60V N-Ch Power MOSFET

V_{DS}		60	V
$R_{DS(on),typ}$	V_{GS}=10V	4.1	m
$R_{DS(on),typ}$	V_{GS}=4.5V	5.6	m
$I_{D \text{ (Sillicon Limited)}}$		105	A
$I_{D \text{ (Package Limited)}}$		70	A

Part Number	Package	Marking
HGD053N06SL	TO-252	GD053N06SL
HGI053N06SL	TO-251	GI053N06SL

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	105	A
		T_C=100	74	
Continuous Drain Current (Package Limited)		T_C=25	70	
Drain to Source Voltage	V_{DS}	-	60	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	250	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25	80	mJ
Power Dissipation	P_D	T_C=25	125	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	R_{JA}	50	/W
Thermal Resistance Junction-Case	R_{JC}	1.2	/W

Ver 1.0   Oct. 2016

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	-	4.1	5.3	m
		V_{GS}=4.5V, I_D=20A	-	5.6	7.5	
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	48	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.5	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz	-	2274	-	pF
Output Capacitance	C_{oss}		-	793	-	
Reverse Transfer Capacitance	C_{rss}		-	35	-	
Total Gate Charge	Q_g(10V)	V_{DD}=30V, I_D=20A, V_{GS}=10V	-	36	-	nC
Total Gate Charge	Q_g(4.5V)		-	18	-	
Gate to Source Charge	Q_{gs}		-	4.5	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7.5	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=30V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	11	-	ns
Rise time	t_r		-	7	-	
Turn off Delay Time	$t_{d(off)}$		-	35	-	
Fall Time	t_f		-	10	-	

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	-	30	-	ns
Reverse Recovery Charge	Q_{rr}		-	53	-	nC

