HG3P095N25S

P-1

250V N-Ch Power MOSFET

V_{DS}	250	V
$R_{DS(on),typ}$	8.5	mΩ
$I_{D\ (Sillicon\ Limited)}$	164	A

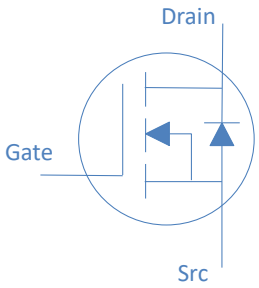
Feature

◇ High Speed Power Smooth Switching
◇ Enhanced Body diode dv/dt capability
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free

Application

◇ Synchronous Rectification in SMPS
◇ Hard Switching and High Speed Circuit
◇ Power Tools
◇ UPS
◇ Motor Control

TO-3P



Part Number	Package	Marking
HG3P095N25S	TO-3P	G3P095N25S

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℃	164	A
		T_C=100℃	116	
Drain to Source Voltage	V_{DS}	-	250	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	580	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25℃	180	mJ
Power Dissipation	P_D	T_C=25℃	600	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\Theta JC}$	0.25	℃/W
Thermal Resistance Junction-Ambient	$R_{\Theta JA}$	40	℃/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=250μA	250	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	2	2.9	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=200V, T_j=25℃	-	-	1	μA
		V_{GS}=0V, V_{DS}=200V, 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	-	8.5	10	mΩ
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	84	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.9	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=100V, f=1MHz	-	9900	-	pF
Output Capacitance	C_{oss}		-	696	-	
Reverse Transfer Capacitance	C_{rss}		-	14	-	
Total Gate Charge	Q_g	V_{DD}=125V, I_D=20A, V_{GS}=10V	-	116	-	nC
Gate to Source Charge	Q_{gs}		-	36	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	12	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=125V, I_D=20A, V_{GS}=10V, R_G=10Ω,	-	34	-	ns
Rise time	t_r		-	44	-	
Turn off Delay Time	$t_{d(off)}$		-	76	-	
Fall Time	t_f		-	22	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	-	V
Reverse Recovery Time	t_{rr}	V_R=125V, I_F=20A, dI_F/dt=100A/μs	-	336	-	ns
Reverse Recovery Charge	Q_{rr}		-	1680	-	nC

