On-Resistance vs. Gate-Source Voltage

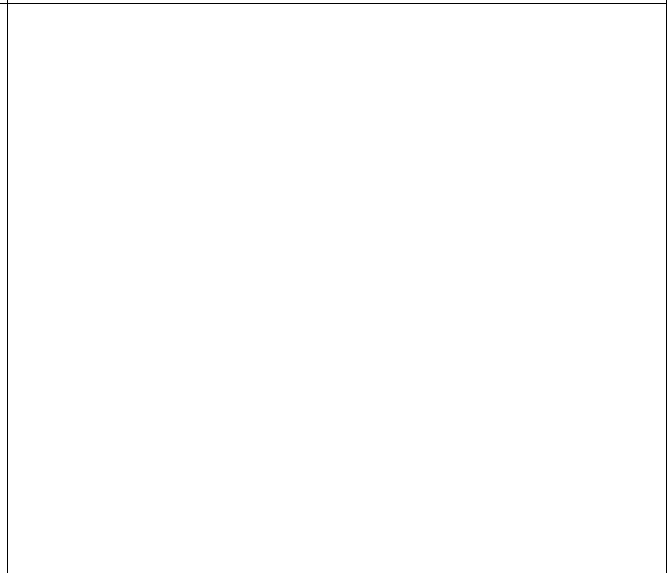


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

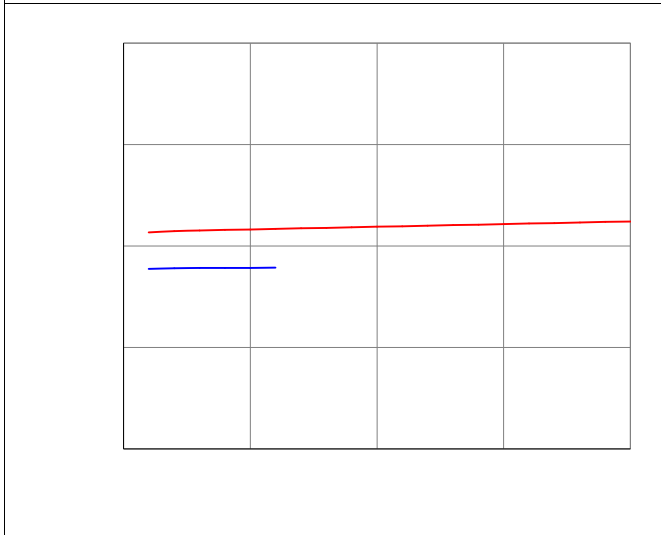


Figure 4. Normalized On-Resistance vs. Junction Temperature

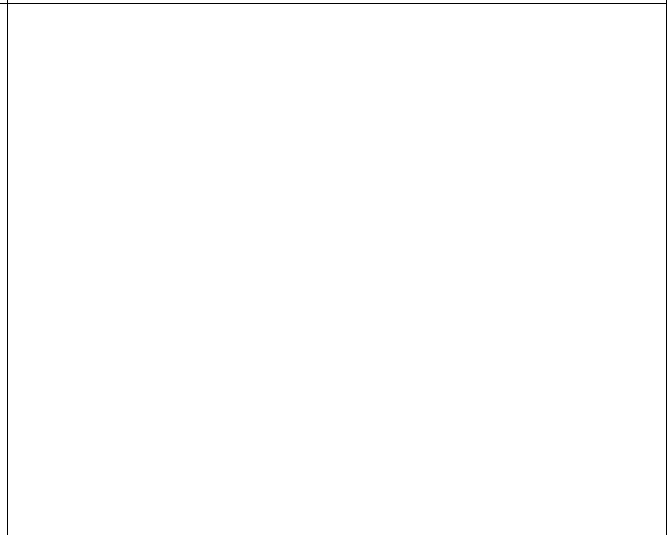


Figure 5. Typical Transfer Characteristics

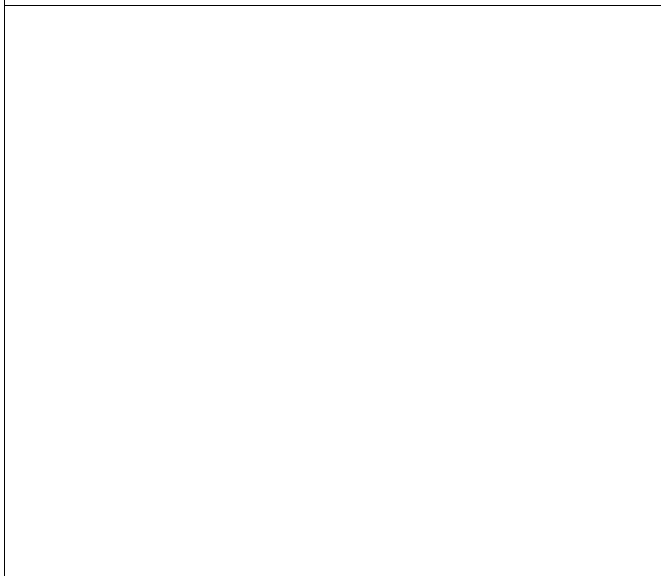


Figure 6. Typical Source-Drain Diode Forward Voltage

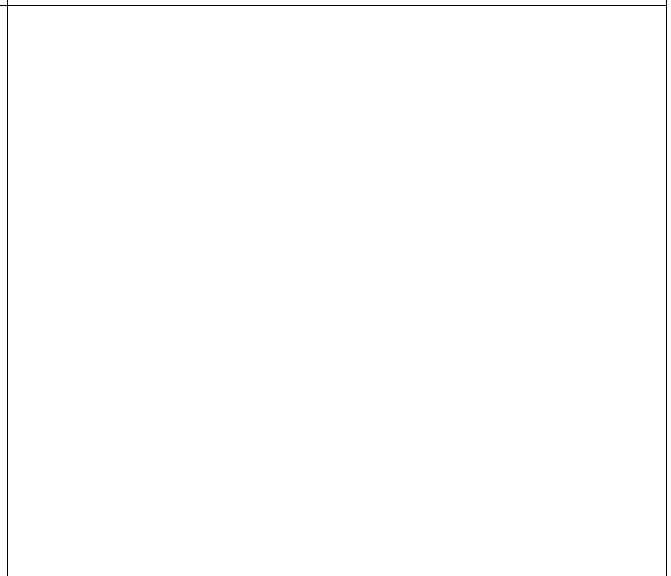


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage



