80V N-Ch Power MOSFET

V_{DS}	80	V
$R_{DS(on),typ}$	0.9	m
$I_{D\ (Sillicon\ Limited)}$	428	A
$I_{D\ (Package\ Limited)}$	240	A

Part Number	Package	Marking
HGB012N08A	TO-263-7	GB012N08A

Absolute Maximum Ratings at T_j

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C	428	A
		T_C	303	
Continuous Drain Current (Package Limited)		T_C	240	
Drain to Source Voltage	V_{DS}	-	80	V
Gate to Source Voltage	V_{GS}	-	20	V
Pulsed Drain Current	I_{DM}	-	1800	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C	720	mJ
Power Dissipation	P_D	T_C	429	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	R	0.35	
Thermal Resistance Junction-Ambient	R	60	

Electrical Characteristics at T_j

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	80	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2	2.6	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=80V, T_j	-	-	1	A
		V_{GS}=0V, V_{DS}=80V, T_j	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS} $_{DS}$=0V	-	-	100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	0.9	1.2	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	87	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	0.64	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=40V, f=1MHz	-	19090	-	pF
Output Capacitance	C_{oss}		-	2871	-	
Reverse Transfer Capacitance	C_{rss}		-	54	-	
Total Gate Charge	Q_g	V_{DD}=40V, I_D=20A, V_{GS}=10V	-	318	-	nC
Gate to Source Charge	Q_{gs}		-	60	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	85	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=40V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	36	-	ns
Rise time	t_r		-	32	-	
Turn off Delay Time	$t_{d(off)}$		-	84	-	
Fall Time	t_f		-	26	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	-	V
Reverse Recovery Time	t_{rr}	V_R=40V, I_F=20A, dI_F/dt=100A/ s	-	100	-	ns
Reverse Recovery Charge	Q_{rr}		-	221	-	nC

