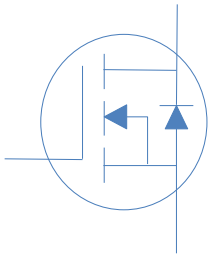
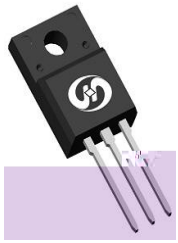
100V N-Ch Power MOSFET

V_{DS}		100	V
$R_{DS(on),typ}$	V_{GS}=10V	7.6	m
$I_{D\ (Sillicon\ Limited)}$		43.5	A





Part Number	Package	Marking
HGA080N10A	TO-220F	GA080N10A

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℃	44	A
		T_C=100℃	31	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	260	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25℃	245	mJ
Power Dissipation	P_D	T_C=25℃	33	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	R_{JA}	60	℃/W
Thermal Resistance Junction-Case	R_{JC}	4.5	℃/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	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2.0	3.0	4.0	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=100V, T_j=25℃	-	-	1	A
		V_{GS}=0V, V_{DS}=100V, 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	-	7.6	8.8	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=10A	-	38	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.4	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	1576	-	pF
Output Capacitance	C_{oss}		-	350	-	
Reverse Transfer Capacitance	C_{rss}		-	7.0	-	
Total Gate Charge	Q_g(10V)	V_{DD}=50V, I_D=20A, V_{GS}=10V	-	25	-	nC
Gate to Source Charge	Q_{gs}		-	6	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	8	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	7	-	ns
Rise time	t_r		-	4	-	
Turn off Delay Time	$t_{d(off)}$		-	19	-	
Fall Time	t_f		-	3	-	

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=50V, I_F=20A, dI_F/dt=500A/ s	-	50	-	ns
Reverse Recovery Charge	Q_{rr}		-	212	-	nC