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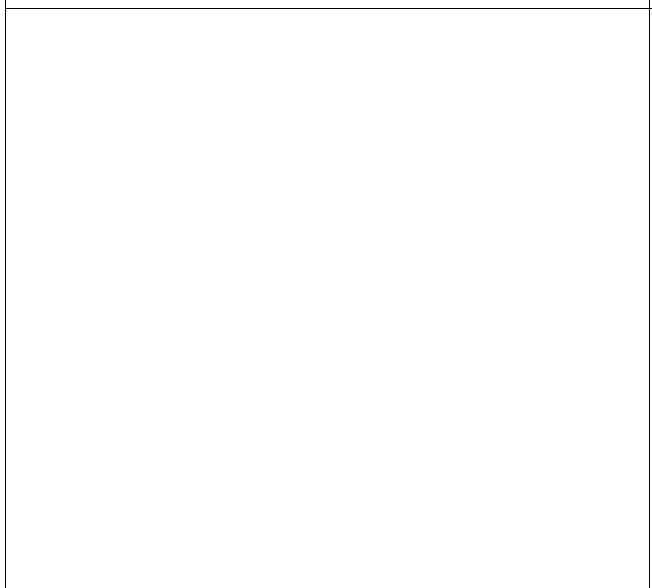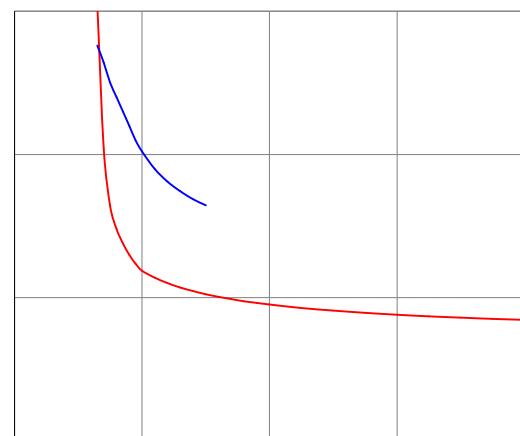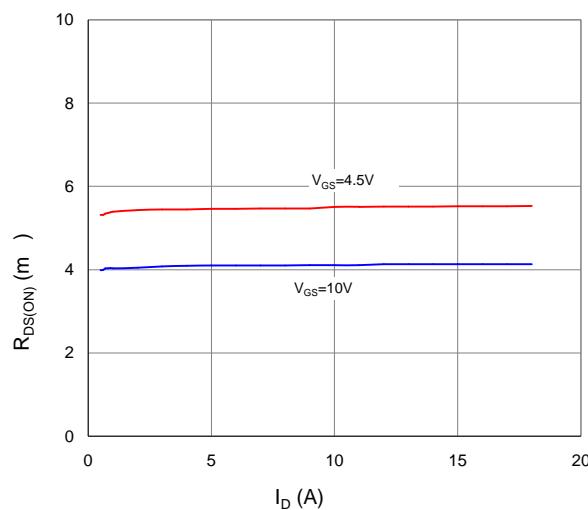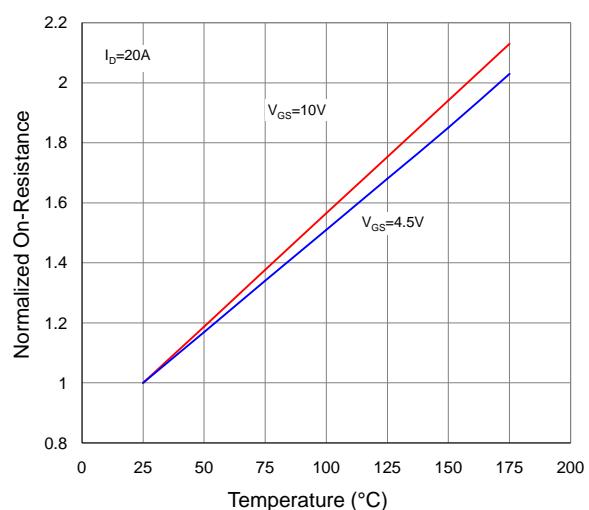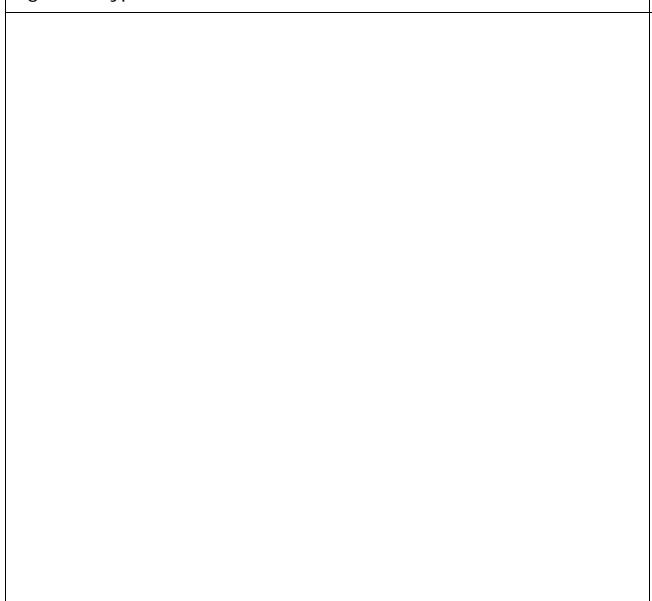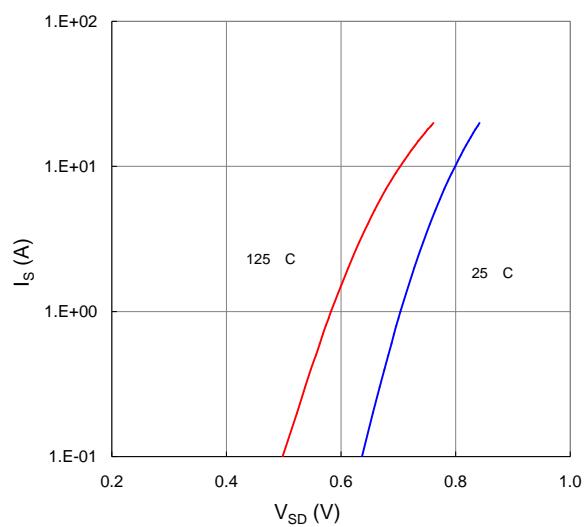