Fig 1. Typical Output Characteristics

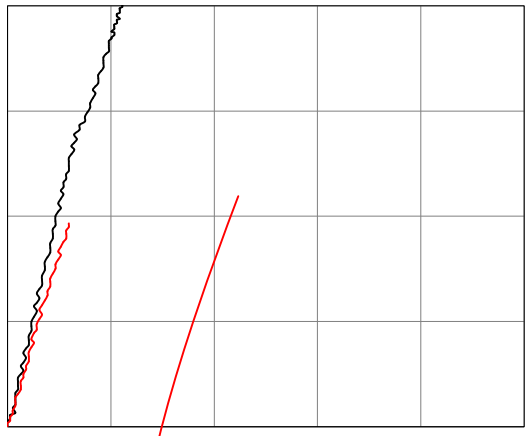


Figure 2. On-Resistance vs. Gate-Source Voltage

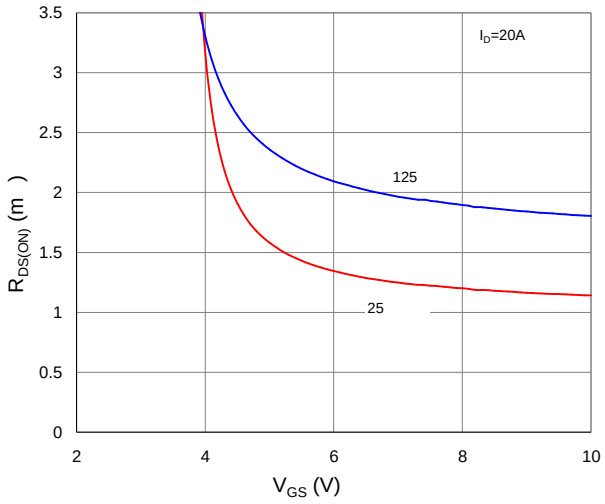


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

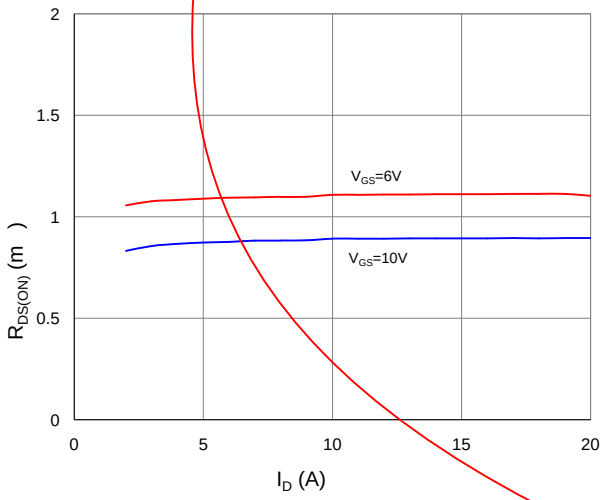


Figure 4. Normalized On-Resistance vs. Junction Temperature

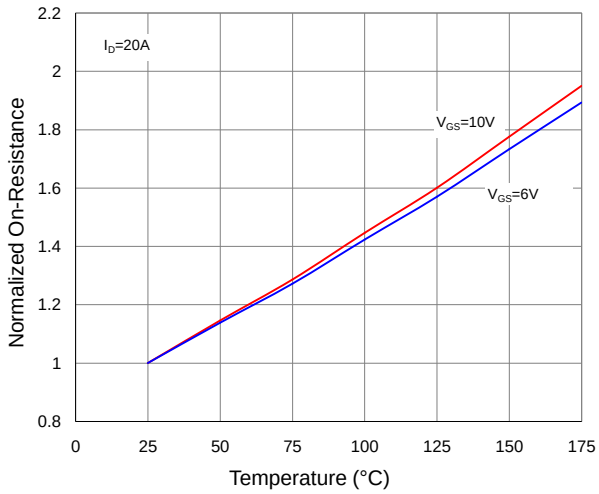


Figure 5. Typical Transfer Characteristics

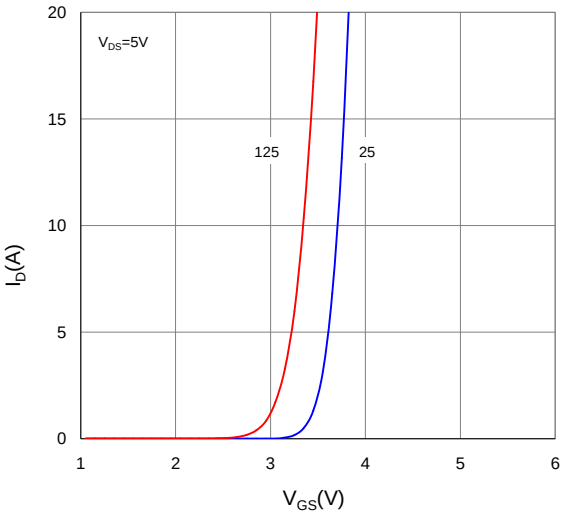


