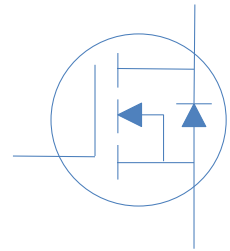


## 120V N-Ch Power MOSFET

$V_{DS}$		120	V
$R_{DS(on),typ}$	TO-263	2	m
$R_{DS(on),typ}$	TO-220	2.3	m
$I_D$ (Silicon Limited)		269	A
$I_D$ (Package Limited)		180	A



Part Number	Package	Marking
HGB027N12S	TO-263	GB027N12S
HGP027N12S	TO-220	GP027N12S

Absolute Maximum Ratings at  $T_J$ 

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	$I_D$	$T_C$	269	A
		$T_C$	191	
		$T_C$	180	
Continuous Drain Current (Package Limited)		$T_C$	180	
Drain to Source Voltage	$V_{DS}$	-	120	V
Gate to Source Voltage	$V_{GS}$	-	20	V
Pulsed Drain Current	$I_{DM}$	-	750	A
Avalanche Energy, Single Pulse	$E_{AS}$	$L=0.4mH, T_C$	720	mJ
Power Dissipation	$P_D$	$T_C$	429	W
Operating and Storage Temperature	$T_J, T_{stg}$	-	-55 to 175	

## Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	R	0.35	
Thermal Resistance Junction-Ambient	R	60	

## Electrical Characteristics at T<sub>j</sub>

### Static Characteristics

Parameter	Symbol	Conditions	Value		Unit
			typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\text{ A}$	120	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\text{ A}$	2	2.9	4
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=120V, T_j$	-	-	1
		$V_{GS}=0V, V_{DS}=120V, T_j$	-	-	100
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS} \quad \quad \quad V_{DS}=0V$	-	-	100
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$ TO-263	-	2	2.5
		$V_{GS}=10V, I_D=20A$ TO-220	-	2.3	2.8
Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=20A$	-	86	-
		$V_{GS}=0V, V_{DS}\text{ Open}, f=1\text{MHz}$	-	1.8	-

### Dynamic Characteristics

Input Capacitance	$C_{iss}$		-	11140	-
Output Capacitance	$C_{oss}$	$V_{GS}=0V, V_{DS}=60V, f=1\text{MHz}$	-	1332	-
Reverse Transfer Capacitance	$C_{rss}$		-	326	-
Total Gate Charge	$Q_g$		-		
Gate to Source Charge	$Q_{gs}$	$V_{DD}=60V, I_D=20A, V_{GS}=10V$	-		nC
Gate to Drain (Miller) Charge	$Q_{gd}$		-		
Rise time	$t_r$		-	30	
Reverse Recovery Time			-	91	ns
Reverse Recovery Charge	$Q_{rr}$		-	182	nC

