

## 65V N-Ch Power MOSFET

$V_{DS}$		65	V
$R_{DS(on),typ}$	$V_{GS}=10V$	4.7	m

Gate to Source Voltage	$V_{DS}$	
Pulsed Drain Current	$V_{GS}$	
	$I_{DM}$	
Power Dissipation	$P_D$	$T_C=25^{\circ}C$
Operating and Storage Temperature	$T_J, T_{stg}$	-

## Absolute Maximum Ratings

Symbol

**Electrical Characteristics at  $T_j=25^{\circ}\text{C}$  (unless otherwise specified)**
**Static Characteristics**

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\text{ A}$	65	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\text{ A}$	2.0	2.7	4.0	
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{GS}=0V, V_{DS}=60V, T_j=25^{\circ}\text{C}$	-	-	1	A
		$V_{GS}=0V, V_{DS}=60V, T_j=100^{\circ}\text{C}$	-	-	100	
Gate to Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	4.7	5.4	m
Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=20A$	-	50	-	S
Gate Resistance	$R_G$	$V_{GS}=0V, V_{DS}\text{ Open}, f=1\text{MHz}$	-	1.2	-	

**Dynamic Characteristics**

Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=30V, f=1\text{MHz}$	-	2373	-	pF
Output Capacitance	$C_{oss}$		-	769	-	
Reverse Transfer Capacitance	$C_{rss}$		-	45	-	
Total Gate Charge	$Q_g(10V)$	$V_{DD}=30V, I_D=20A, V_{GS}=10V$	-	41	-	nC
Gate to Source Charge	$Q_{gs}$		-	10	-	
Gate to Drain (Miller) Charge	$Q_{gd}$		-	10	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=20A, V_{GS}=10V, R_G=10\text{ }\Omega$	-	11	-	ns
Rise time	$t_r$		-	7	-	
Turn off Delay Time	$t_{d(off)}$		-	35	-	
Fall Time	$t_f$		-	9	-	

**Reverse Diode Characteristics**

Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_F=30A$	-	0.9	1.2	V
Reverse Recovery Time	$t_{rr}$	$V_R=30V, I_F=20A, dI_F/dt=400A/\text{s}$	-	35	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	88	-	nC

