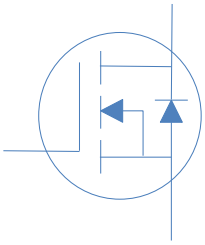
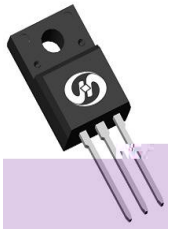
150V N-Ch Power MOSFET

V_{DS}	150	V
$R_{DS(on),max}$	11.5	m
I_D	42	A





Part Number	Package	Marking
HGA115N15S	TO-220F	GA115N15S

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℃	42	A
		T_C=100℃	30	
Drain to Source Voltage	V_{DS}	-	150	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	300	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25℃	125	mJ
Power Dissipation	P_D	T_C=25℃	47	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}	3.2	℃/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	150	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2	3	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=150V, T_j=25℃	-	-	1	A
		V_{GS}=0V, V_{DS}=150V, 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	-	9.7	11.5	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	65	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	2.8	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=75V, f=1MHz	-	3365	-	pF
Output Capacitance	C_{oss}		-	239	-	
Reverse Transfer Capacitance	C_{rss}		-	6.5	-	
Total Gate Charge	Q_g(10V)	V_{DD}=75V, I_D=20A, V_{GS}=10V	-	42	-	nC
Gate to Source Charge	Q_{gs}		-	14	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=75V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	17	-	ns
Rise time	t_r		-	8	-	
Turn off Delay Time	$t_{d(off)}$		-	26	-	
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=75V, I_F=20A, dI_F/dt=100A/ s	-	80	-	ns
Reverse Recovery Charge	Q_{rr}		-	160	-	nC