Fig 1. Typical Output Characteristics

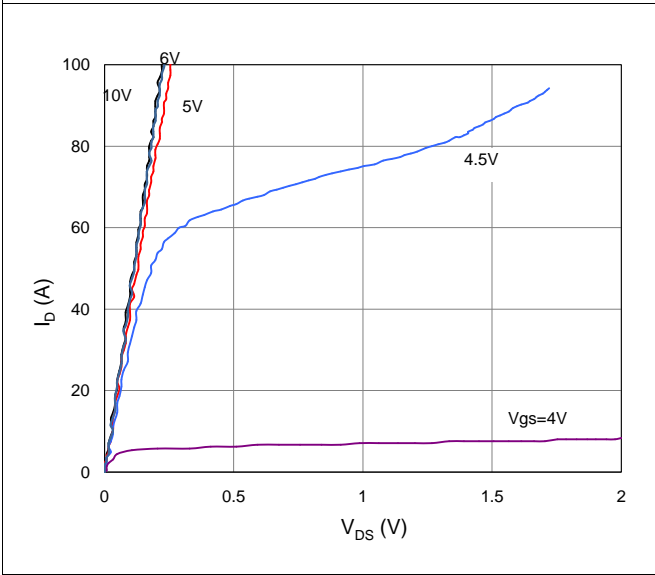


Figure 2. On-Resistance vs. Gate-Source Voltage

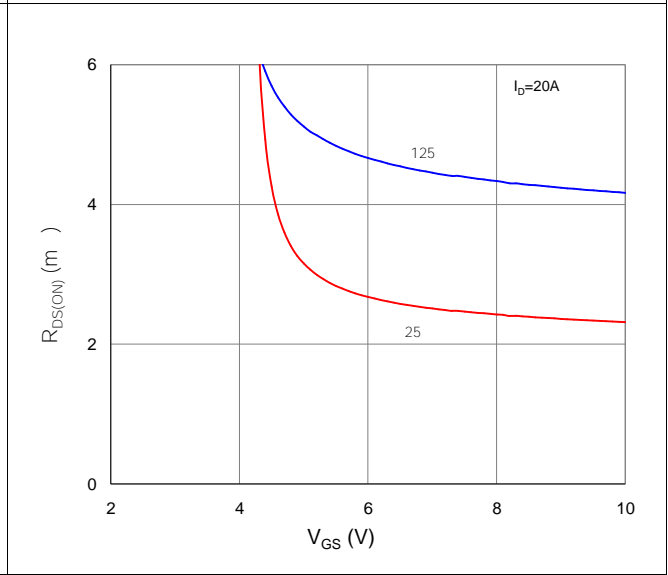


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

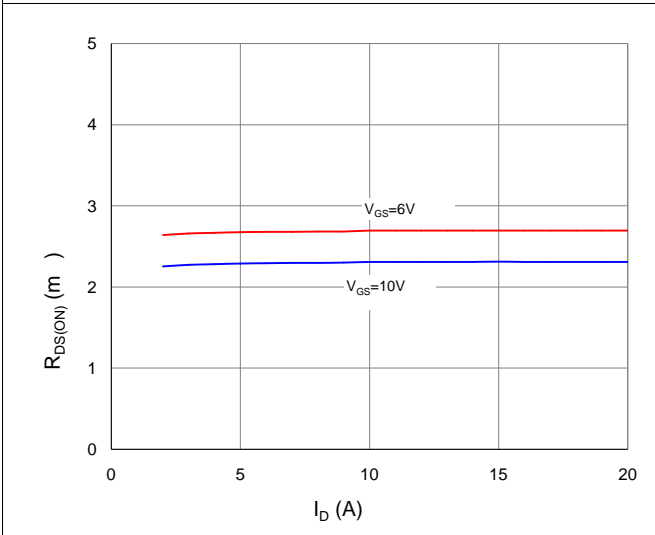