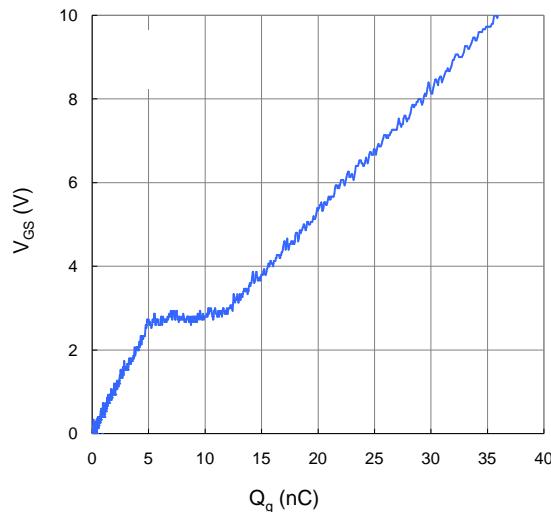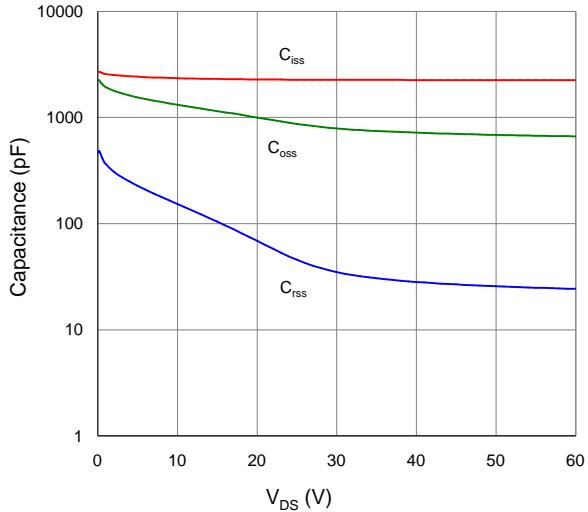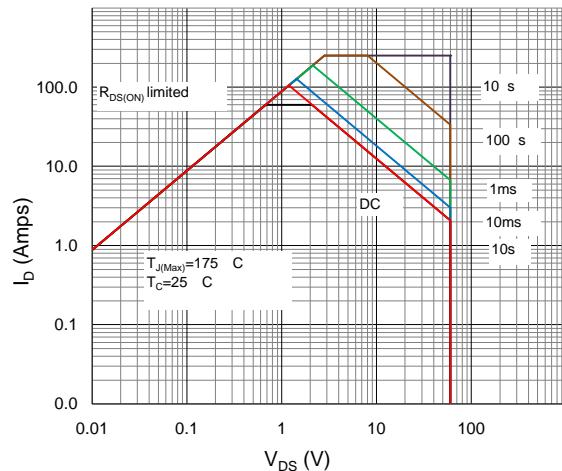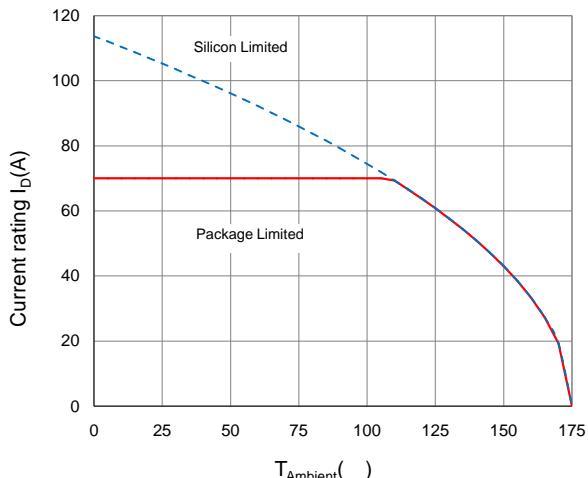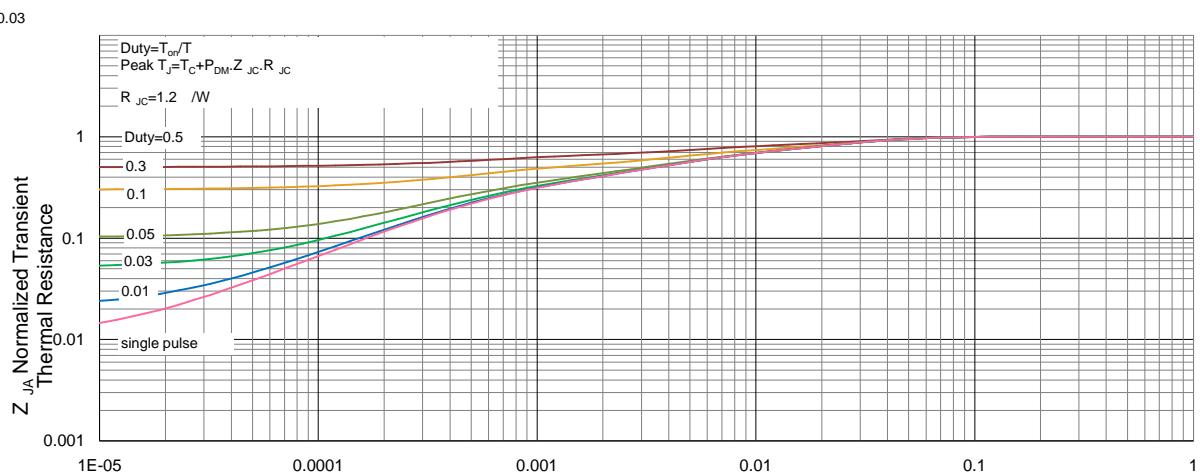
| Fig 1. Typical Output Characteristics	Figure 2. On-Resistance vs. Gate-Source Voltage

