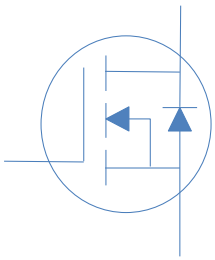
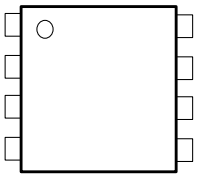
60V N-Ch Power MOSFET

V_{DS}		60	V
$R_{DS(on),typ}$	V_{GS}=10V	1.7	m
$R_{DS(on),typ}$	V_{GS}=4.5V	2.3	m
$I_{D\ (Sillicon\ Limited)}$		172	A
$I_{D\ (Package\ Limited)}$		85	A



Part Number	Package	Marking
HGN021N06SL	DFN5*6	GN021N06SL



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

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C=25	172	A
		T_C=100	109	
Continuous Drain Current (Package Limited)		T_C=25	85	
Drain to Source Voltage	V_{DS}	-	60	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	400	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25	320	mJ
Power Dissipation	P_D	T_C=25	114	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	R_{JA}	55	/W
Thermal Resistance Junction-Case	R_{JC}	1.1	/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=250 A	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	1.0	1.6	2.4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=60V, T_j=25	-	-	1	A
		V_{GS}=0V, V_{DS}=60V, 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	-	1.7	2.1	m
		V_{GS}=4.5V, I_D=20A	-	2.3	3.2	
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	60	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	2.0	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz	-	4424	-	pF
Output Capacitance	C_{oss}		-	1670	-	
Reverse Transfer Capacitance	C_{rss}		-	73	-	
Total Gate Charge	Q_g(10V)	V_{DD}=30V, I_D=20A, V_{GS}=10V	-	76	-	nC
Total Gate Charge	Q_g(4.5V)		-	36	-	
Gate to Source Charge	Q_{gs}		-	9	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	15	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=30V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	14	-	ns
Rise time	t_r		-	11	-	
Turn off Delay Time	$t_{d(off)}$		-	58	-	
Fall Time	t_f		-	17	-	

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=30V, I_F=20A, dI_F/dt=300A/ s	-	44	-	ns
Reverse Recovery Charge	Q_{rr}		-	88	-	nC