Figure 4. Normalized On-Resistance vs. Junction Temperature

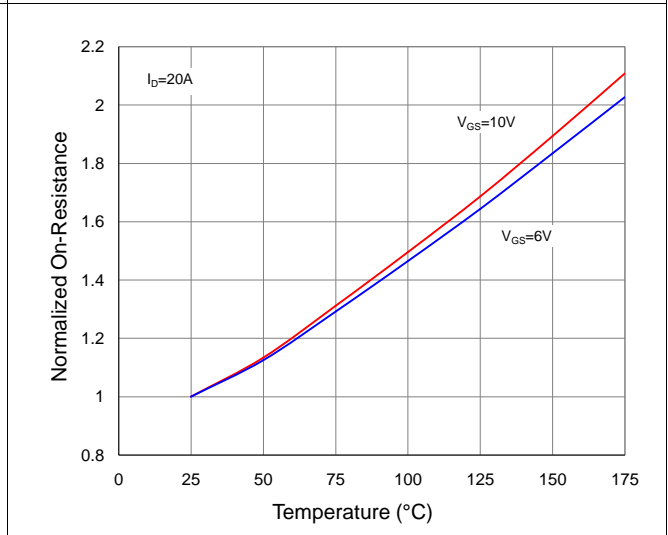


Figure 5. Typical Transfer Characteristics

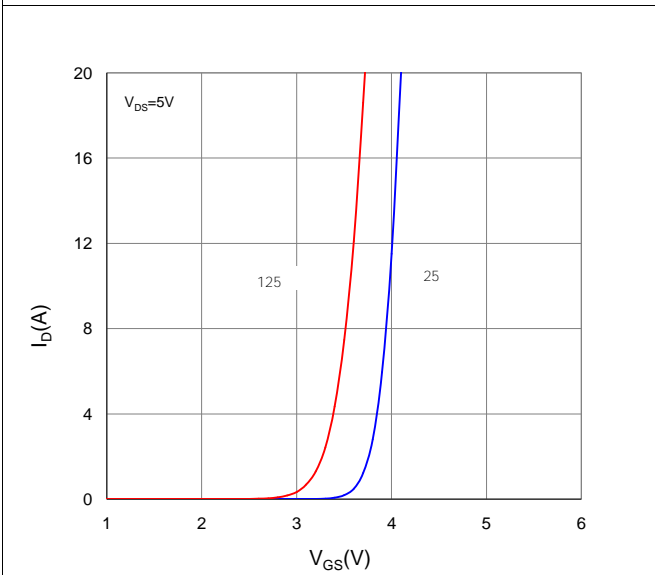


Figure 6. Typical Source-Drain Diode Forward Voltage

