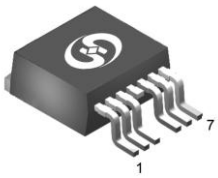
120V N-Ch Power MOSFET

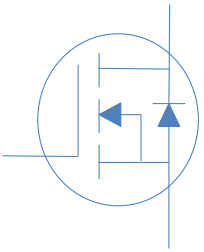
G ffl g g ffl
g
g g ffffl
ffl

g
G g ffl G ffl g

V_{DS}		120	V
$R_{DS(on),typ}$	TO-263-7	1.9	m
$I_{D\ (Sillicon\ Limited)}$		285	A
$I_{D\ (Package\ Limited)}$		240	A

Part Number	Package	Marking
HGB025N12S	TO-263-7	GB025N12S





Absolute Maximum Ratings at T_j

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C	285	A
		T_C	202	
Continuous Drain Current (Package Limited)		T_C	240	
Drain to Source Voltage	V_{DS}	-	120	V
Gate to Source Voltage	V_{GS}	-	20	V
Pulsed Drain Current	I_{DM}	-	750	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 min	Value typ	Value max	Unit
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250 A	120	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2	2.9	4	
Gate to Source Leak49 4lA9 4lA9 4lA		V_{GS} $_{DS}$=0V	-			nA
			-			m
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	86	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.8	-	

Dynamic Characteristics

Input Capacitance	C_{iss}		-	11140	-	
Output Capacitance	C_{oss}	V_{GS}=0V, V_{DS}=60V, f=1MHz	-	1332	-	pF
Reverse Transfer Capacitance	C_{rss}		-	326	-	
Total Gate Charge	Q_g		-	220	-	
Gate to Source Charge	Q_{gs}	V_{DD}=60V, I_D=20A, V_{GS}=10V	-	52	-	nC
Gate to Drain (Miller) Charge	Q_{gd}		-	84	-	
Turn on Delay Time	$t_{d(on)}$		-	35	-	
Rise time	t_r	V_{DD}=60V, I_D=20A, V_{GS}=10V,	-	30	-	ns
Turn off Delay Time	$t_{d(off)}$	R_G=10 ,	-	45	-	
Fall Time	t_f		-	20	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	-	V
Reverse Recovery Time	t_{rr}	V_R=60V, I_F=20A, dI_F/dt=100A/ s	-	91	-	ns
Reverse Recovery Charge	Q_{rr}		-	182	-	nC

Fig 1. Typical Output Characteristics	Figure 2. On-Resistance vs. Gate-Source Voltage

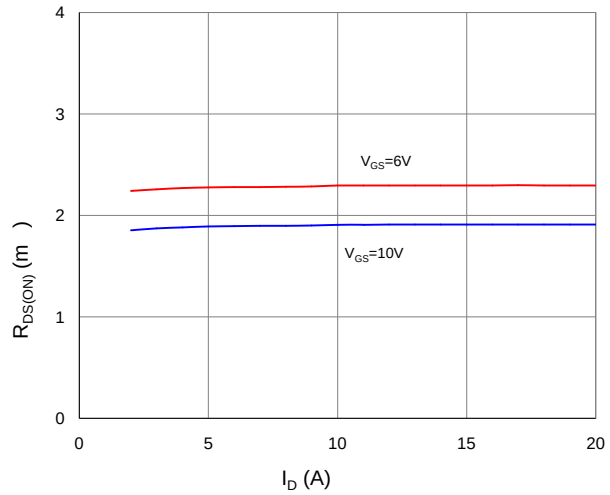
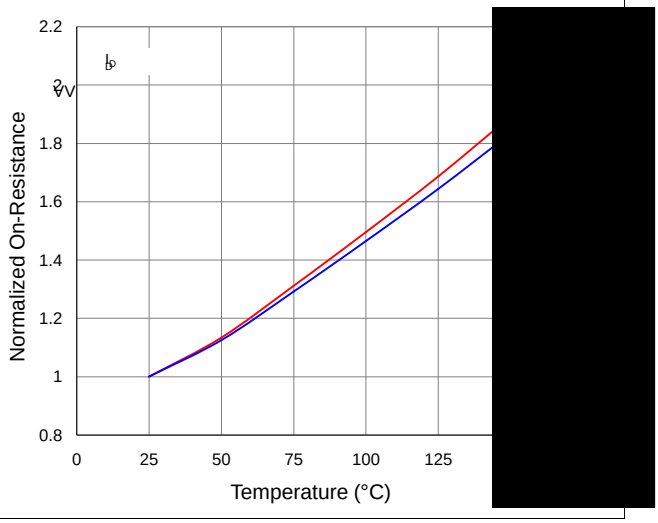
Figure 3. On-Resistance vs. Drain Current and Gate Voltage	Figure 4. Normalized On-Resistance vs. Junction Temperature
	