Figure 6. Typical Source-Drain Diode Forward Voltage

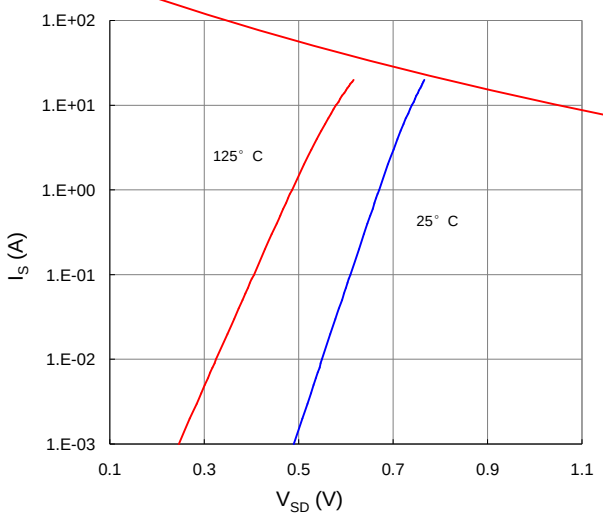


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

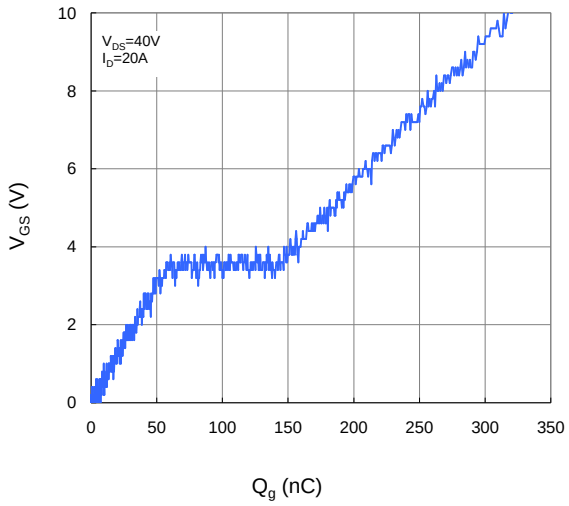


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

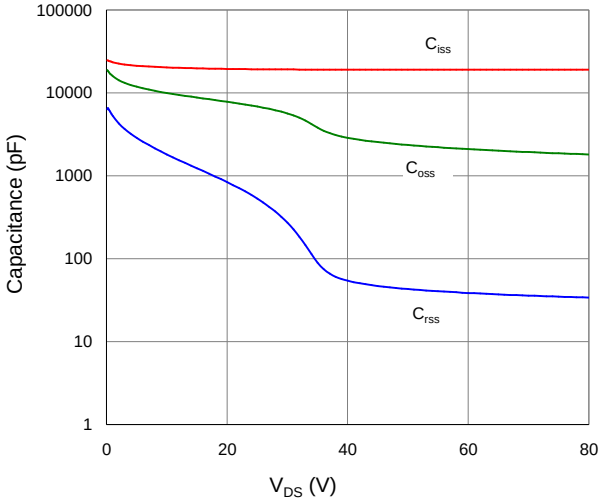


Figure 9. Maximum Safe Operating Area

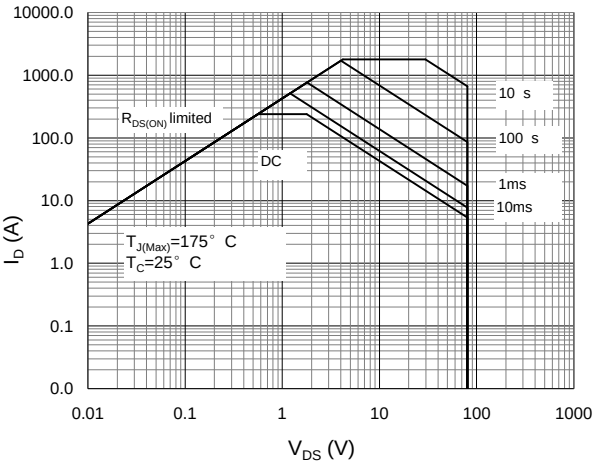


Figure 10. Maximun Drain Current vs. Case Temperature