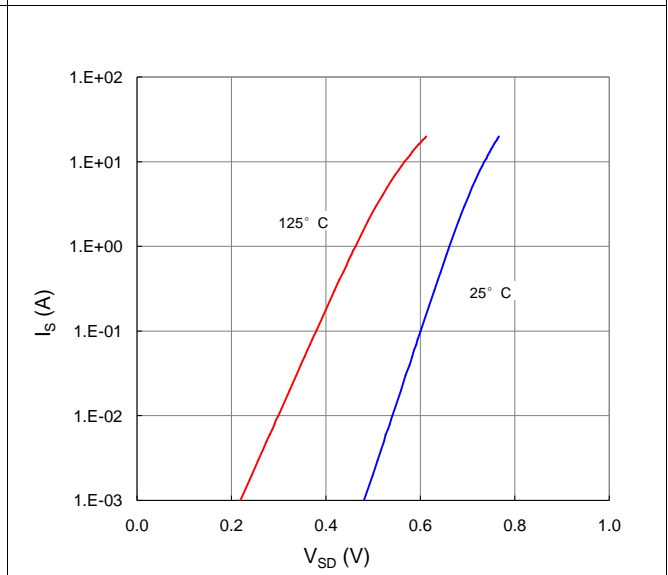


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

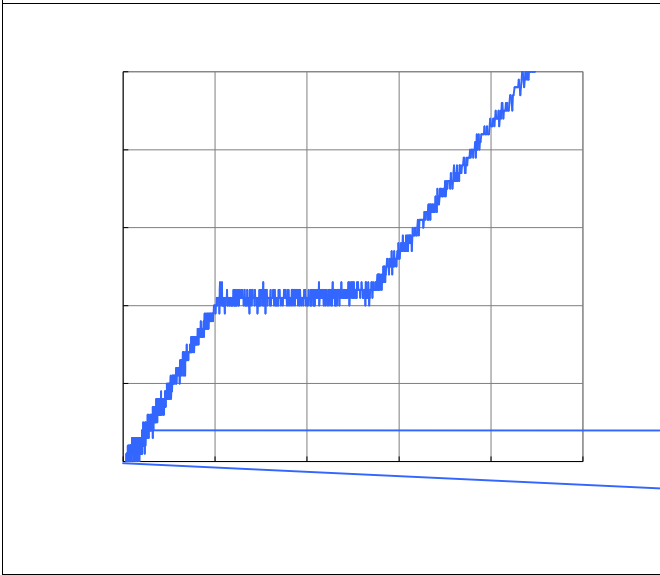


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

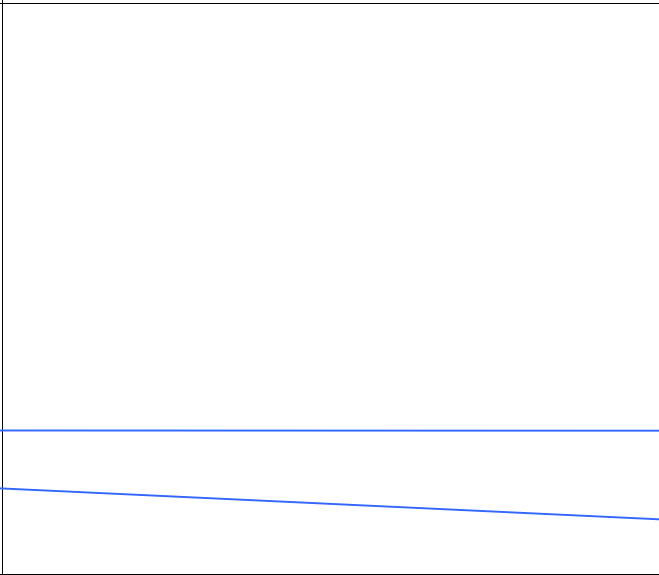


