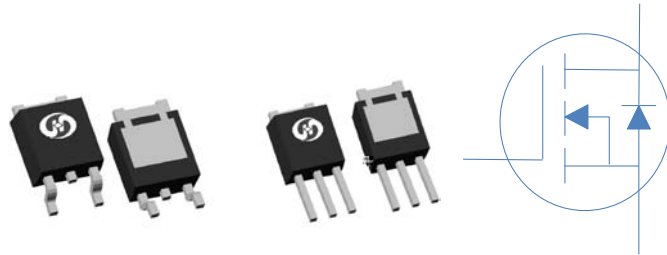


60V N-Ch Power MOSFET

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 (Silicon Limited)		105	A
I_D (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)	$T_C=25$	
Drain to Source Voltage	V_{DS}		-	60
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 to 175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	R_{JA}	50	$^{\circ}W$
Thermal Resistance Junction-Case	R_{JC}	1.2	$^{\circ}W$

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}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 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	$t_{d(on)}$	$V_{DD}=30V, I_D=20A, V_{GS}=10V,$ $R_G=10 \Omega$	-	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

Fig 1. Typical Output Characteristics

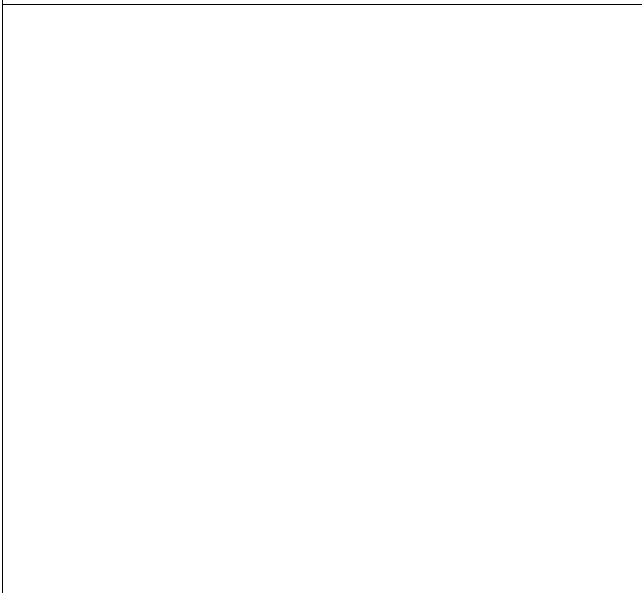


Figure 2. On-Resistance vs. Gate-Source Voltage

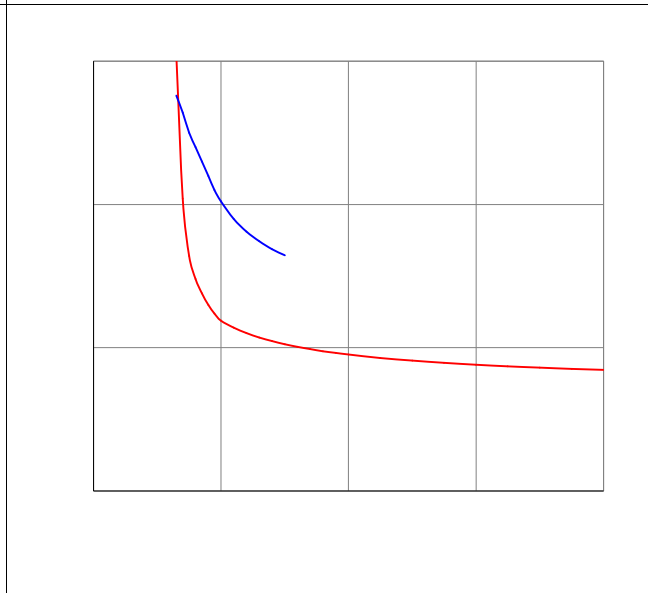


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

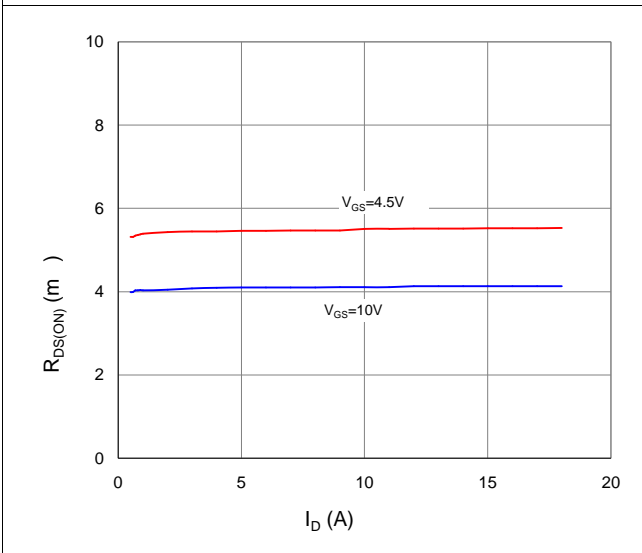


Figure 4. Normalized On-Resistance vs. Junction Temperature

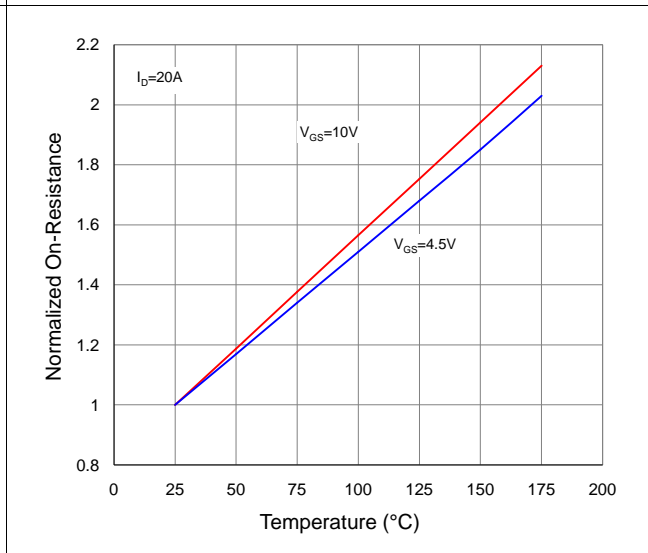


Figure 5. Typical Transfer Characteristics