Figure 5. Typical Transfer Characteristics	Figure 6. Typical Source-Drain Diode Forward Voltage

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

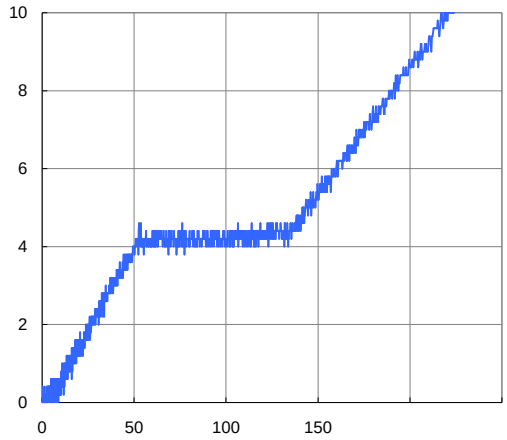


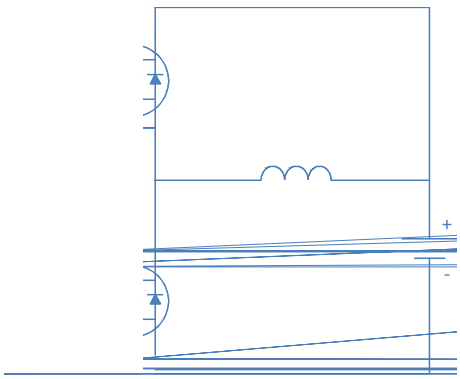
Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

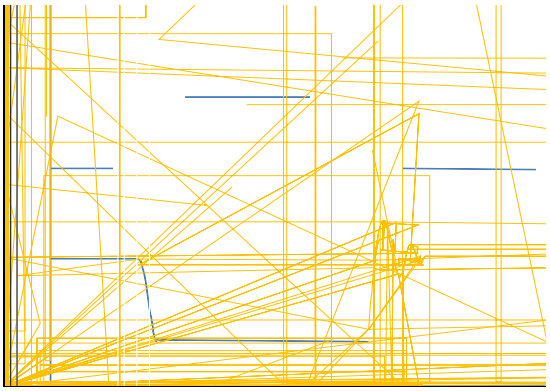
Figure 9. Maximum Safe Operating Area

Figure 10. Maximun Drain Current vs. Case Temperature

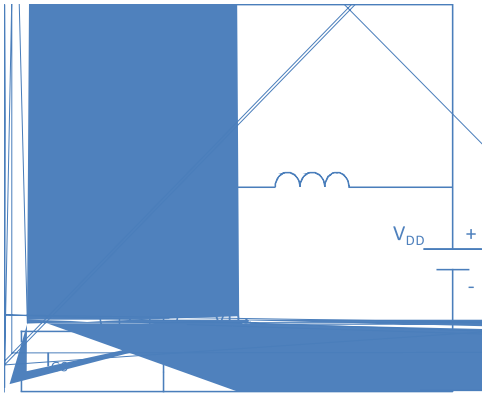
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