Fig 1. Typical Output Characteristics

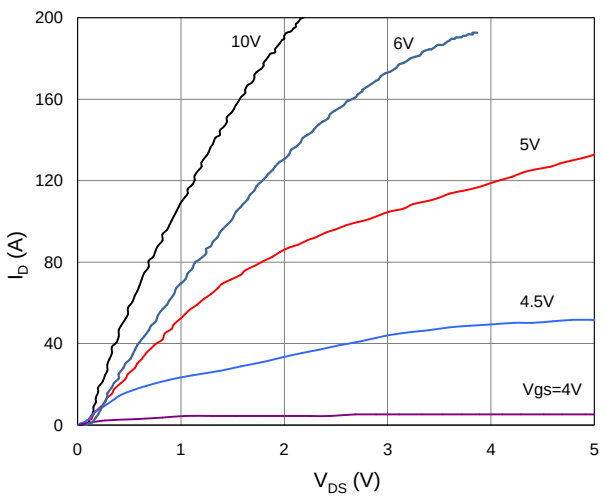


Figure 2. On-Resistance vs. Gate-Source Voltage

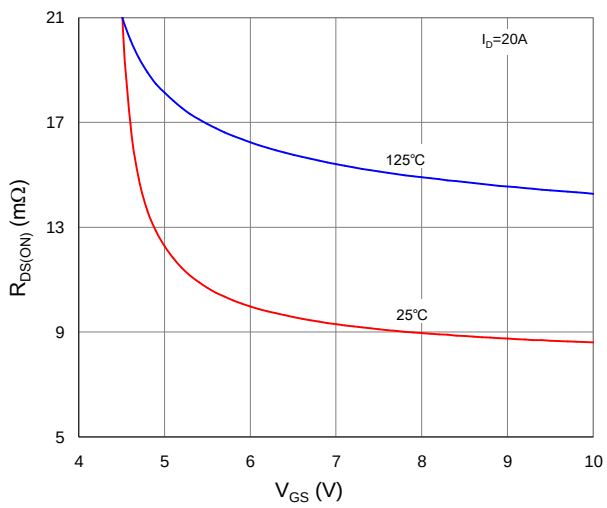


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

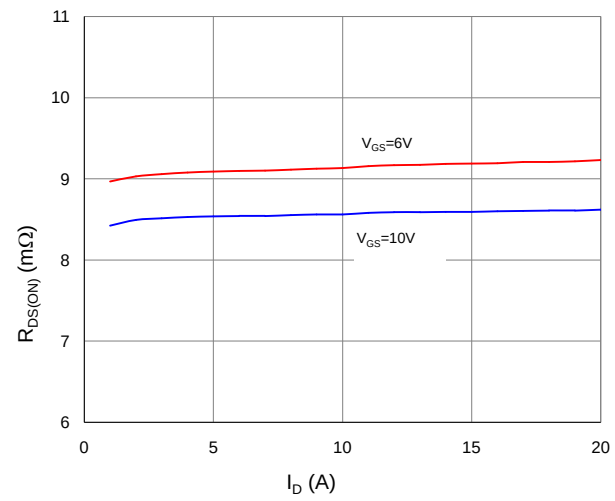


Figure 4. Normalized On-Resistance vs. Junction Temperature