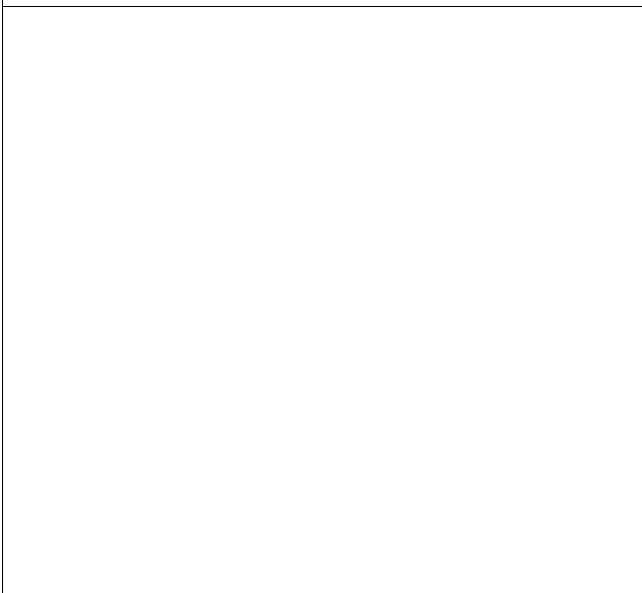


Figure 6. Typical Source-Drain Diode Forward Voltage

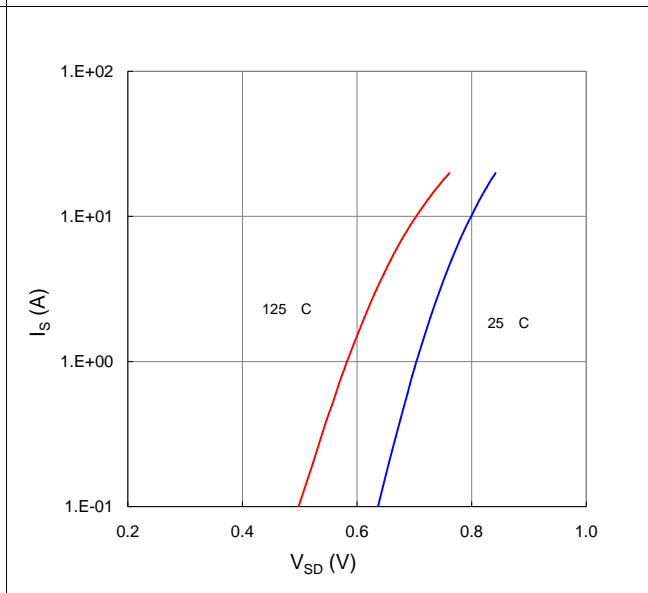


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

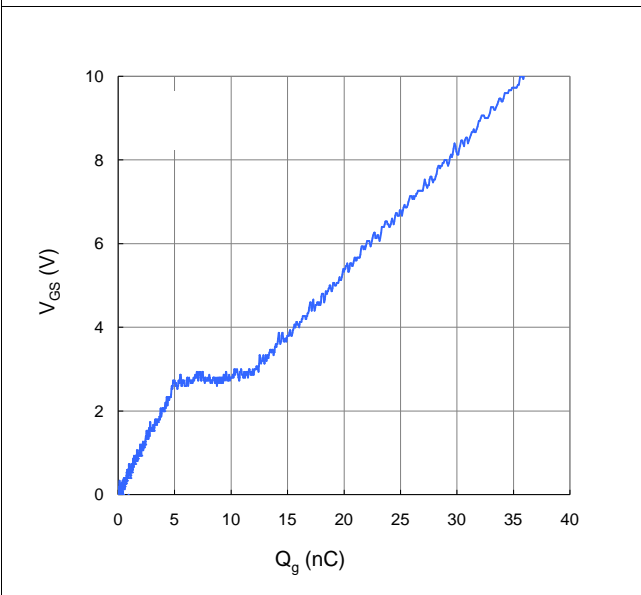


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

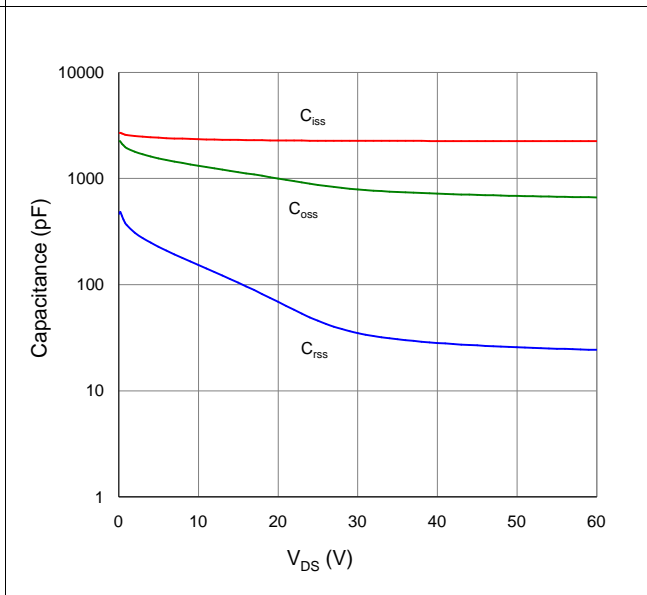


Figure 9. Maximum Safe Operating Area

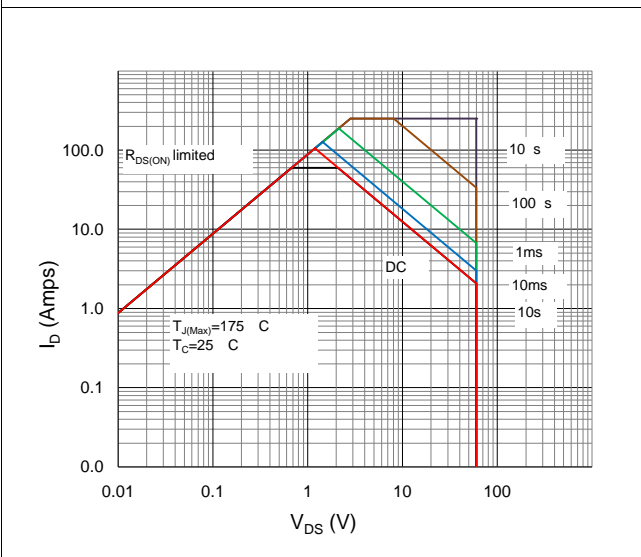


Figure 10. Maximum Drain Current vs. Case Temperature

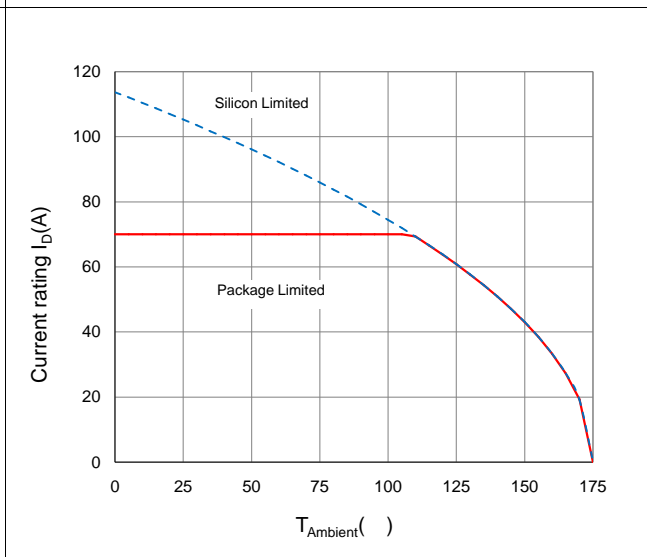
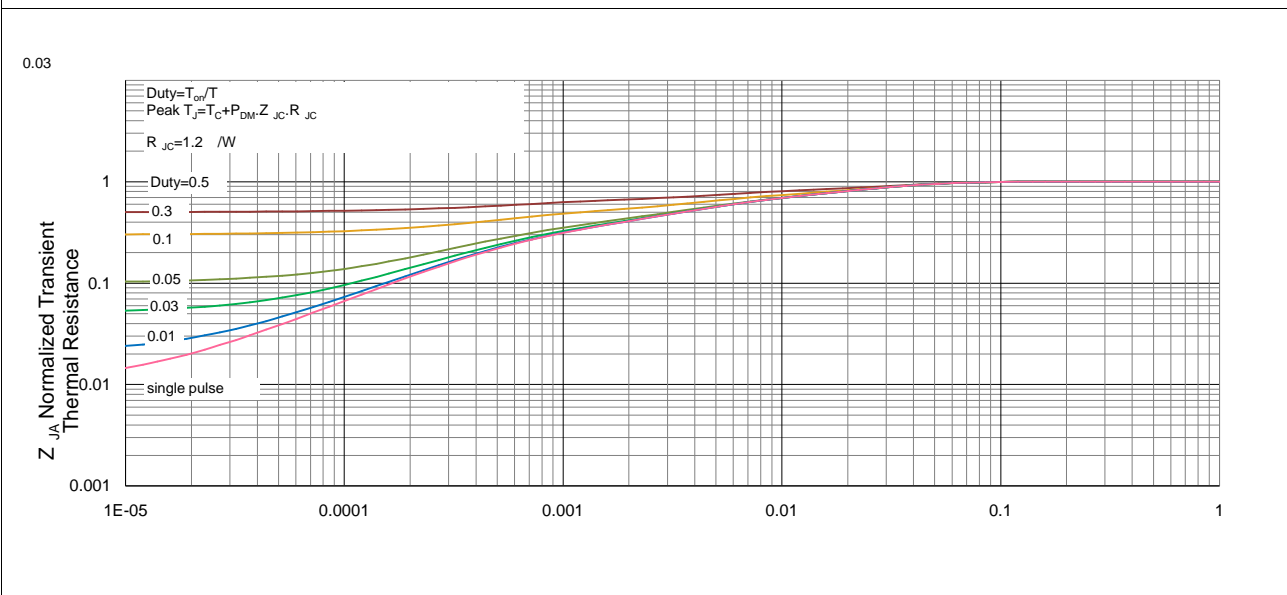