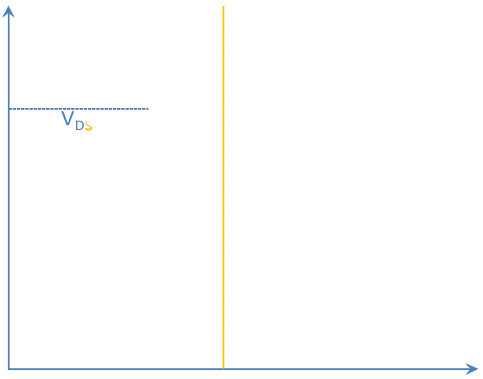
Inductive switching Test



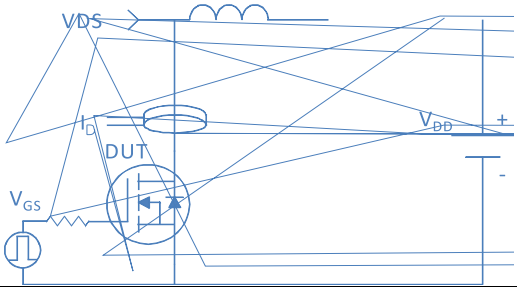


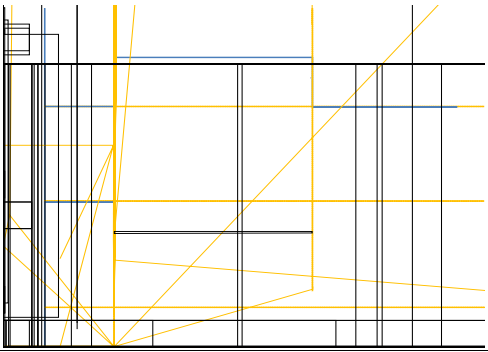
Gate Charge Test



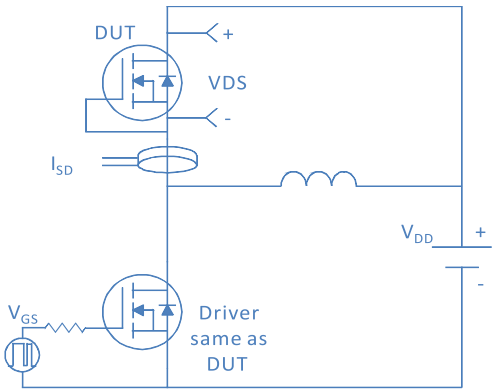


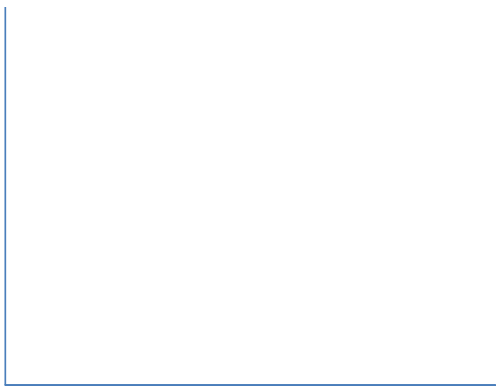
Uclamped Inductive Switching (UIS) Test



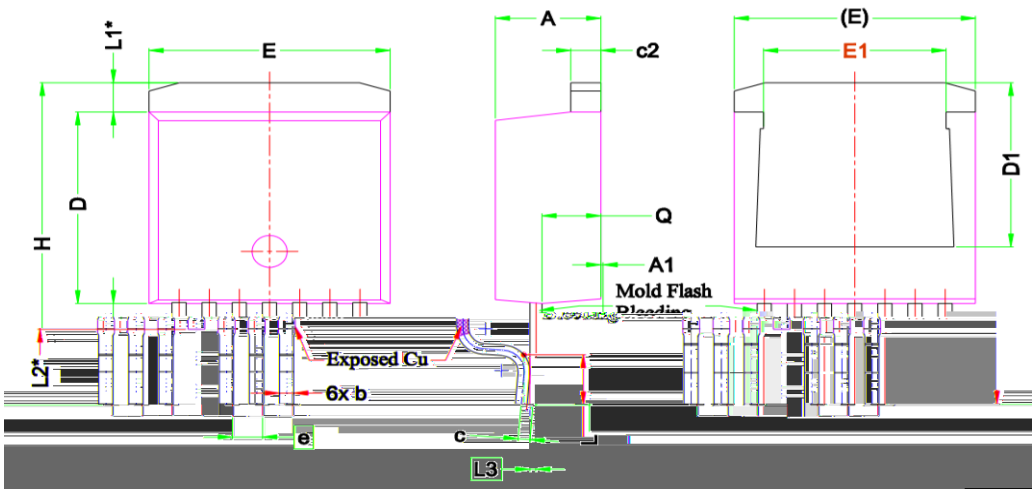


Diode Recovery Test





TO-263-7, 7 leads



DIMENSIONS			
MIN.	NOM.	MAX.	SYMBOL
4.24	4.44	4.64	A
0.00	0.10	0.25	A1
0.50	0.66	0.70	b
0.40	0.50	0.60	c
1.15	1.27	1.40	c2
8.82	8.92	9.02	D
6.86	7.65		D1
9.90	10.16	10.30	E
6.89	7.77	7.89	E1
	1.27 BSC		e
14.61	15.00	15.88	H
1.78	2.62	2.79	L
	1.36 REF.		L1
	1.20 REF.		L2
	0.25 BSC		L3
2.30	2.48	2.70	Q