Fig 1. Typical Output Characteristics

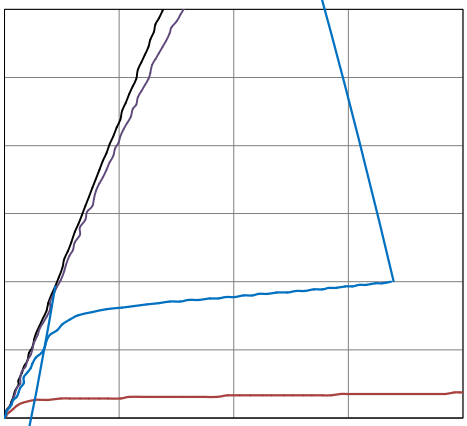


Figure 2. On-Resistance vs. Gate-Source Voltage

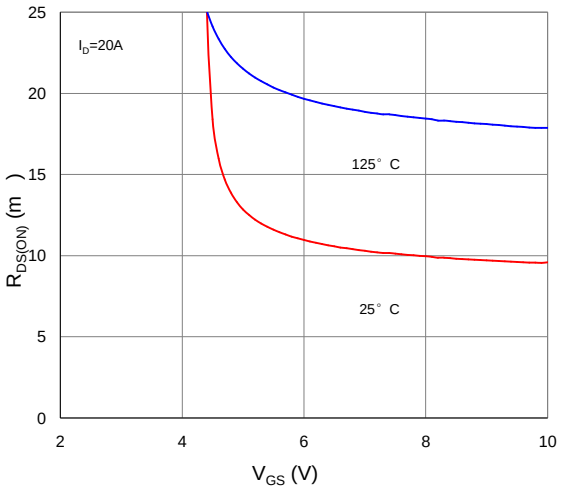


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

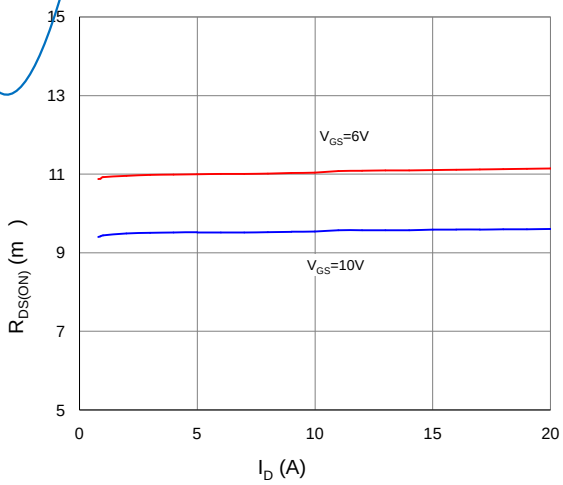


Figure 4. Normalized On-Resistance vs. Junction Temperature

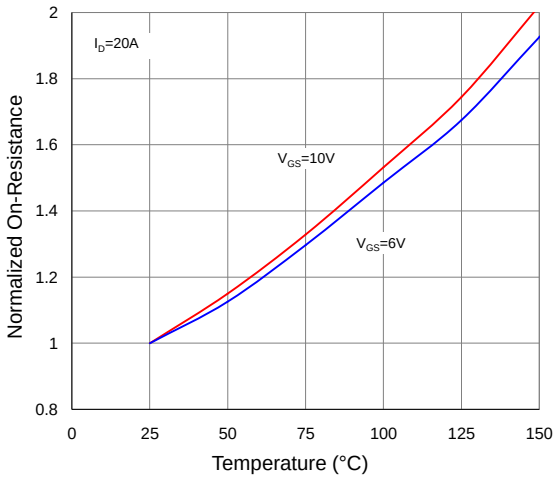


Figure 5. Typical Transfer Characteristics

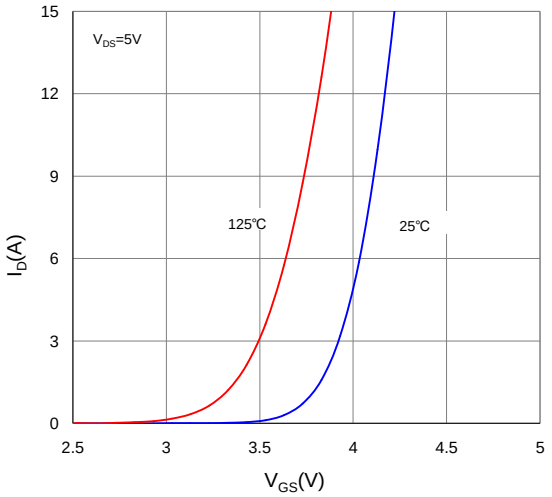