Figure 9. Maximum Safe Operating Area

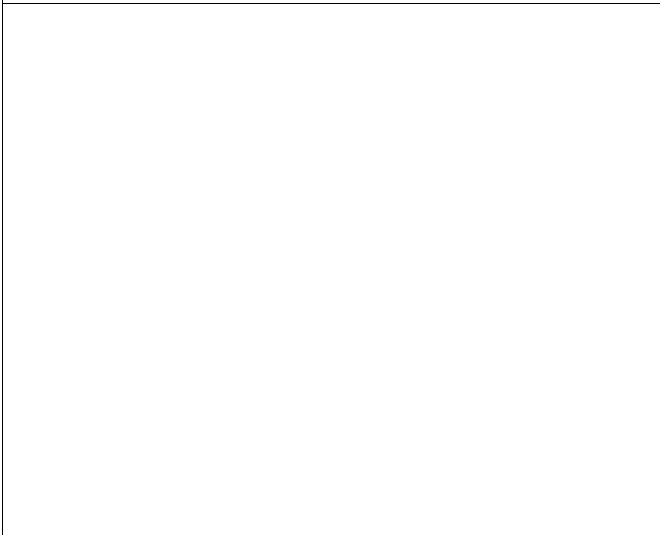


Figure 10. Maximum Drain Current vs. Case Temperature

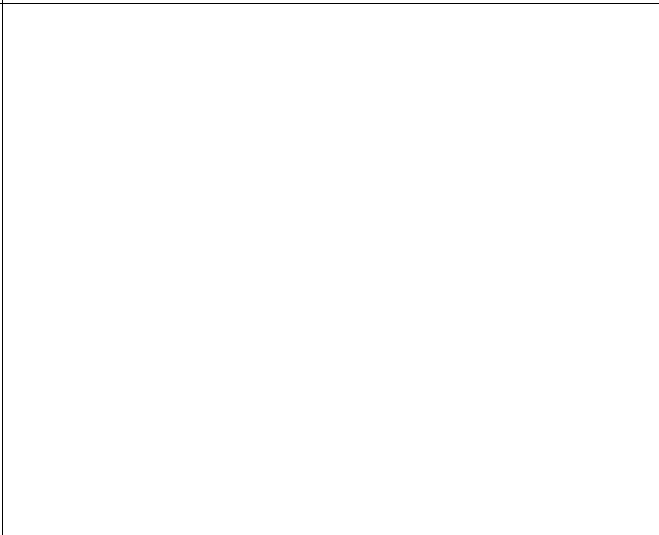
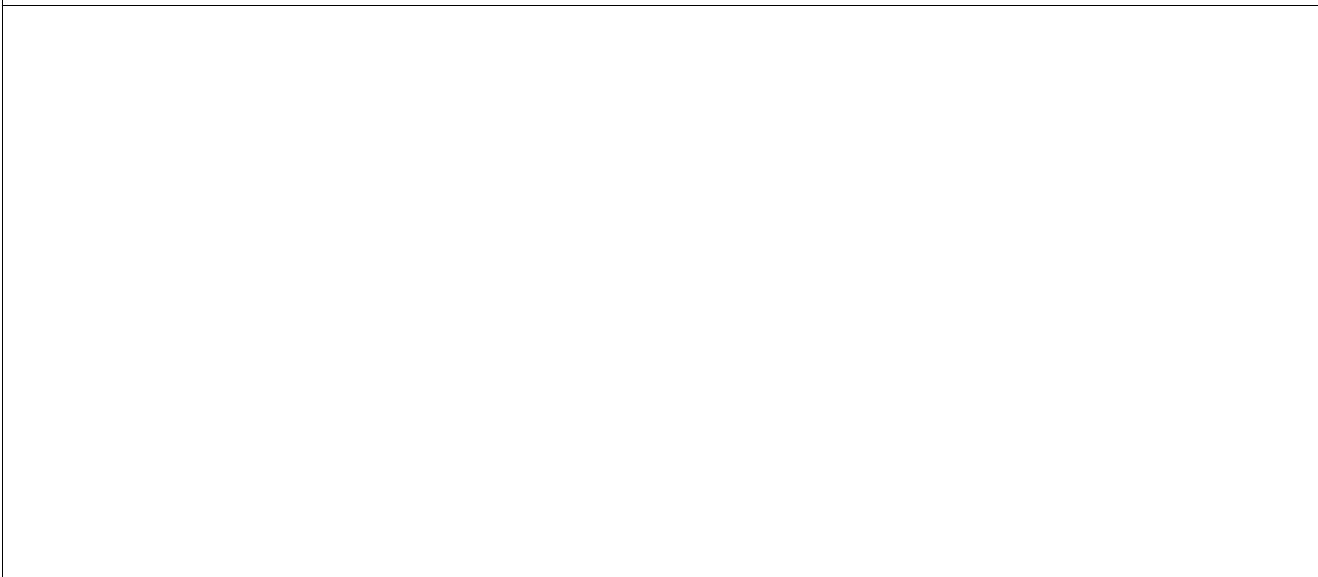
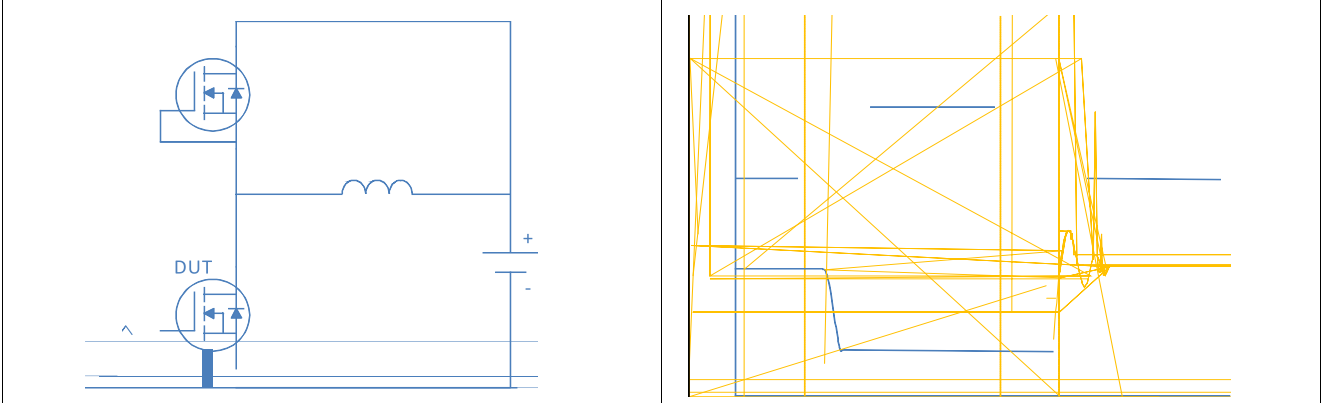