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

$R_{DS(ON)}$ (m)

V_{GS}=4.5V

V_{GS}=10V

I_D (A)

Figure 4. Normalized On-Resistance vs. Junction Temperature

Normalized On-Resistance

I_D=20A

V_{GS}=10V

V_{GS}=4.5V

Temperature (°C)

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

I_S (A)

125 C

25 C

V_{SD} (V)

Ver 1.0   Oct. 2016

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

Ver 1.0

Oct. 2016

Inductive switching Test

Gate Charge Test
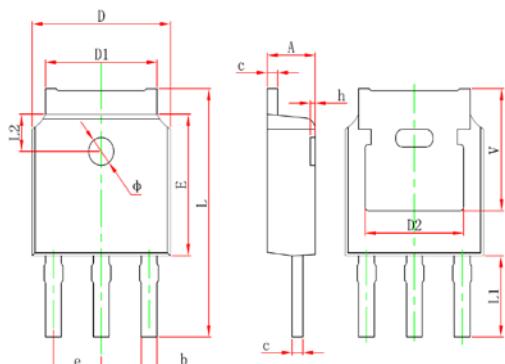
Uclamped Inductive Switching (UIS) Test
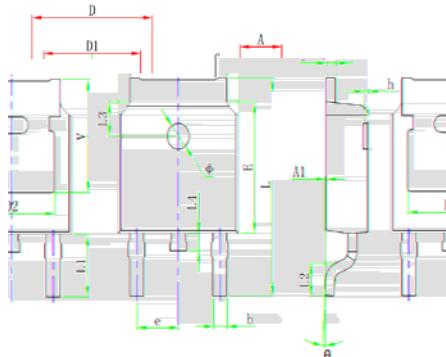
Diode Recovery Test

Package Outline

TO-251, 3leads

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264

TO-252, 2 leads

Symbo.	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023