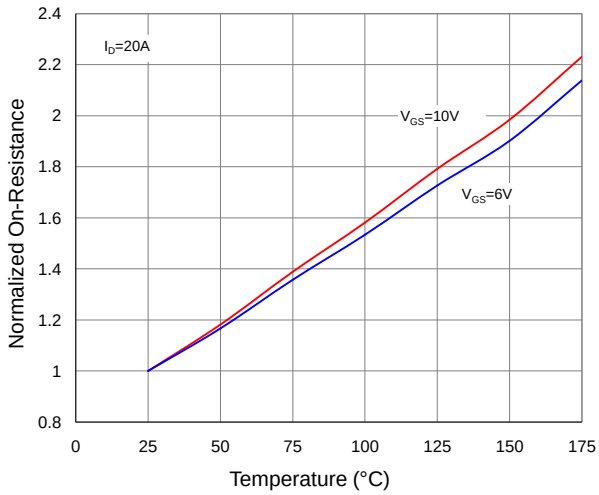


Figure 5. Typical Transfer Characteristics

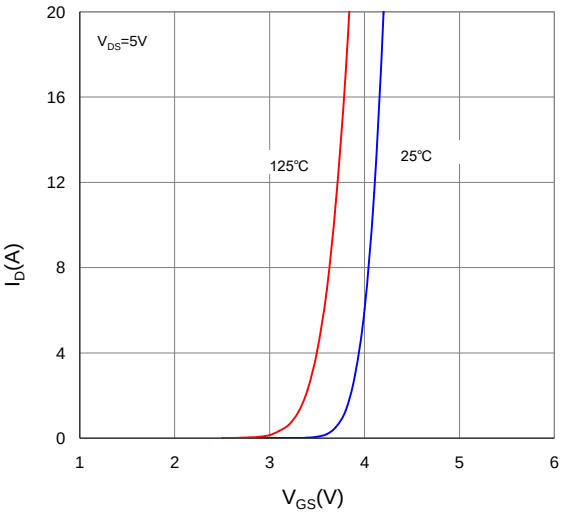


Figure 6. Typical Source-Drain Diode Forward Voltage

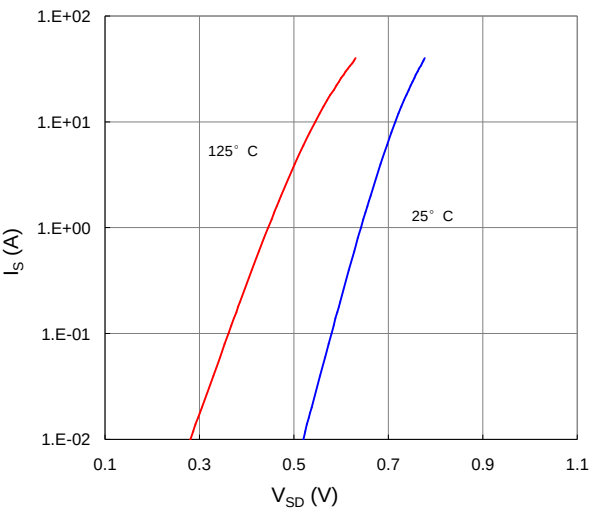


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

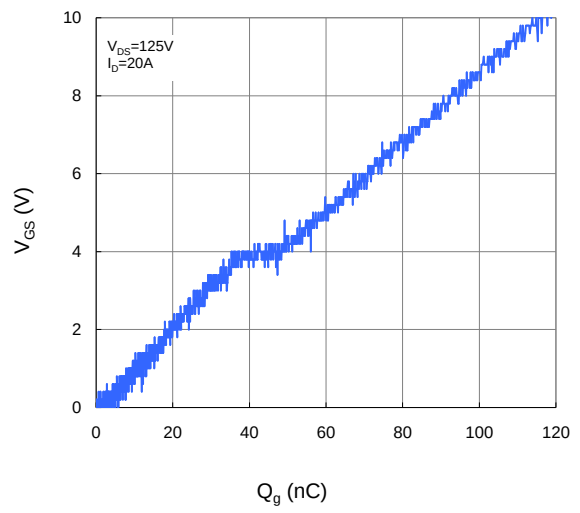


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