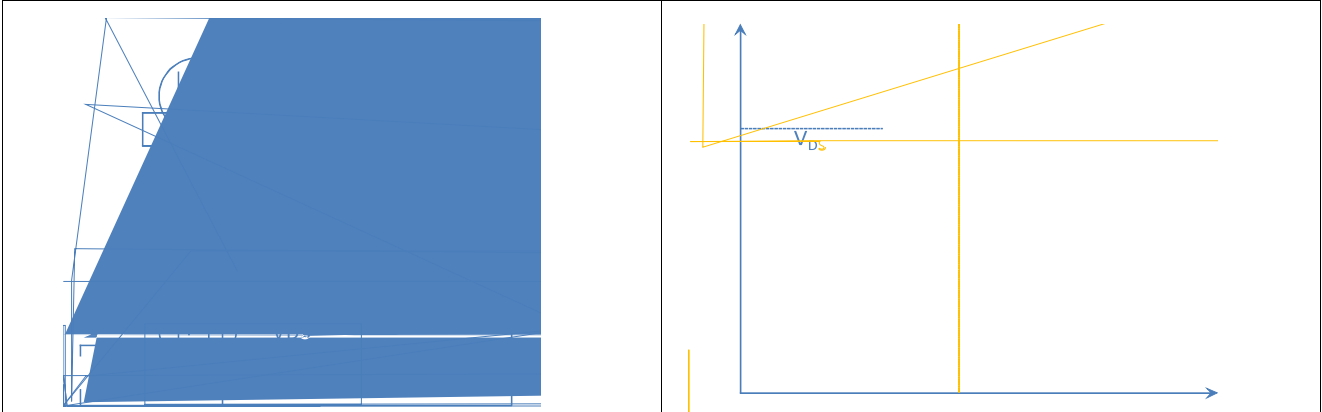
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