Fig 1. Typical Output Characteristics

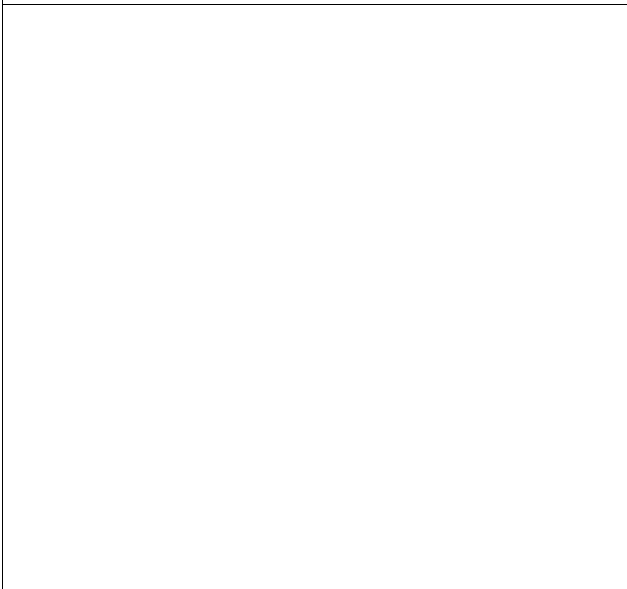


Figure 2. On-Resistance vs. Gate-Source Voltage

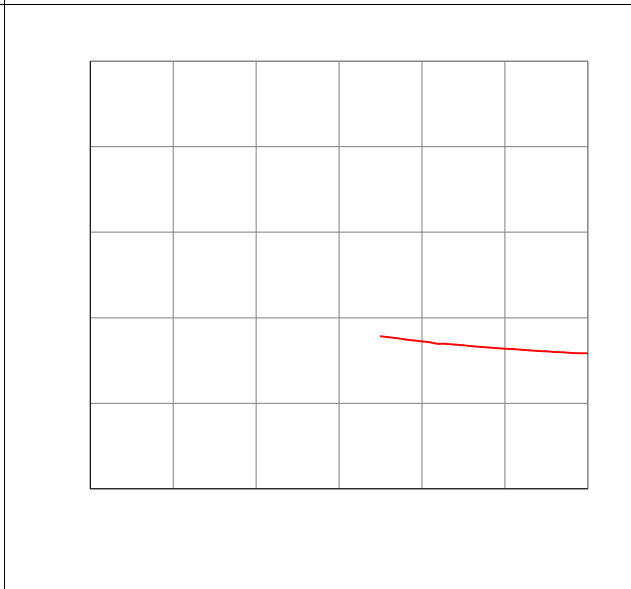


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

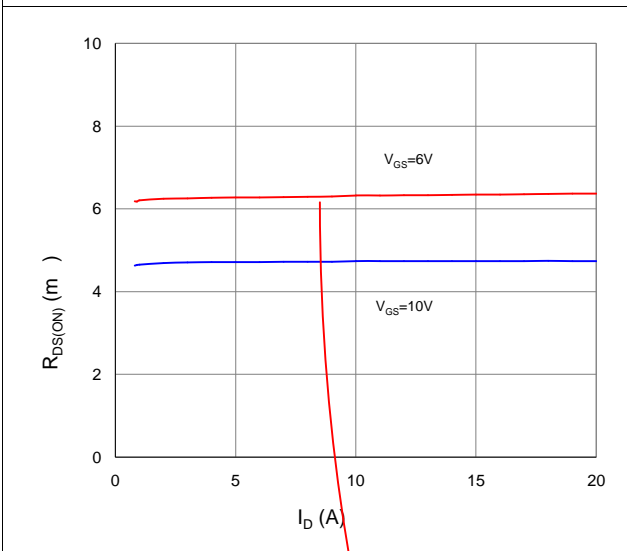


Figure 4. Normalized On-Resistance vs. Junction Temperature