Figure 6. Typical Source-Drain Diode Forward Voltage

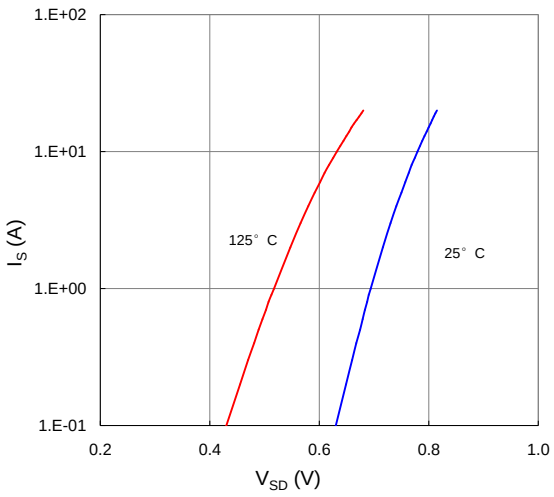


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

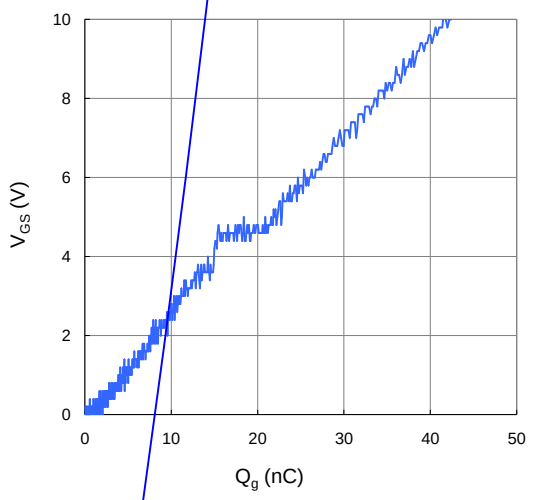


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

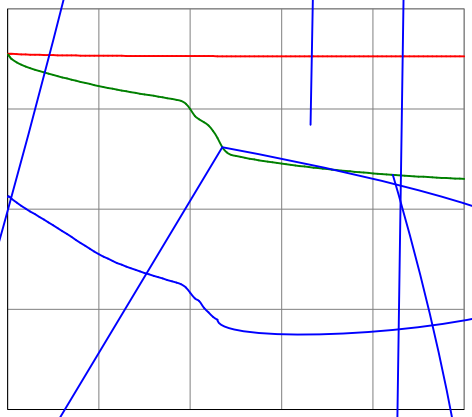


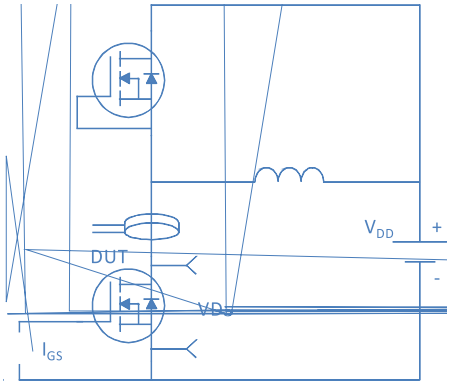
Figure 9. Maximum Safe Operating Area

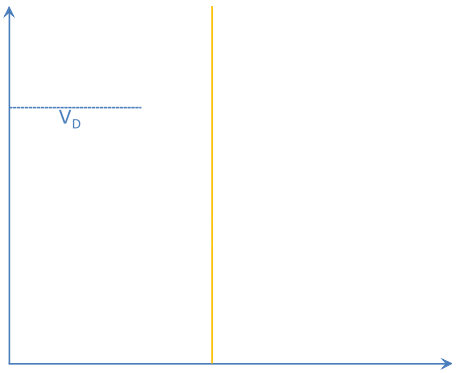
Figure 10. Maximun Drain Current vs. Case Temperature