Fig 1. Typical Output Characteristics

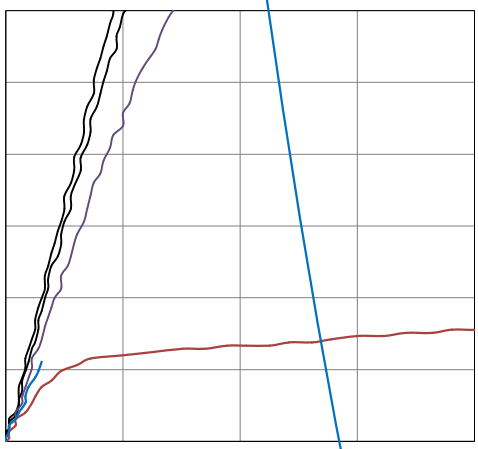


Figure 2. On-Resistance vs. Gate-Source Voltage

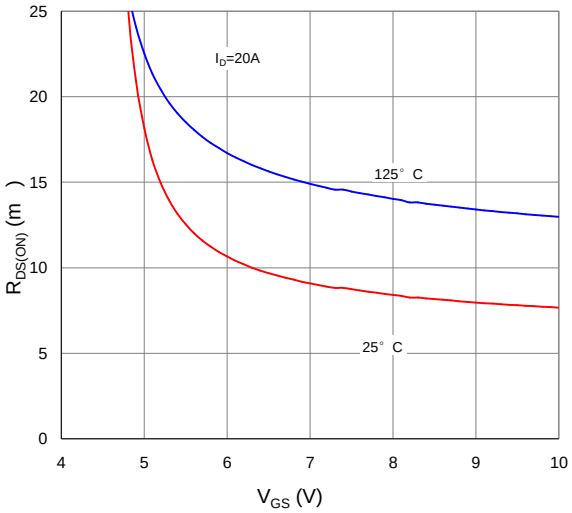


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

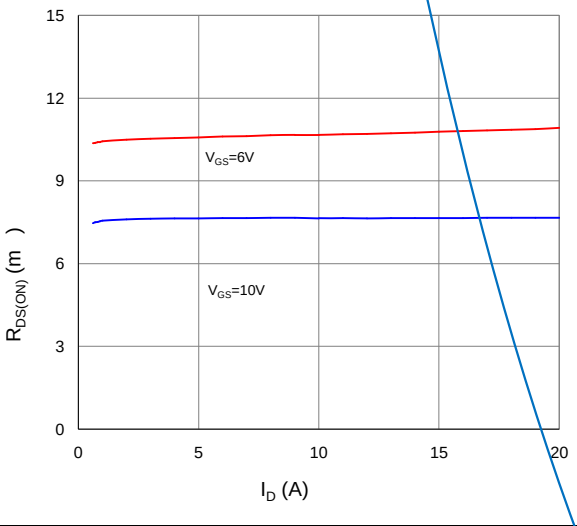


Figure 4. Normalized On-Resistance vs. Junction Temperature

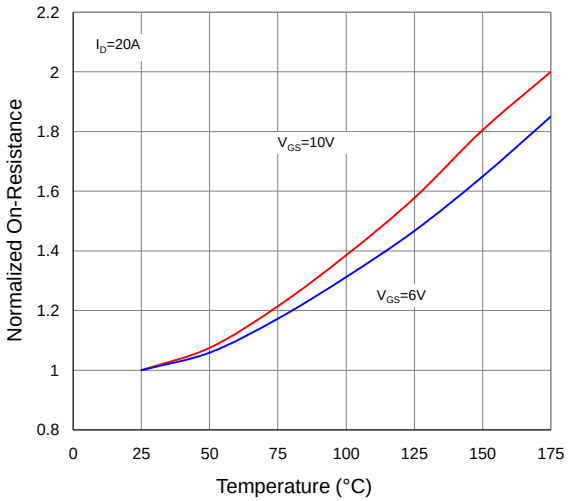


Figure 5. Typical Transfer Characteristics

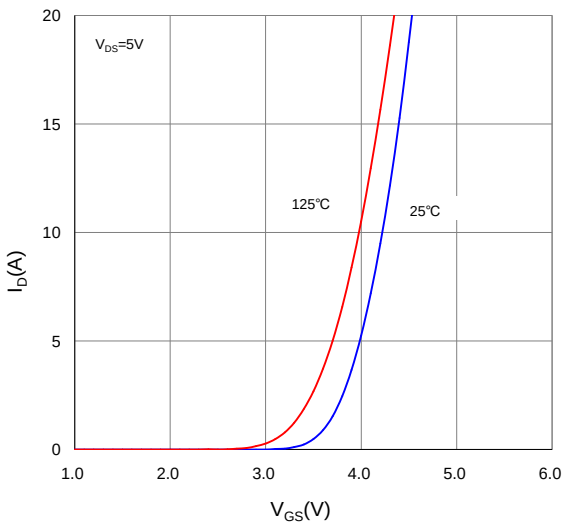


Figure 6. Typical Source-Drain Diode Forward Voltage

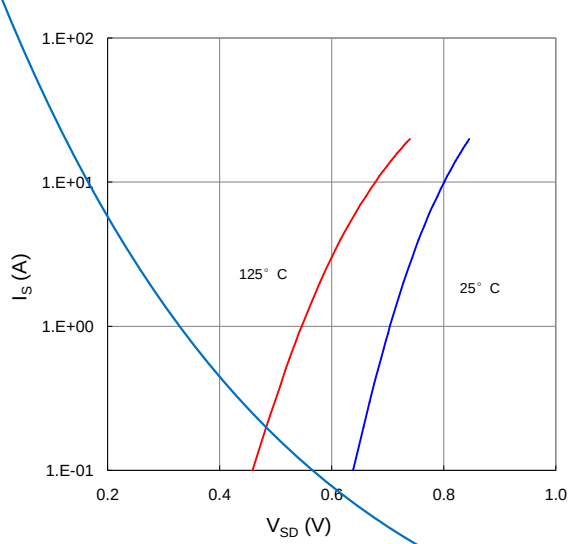