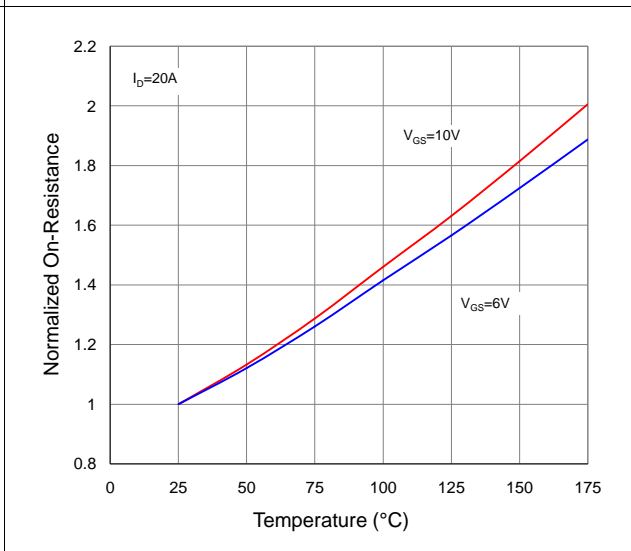


Figure 5. Typical Transfer Characteristics

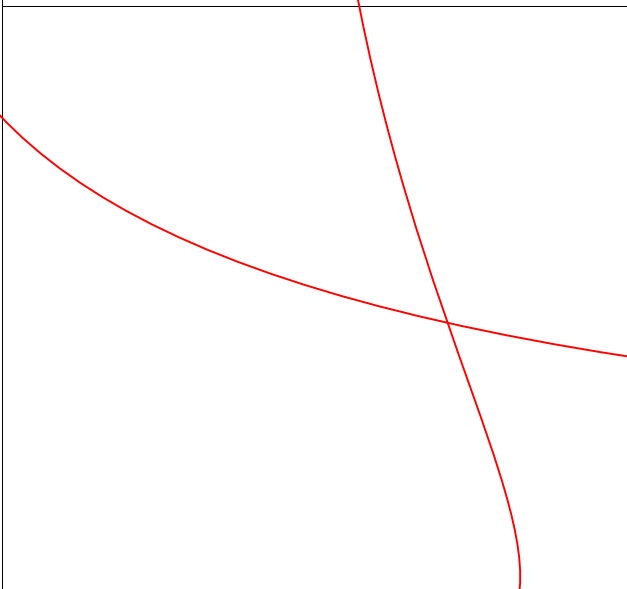


Figure 6. Typical Source-Drain Diode Forward Voltage

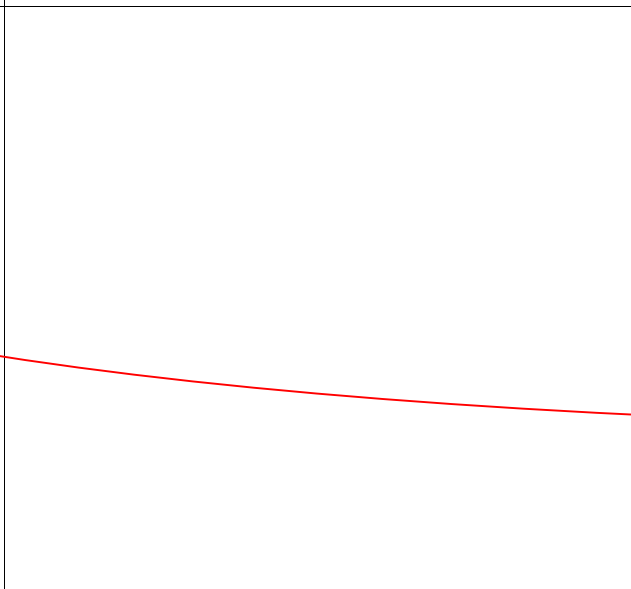


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

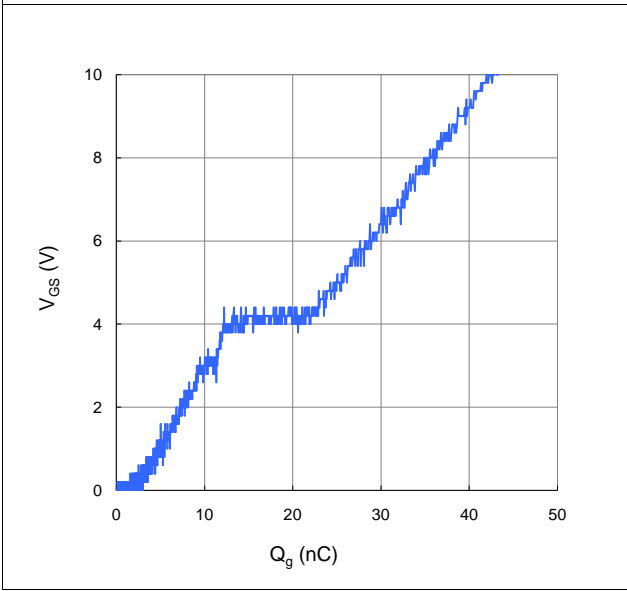