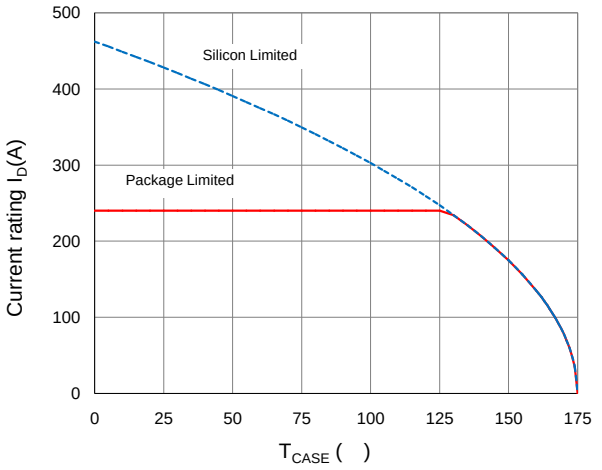
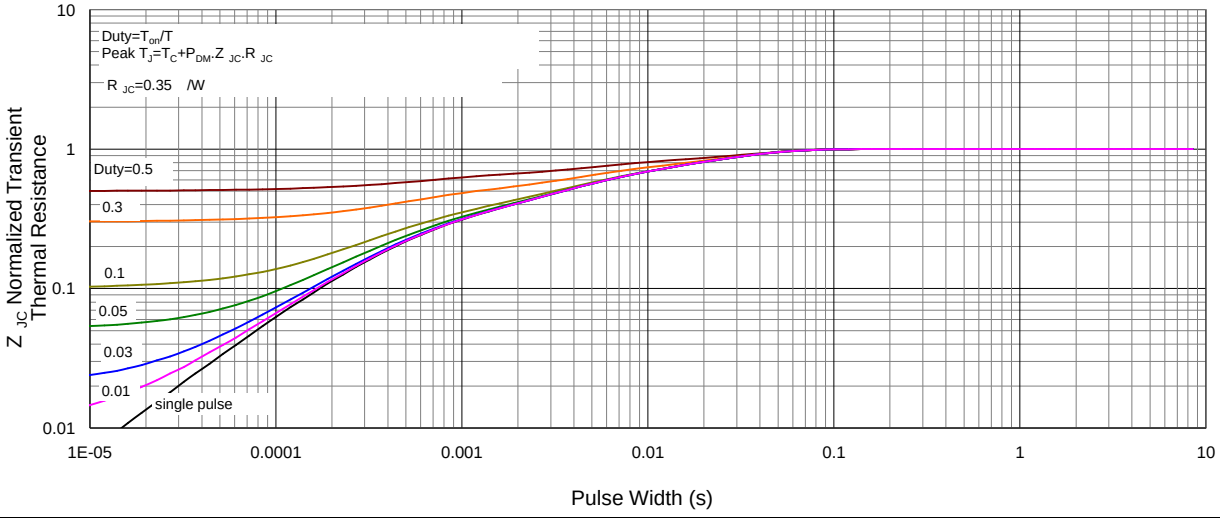
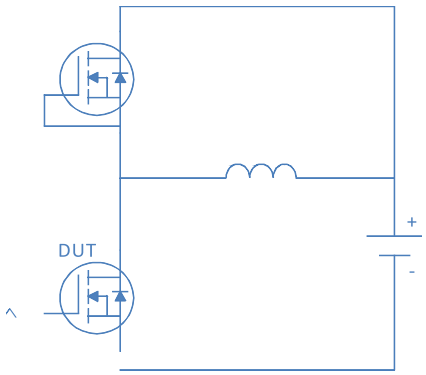
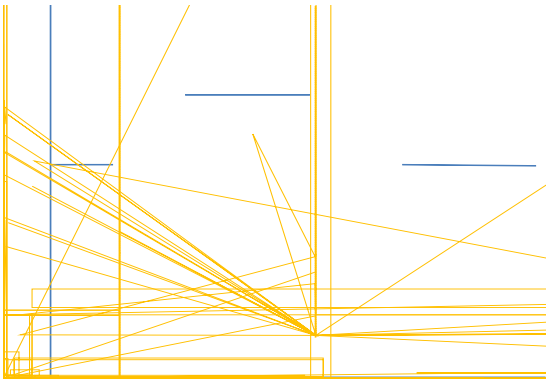


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

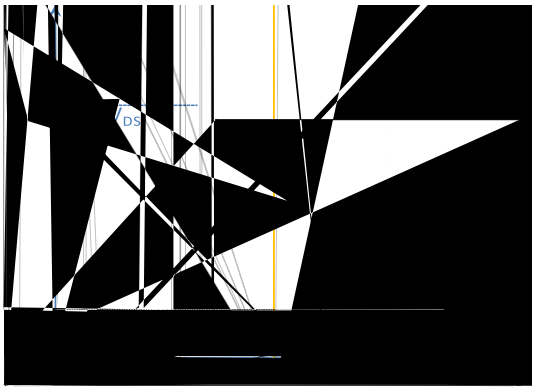


Inductive switching Test

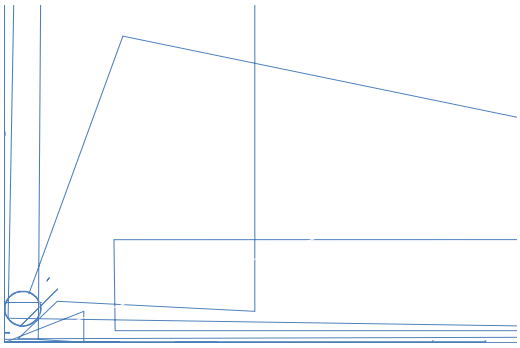


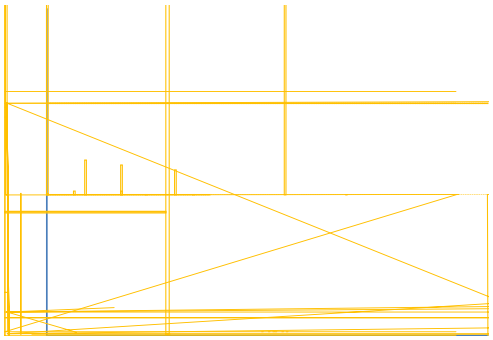


Gate Charge Test



Uclamped Inductive Switching (UIS) Test





Diode Recovery Test