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

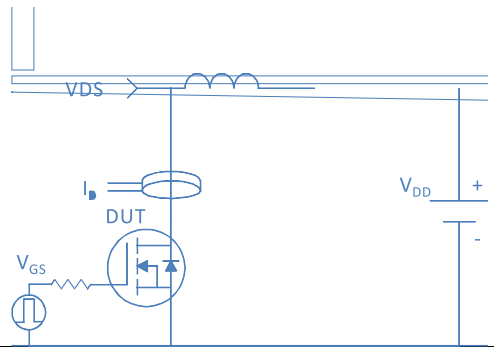
Inductive switching Test

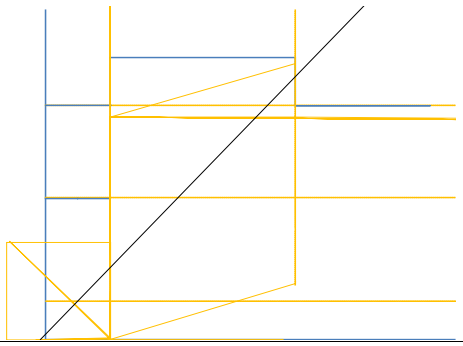
Gate Charge Test



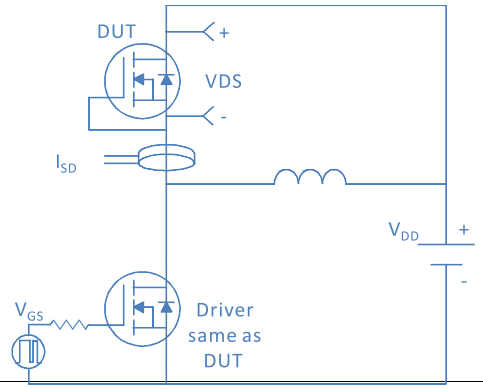


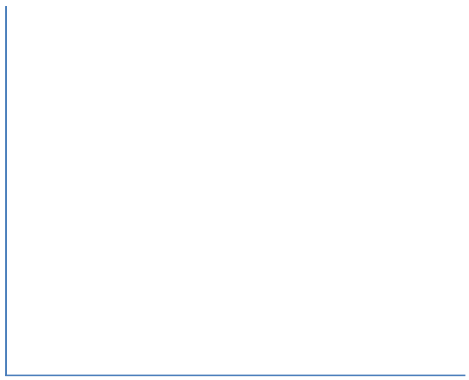
Uclamped Inductive Switching (UIS) Test





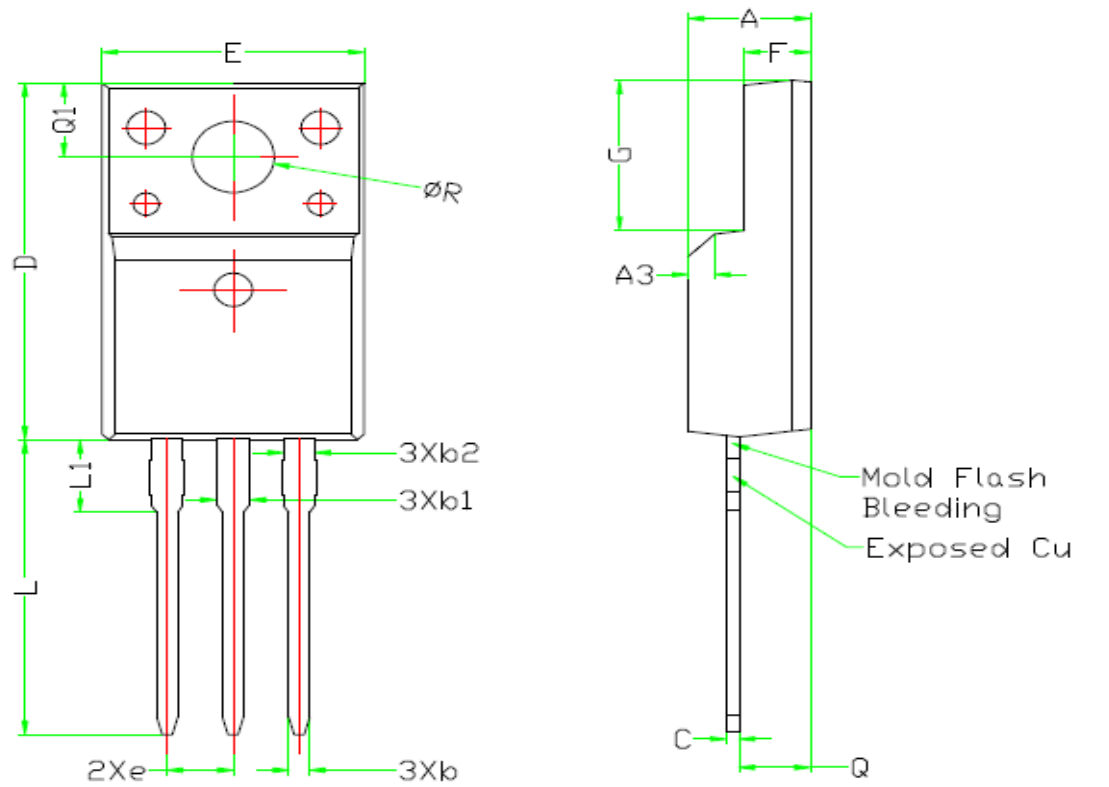
Diode Recovery Test

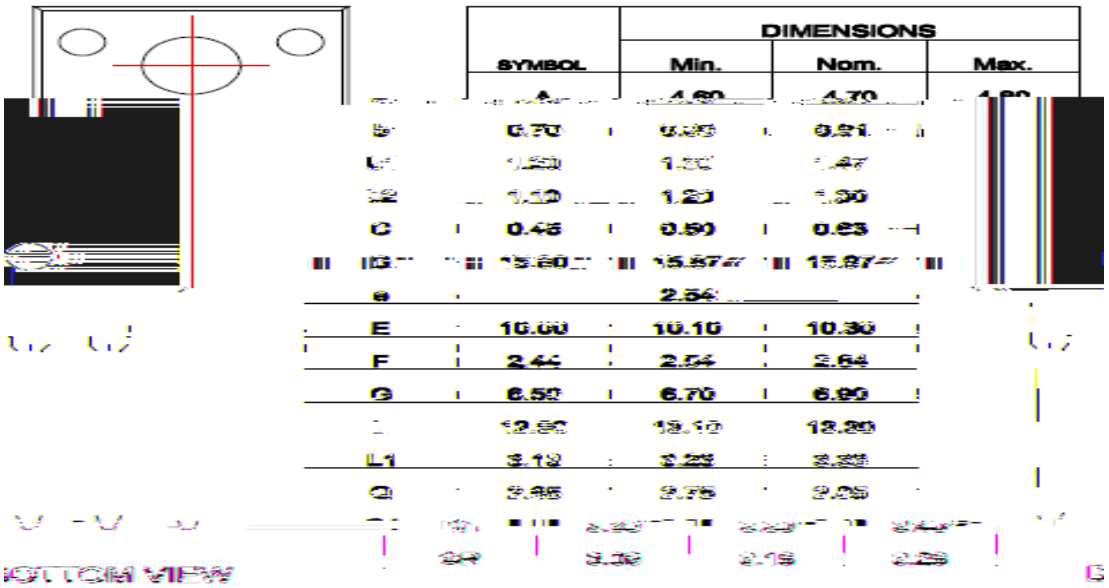




Package Outline

TO-220F, 3 leads





SYMBOL	DIMENSIONS		
	Min.	Nom.	Max.
A	4.60	4.70	
b	0.70	0.85	0.91
L	1.50	1.57	1.64
b2	1.10	1.20	1.30
c	0.45	0.50	0.63
D	15.60	15.87	15.87
e		2.54	
E	10.00	10.10	10.30
F	2.44	2.54	2.64
G	6.50	6.70	6.90
L	12.90	13.10	13.30
L1	3.12	3.28	3.28
Q	2.95	2.75	2.95
	2.49	2.59	2.69

BOTTOM VIEW

Note:
1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash And Burrs