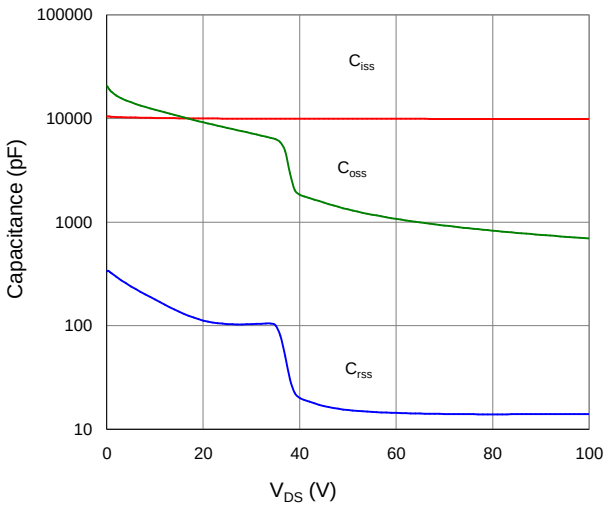


Figure 9. Maximum Safe Operating Area

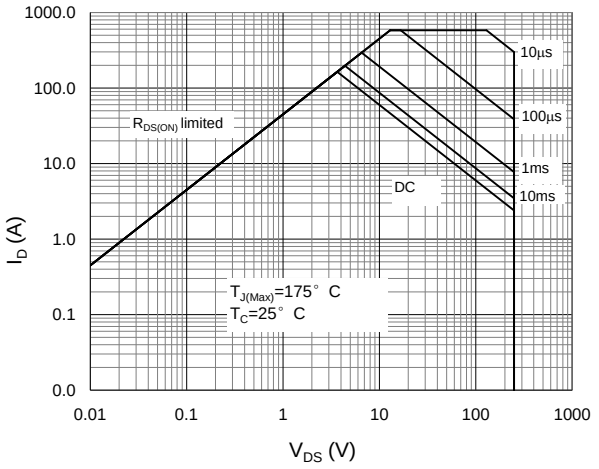


Figure 10. Maximun Drain Current vs. Case Temperature

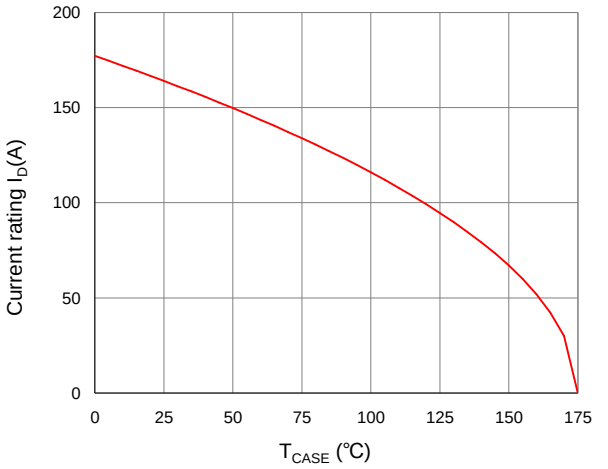
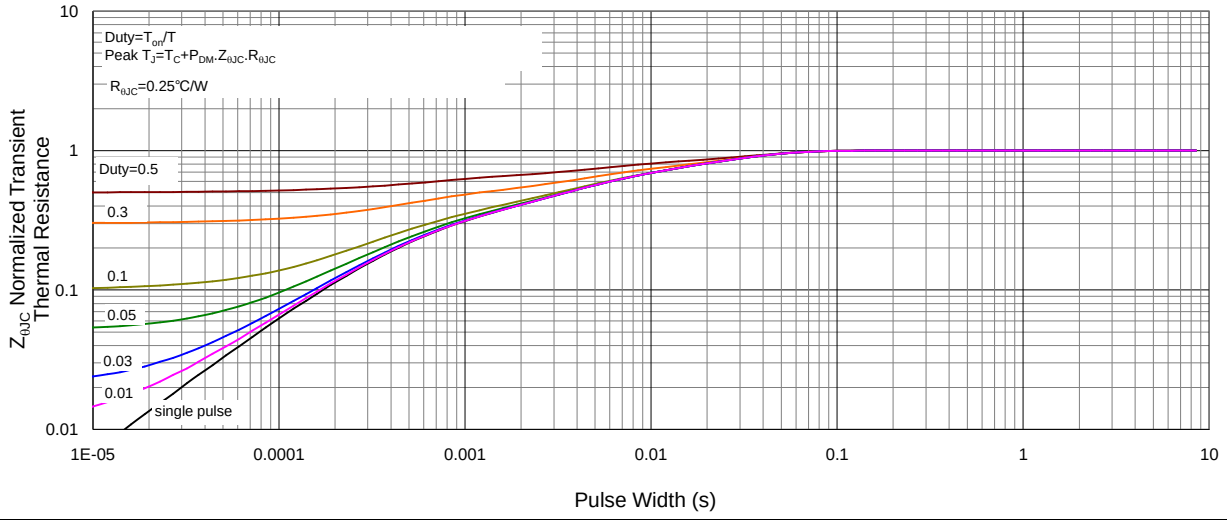
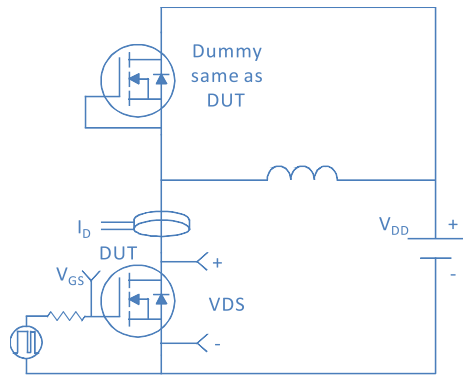
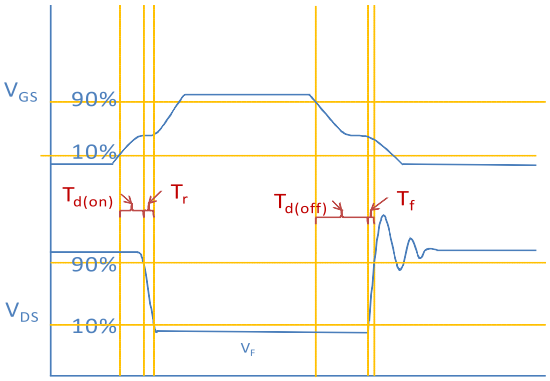