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

Figure 9. Maximum Safe Operating Area

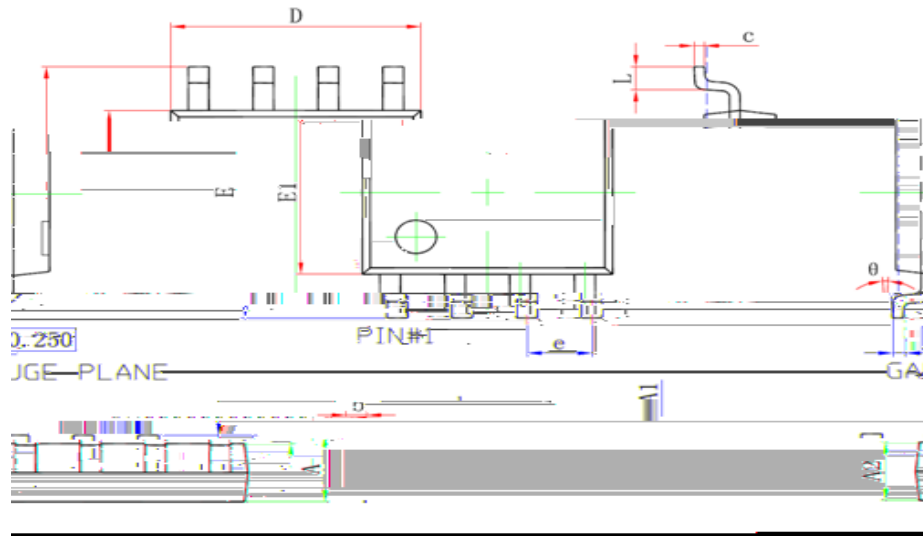
Figure 10. Maximum Drain Current vs. Case Temperature

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



Package Outline

SOIC-8, 8 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.250	1.650	0.049	0.065
b	0.310	0.510	0.012	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (SBC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.031
theta	0°	8°	0°	8°