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

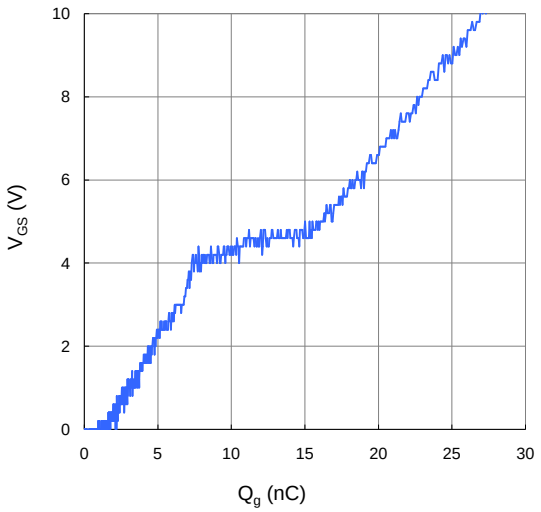


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

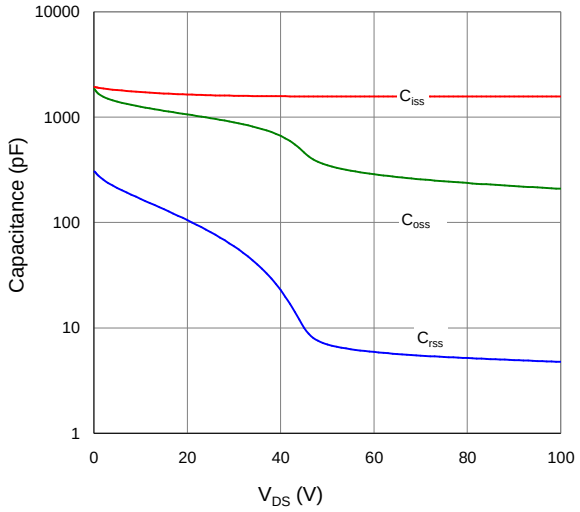


Figure 9. Maximum Safe Operating Area

Figure 10. Maximun Drain Current vs. Case Temperature

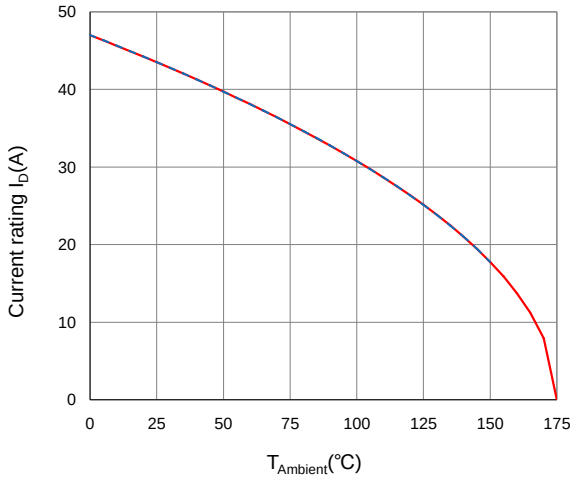
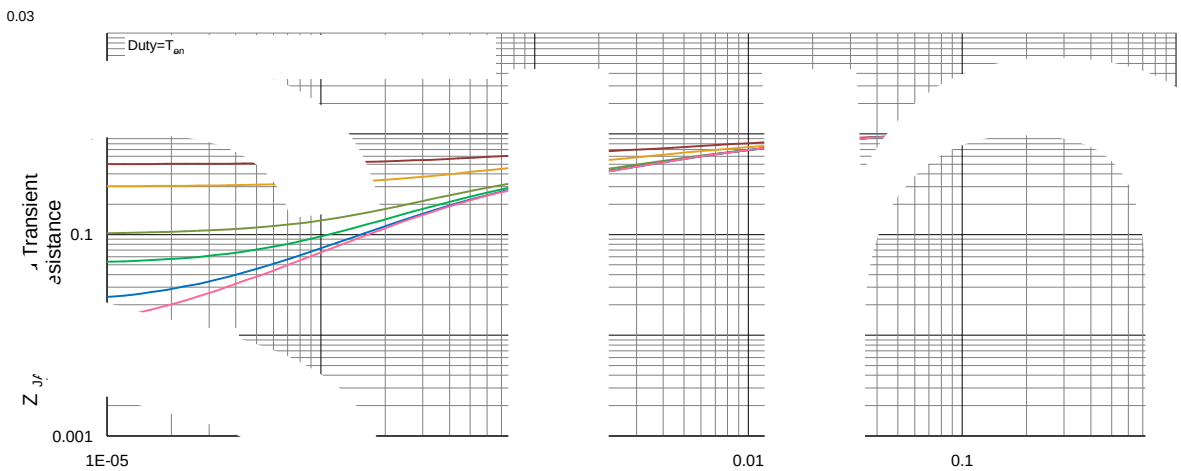
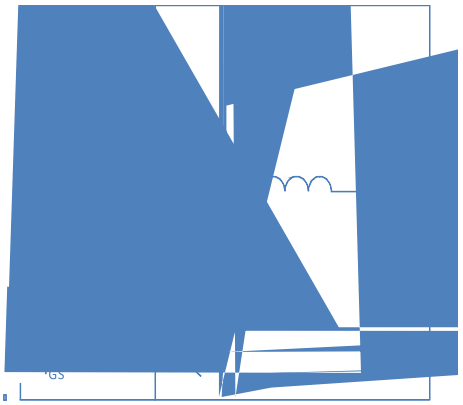


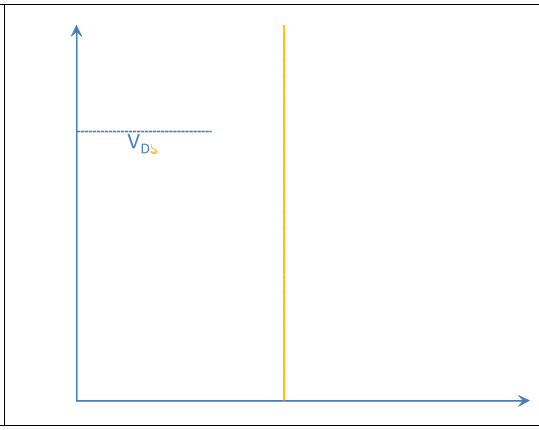
Figure 11. Normalized Maximu... ...t Thermal Impedance, Junction-to-Ambient