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

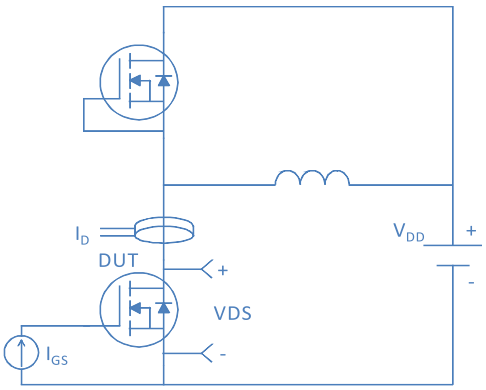


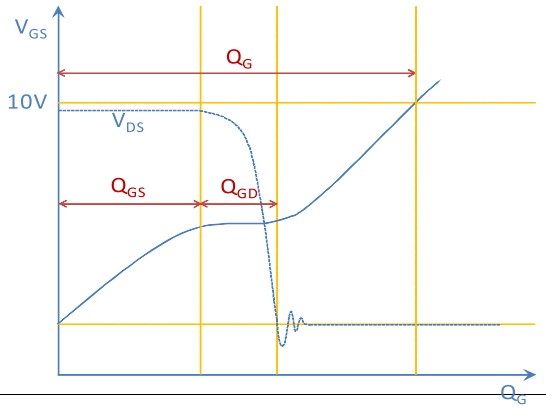
Inductive switching Test



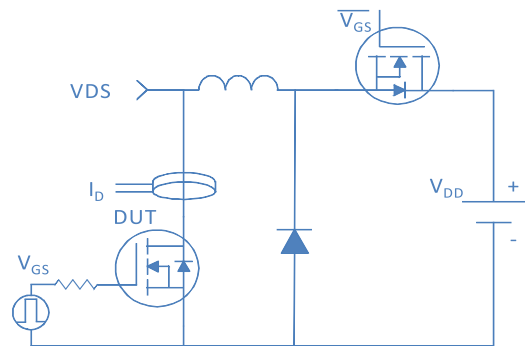


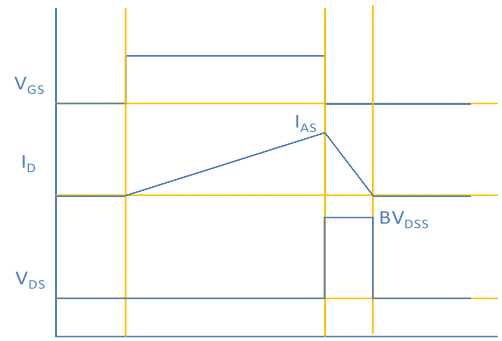
Gate Charge Test



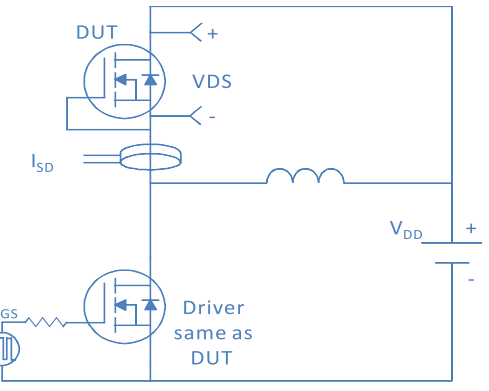


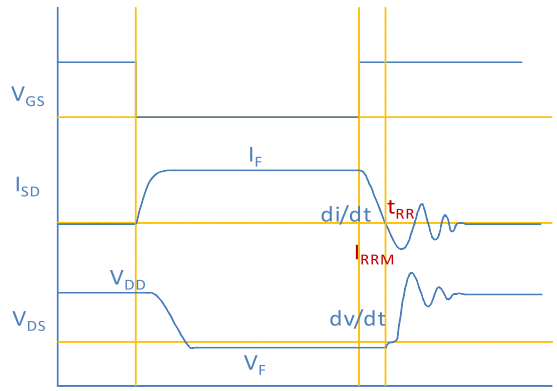
Uclamped Inductive Switching (UIS) Test



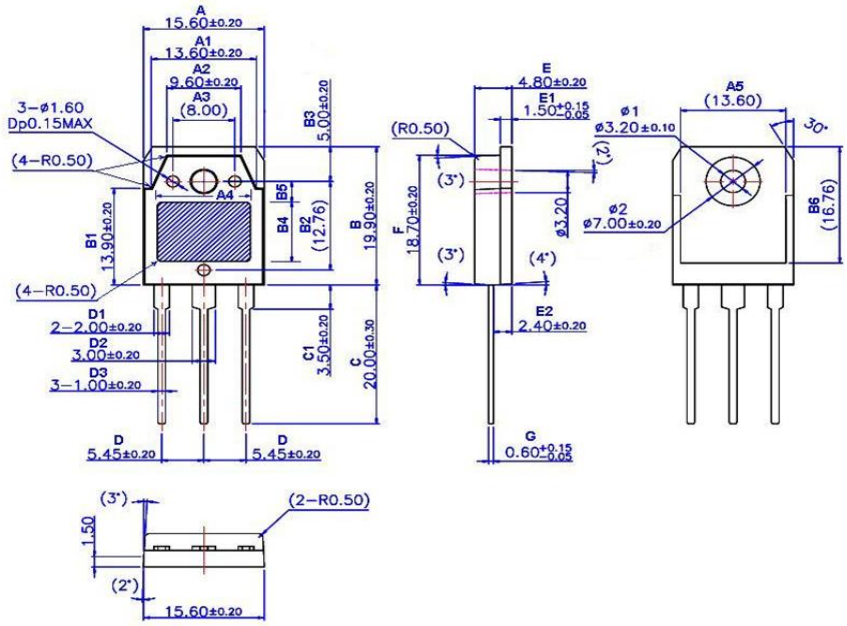


Diode Recovery Test





TO-3P, 3 leads



（单位：mm）

符号	尺寸		符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max		Min	Max
A	15.40	15.80	B1	13.70	14.10	C1	3.30	3.70	E2	2.20	2.60
A1	13.40	13.80	B2	（12.76）		D	5.25	5.65	F	18.50	18.90
A2	9.40	9.80	B3	4.80	5.20	D1	1.80	2.20	G	0.55	0.75
A3	（8.00）		B4	（8.50）		D2	2.80	3.20	Φ1	3.10	3.30
A4	（12.00）		B5	（3.00）		D3	0.80	1.20	Φ2	6.80	7.20
A5	（13.60）		B6	（16.76）		E	4.60	5.00			
B	19.70	20.10	C	19.70	20.30	E1	1.45	1.65			