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

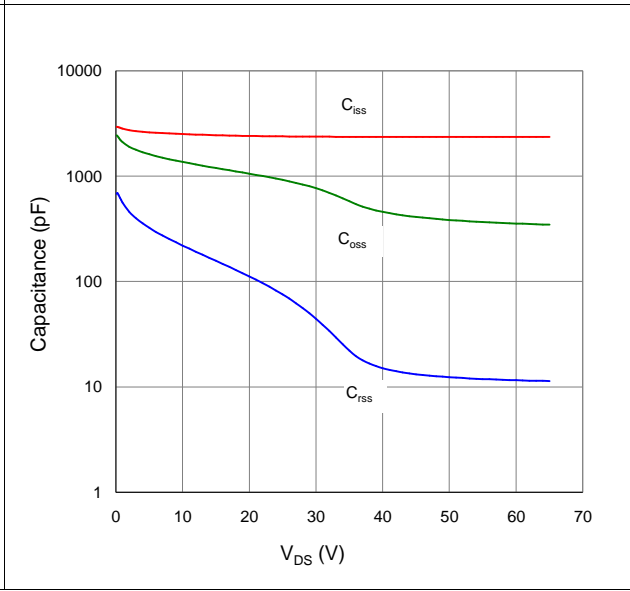


Figure 9. Maximum Safe Operating Area

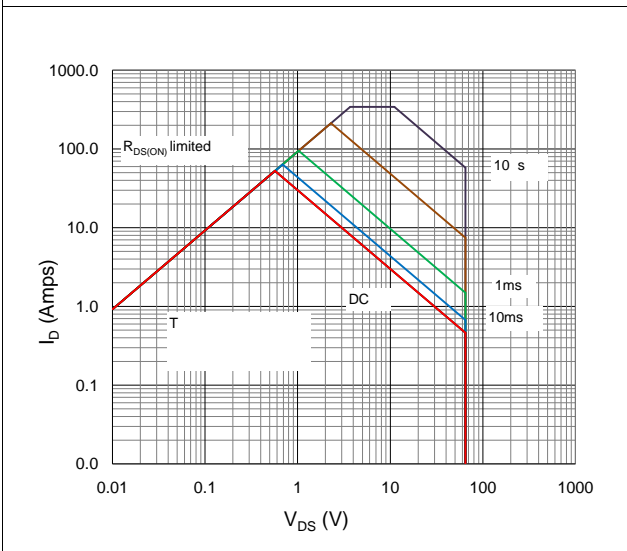


Figure 10. Maximum Drain Current vs. Case Temperature

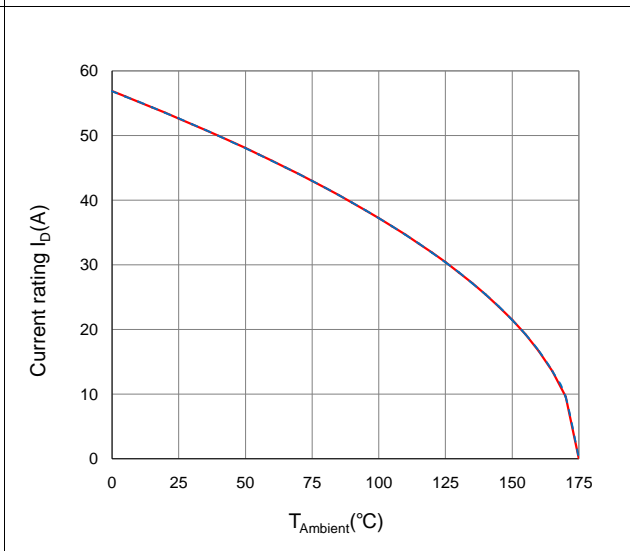
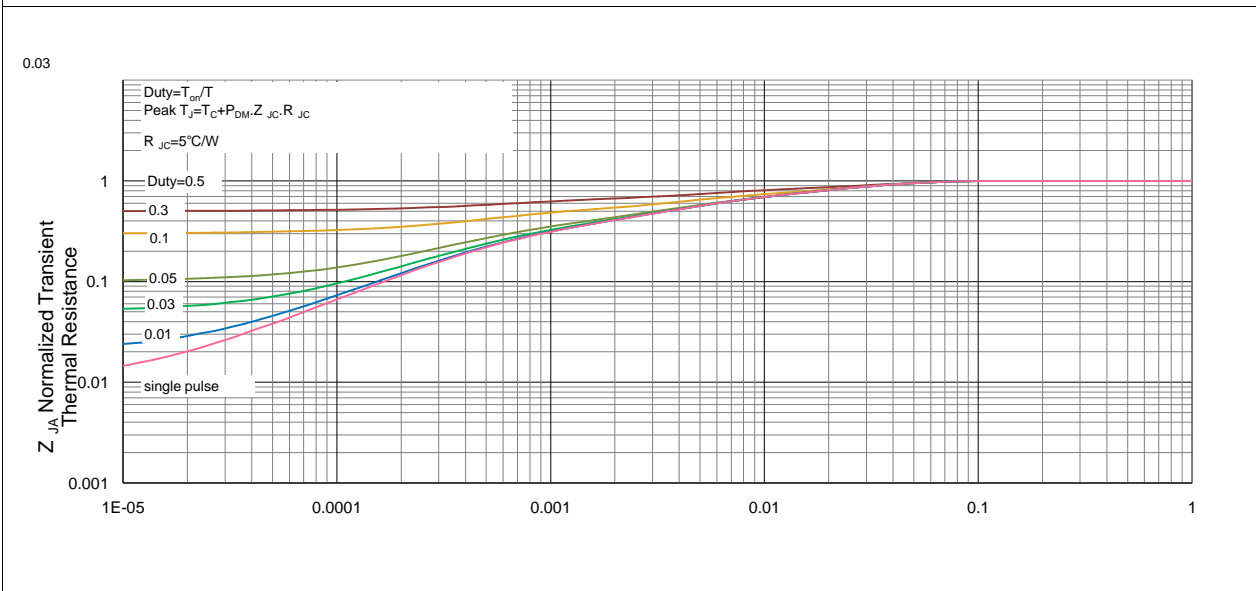
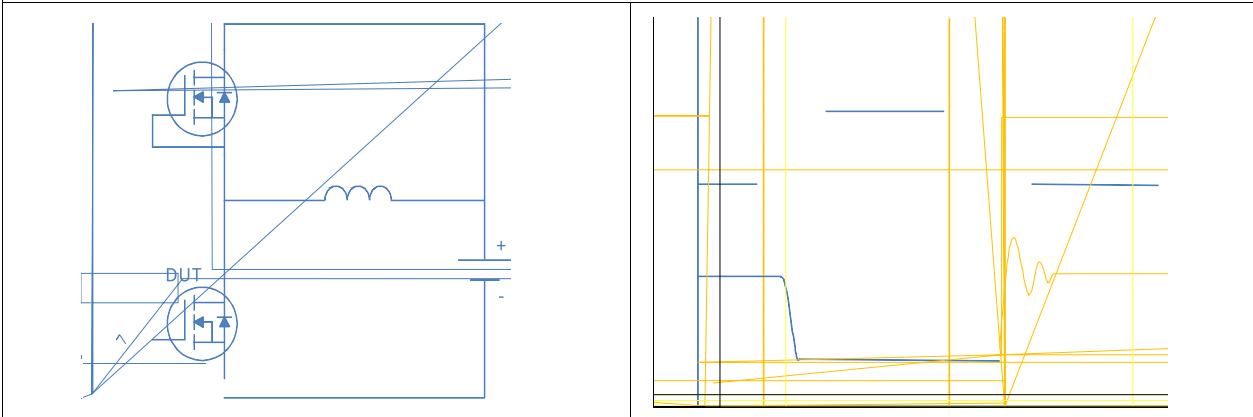