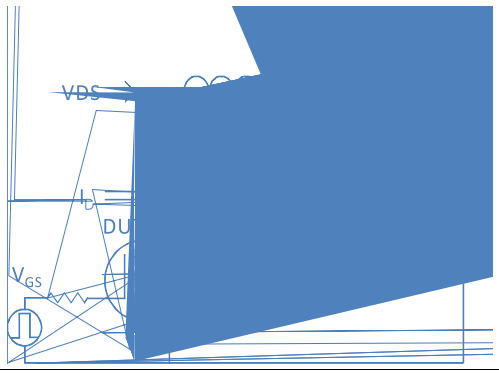
Inductive switching Test

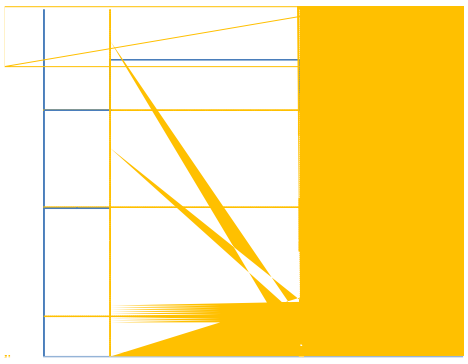
Gate Charge Test



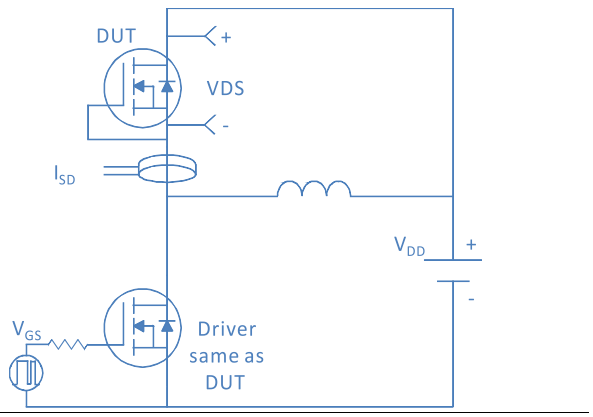


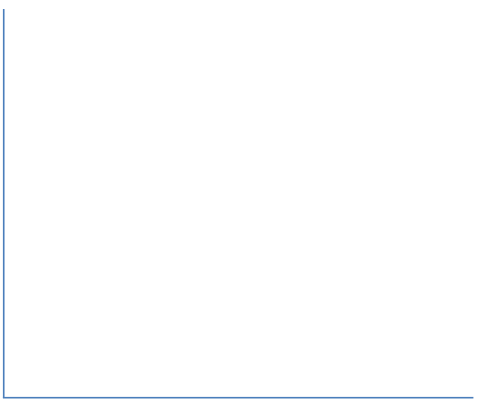
Uclamped Inductive Switching (UIS) Test





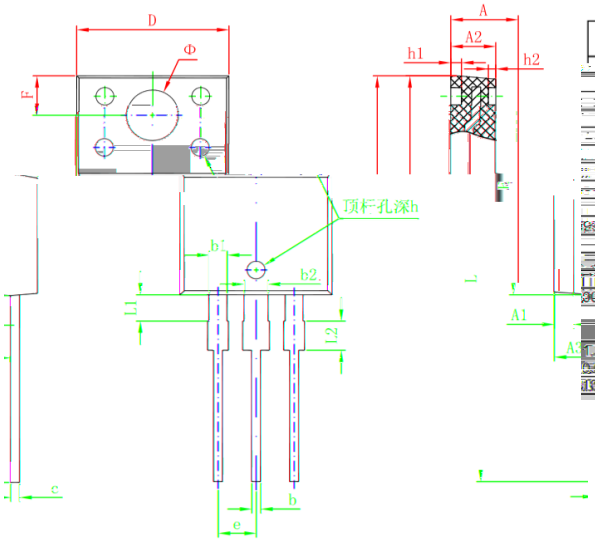
Diode Recovery Test





Package Outline

TO-220F, 3 Leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.500	4.700	0.177	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.900	10.360	0.390	0.408
E	15.800	16.200	0.622	0.638
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
L	28.000	28.400	1.102	1.118
L1	12.700	13.000	0.500	0.512
L2	3.175	3.575	0.125	0.141
Φ	3.100	3.500	0.122	0.138