Fig 1. Typical Output Characteristics

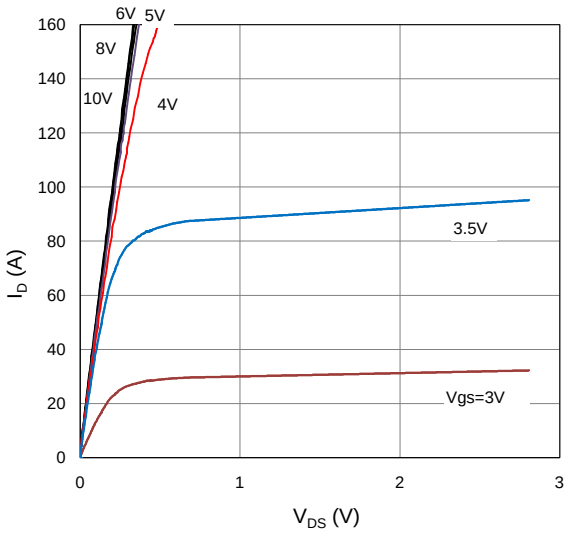


Figure 2. On-Resistance vs. Gate-Source Voltage

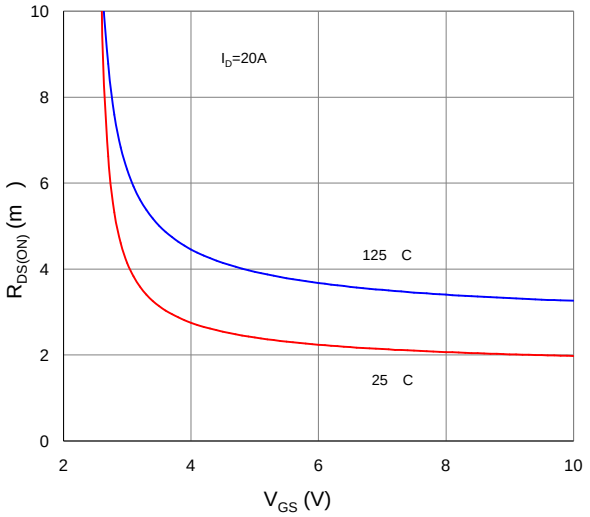


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

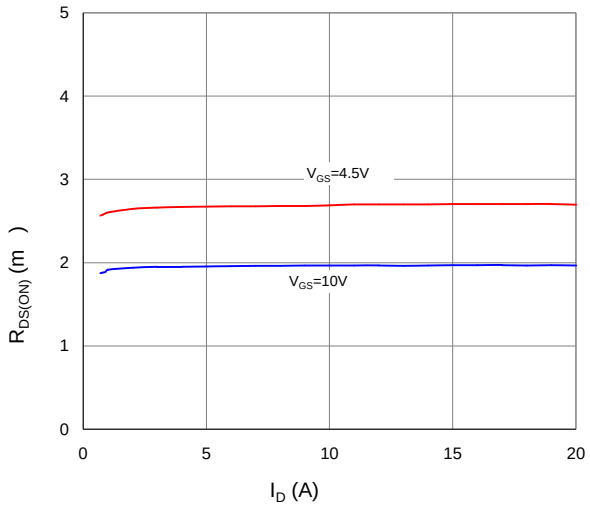


Figure 4. Normalized On-Resistance vs. Junction Temperature

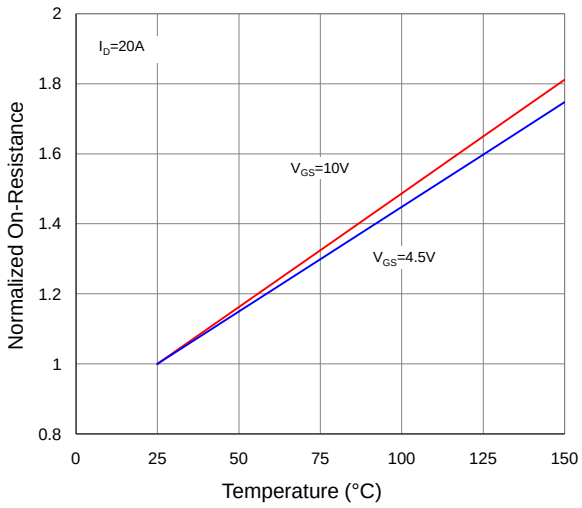


Figure 5. Typical Transfer Characteristics

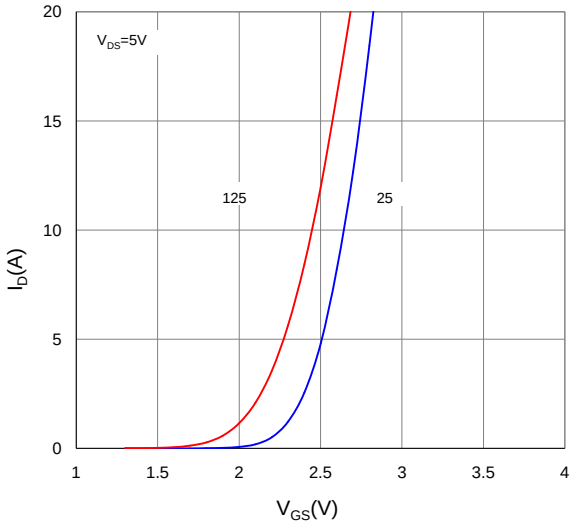


Figure 6. Typical Source-Drain Diode Forward Voltage

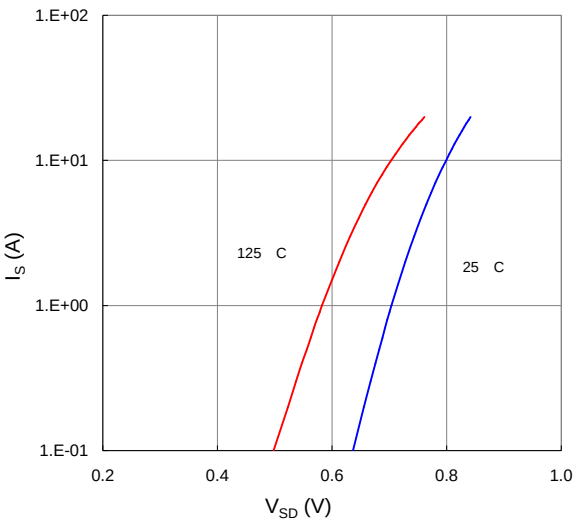


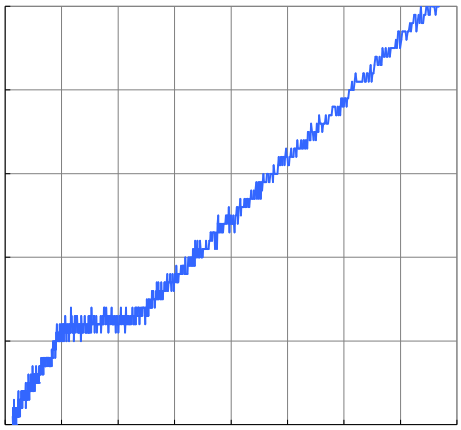
Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage	Figure 8. Typical Capacitance vs. Drain-to-Source Voltage
	

Figure 9. Maximum Safe Operating Area	Figure 10. Maximun Drain Current vs. Case Temperature

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

Package Outline

DFN5x6_P, 8 Leads