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient




Inductive switching Test

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Gate Charge Test

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Uclamped Inductive Switching (UIS) Test

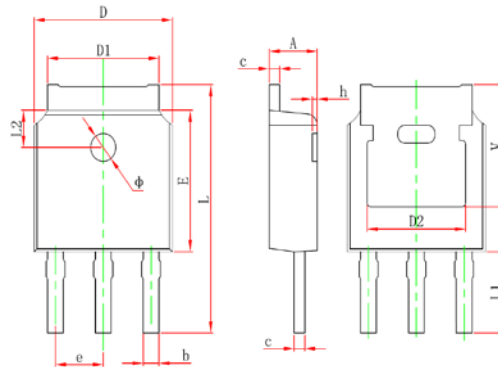
	
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Diode Recovery Test

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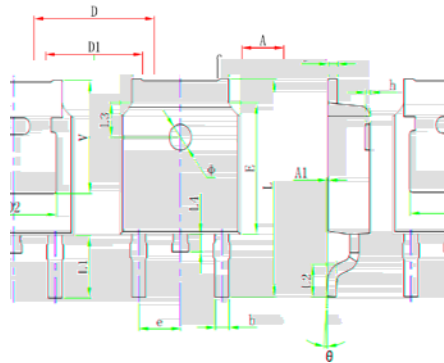
Package Outline

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



Symbol	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