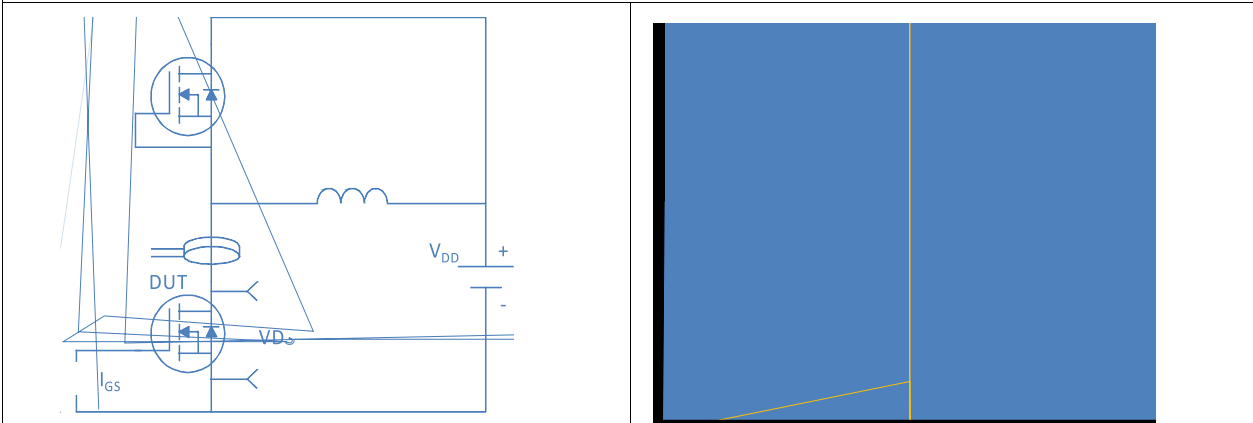
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