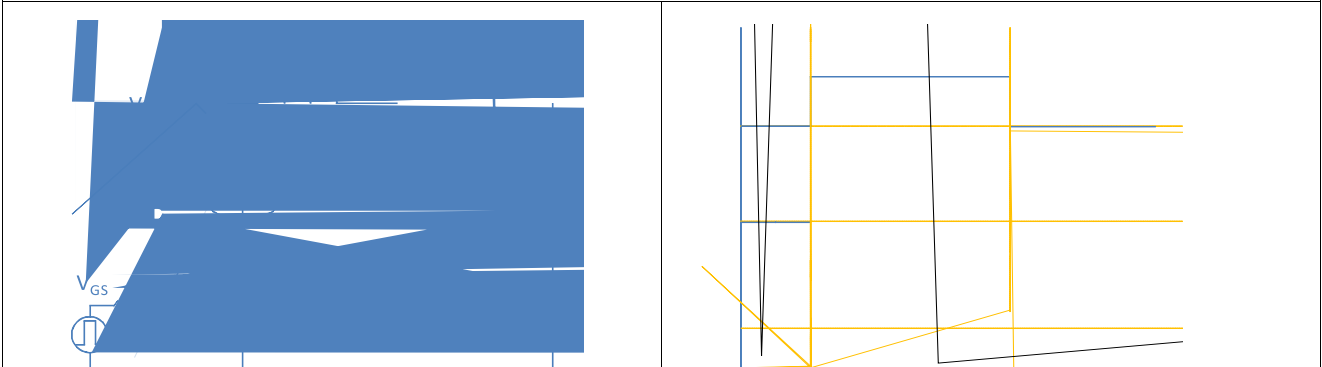
Inductive switching Test



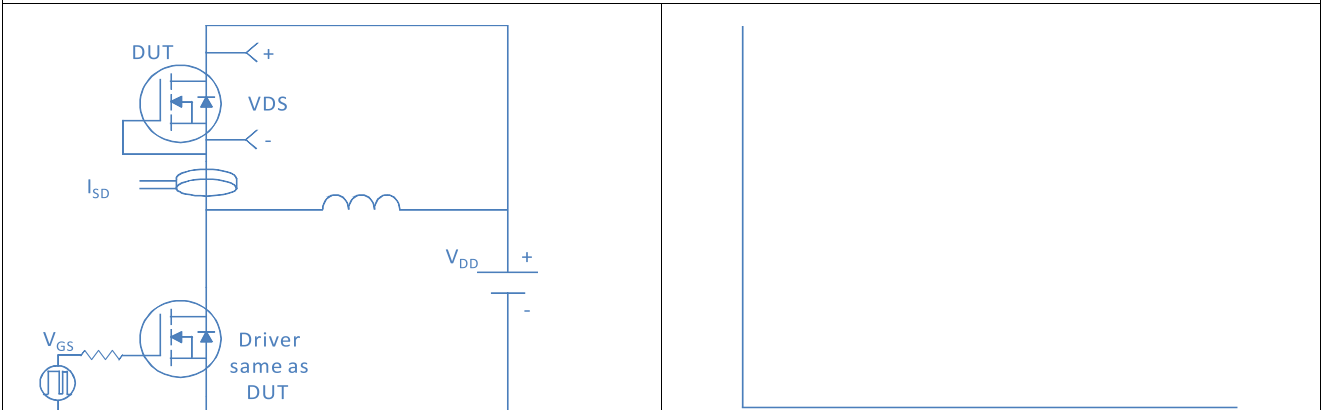
Gate Charge Test



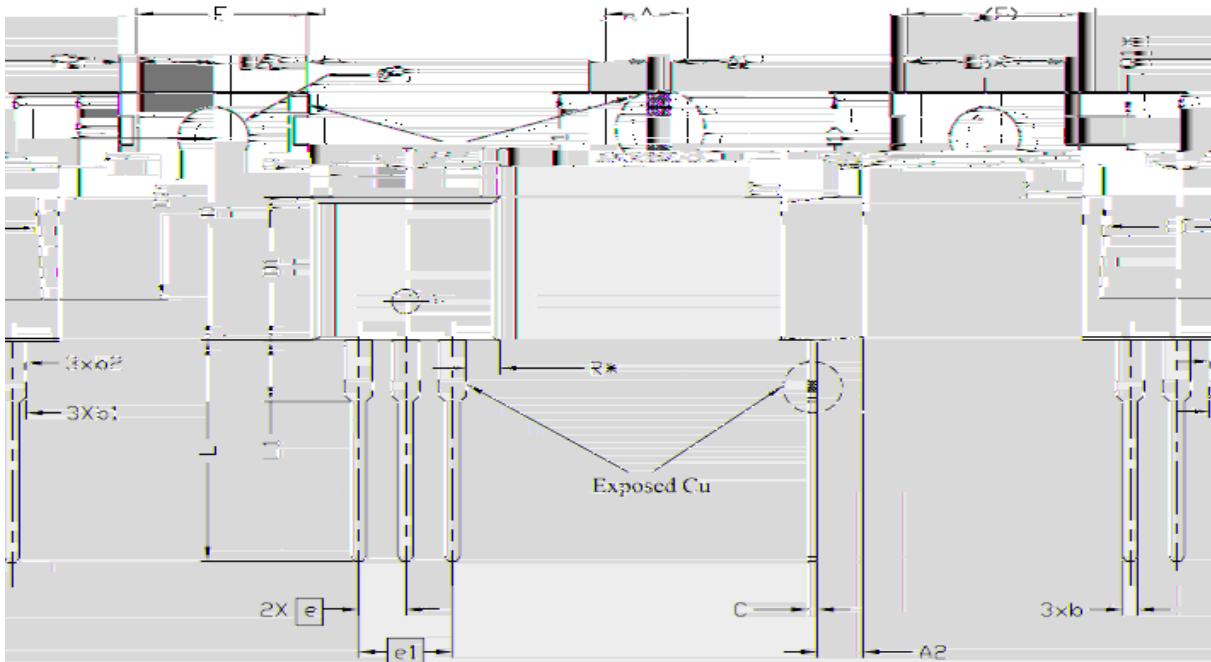
Uclamped Inductive Switching (UIS) Test



Diode Recovery Test



TO-220, 3 leads



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4,24	4,44	4,64	
A1	1,15	1,27	1,40	
A2	2,30	2,48	2,70	
b	0,70	0,80	0,90	
b1	1,20	1,55	1,75	
b2	1,20	1,45	1,70	
c	0,40	0,50	0,60	
D	14,70	15,37	16,00	4
D1	8,82	8,92	9,02	
D2	12,63	12,73	12,83	5
E	9,96	10,16	10,36	4,5
E1	6,86	7,77	8,89	5
E2	-	-	0,76	6
E3*	8,70REF.			
e	2,54BSC			
e1	5,08BSC			
H1	6,30	6,45	6,60	5,6
L	13,47	13,72	13,97	
L1	3,60	3,80	4,00	
øP	3,75	3,84	3,93	
Q	2,60	2,80	3,00	
Q1*	1,73REF.			
R*	1,82REF.			

TO-263, 2 leads