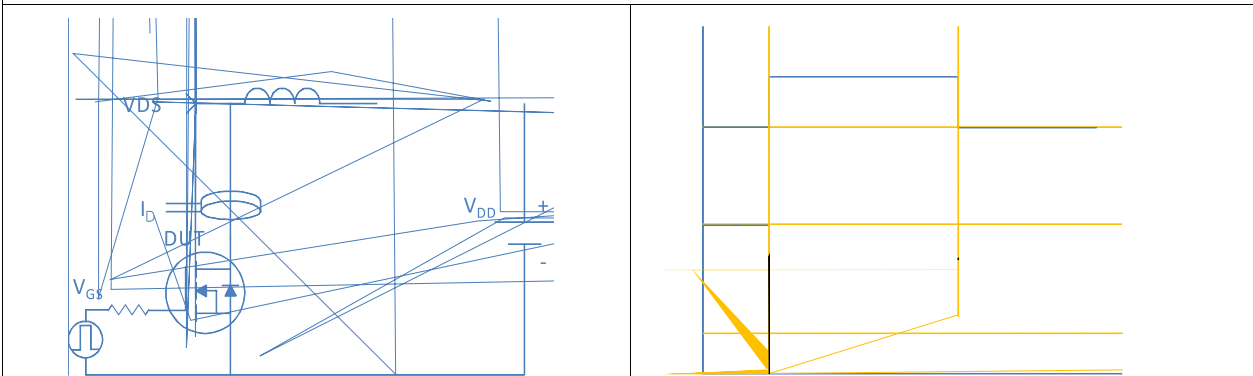
Inductive switching Test



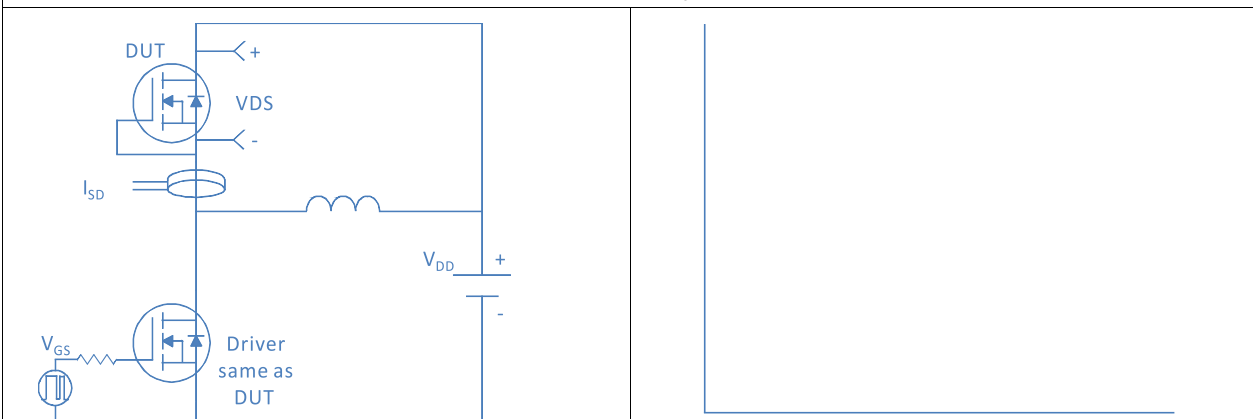
Gate Charge Test



Unclamped Inductive Switching (UIS) Test

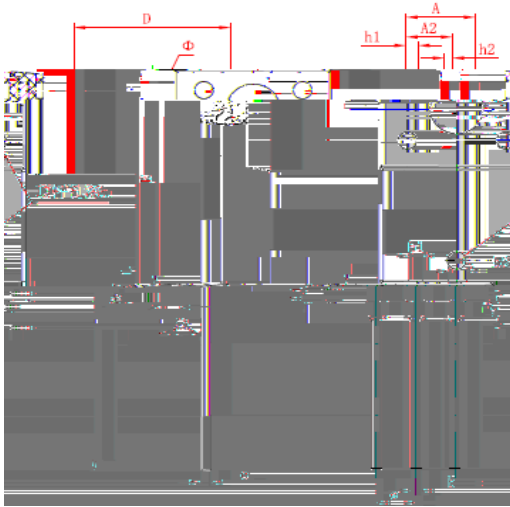


Diode Recovery Test



Package Outline

TO-220F, 3 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.350	4.650	0.169	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.850	3.150	0.112	0.124
A3	2.600	2.800	0.102	0.110
b	0.500	0.750	0.020	0.030
b1	0.800	1.050	0.031	0.041
b2	1.100	1.350	0.043	0.053
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
phi	3.500 REF.		0.138 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
h2	0.500 REF.		0.020 REF.	
L	28.000	28.400	1.102	1.118
L1	1.100	1.300	0.043	0.051