HGN006N03A P-1

30V N-Ch Power MOSFET

Feature

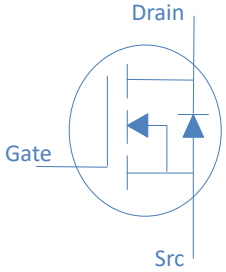
◇ High Speed Power Switching
◇ Enhanced Body diode dv/dt capability
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free, Halogen Free

V_{DS}	30	V
$R_{DS(on),typ}$	0.55	mΩ
$I_{D\ (Sillicon\ Limited)}$	343	A
$I_{D\ (Package\ Limited)}$	100	A

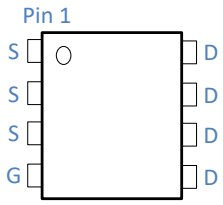
Application

◇ Synchronous Rectification in SMPS
◇ Hard Switching and High Speed Circuit
◇ DC/DC in Telecoms and Inductrial

DFN5*6



Part Number	Package	Marking
HGN006N03A	DFN5*6	GN006N03A



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℃	343	A
		T_C=100℃	217	
Continuous Drain Current(Package Limited)		T_C=25℃	100	
Drain to Source Voltage	V_{DS}	-	30	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	1000	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25℃	180	mJ
Power Dissipation	P_D	T_C=25℃	119	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	55	℃/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.05	℃/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	30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	2	2.3	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=30V, T_j=25℃	-	-	1	μA
		V_{GS}=0V, V_{DS}=30V, 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	-	0.55	0.65	mΩ
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	85	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	0.95	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=15V, f=1MHz	-	5948	-	pF
Output Capacitance	C_{oss}		-	2978	-	
Reverse Transfer Capacitance	C_{rss}		-	363	-	
Total Gate Charge	Q_g(10V)	V_{DD}=15V, I_D=20A, V_{GS}=10V	-	93	-	nC
Gate to Source Charge	Q_{gs}		-	14	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	26	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=15V, I_D=20A, V_{GS}=10V	-	20	-	ns
Rise time	t_r		-	13	-	
Turn off Delay Time	$t_{d(off)}$		-	37	-	
Fall Time	t_f		-	9	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=100A	-	0.8	1.2	V
Reverse Recovery Time	t_{rr}	V_R=15V, I_F=20A, dI_F/dt=100A/μs	-	62	-	ns
Reverse Recovery Charge	Q_{rr}		-	68	-	nC

Fig 1. Typical Output Characteristics

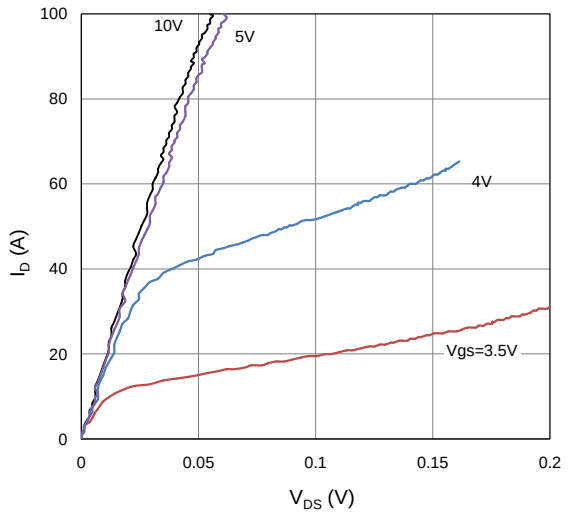


Figure 2. On-Resistance vs. Gate-Source Voltage

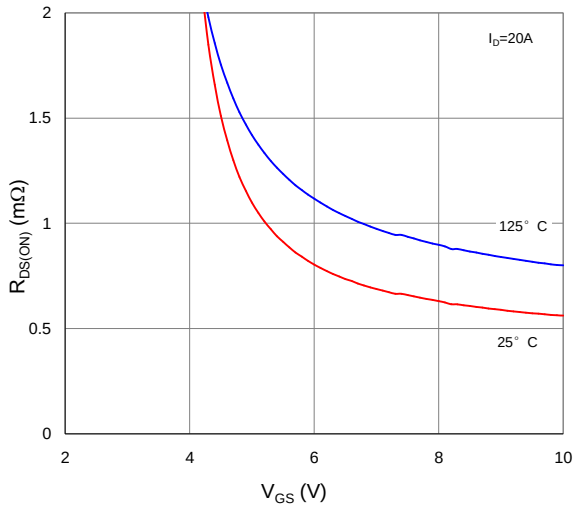


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

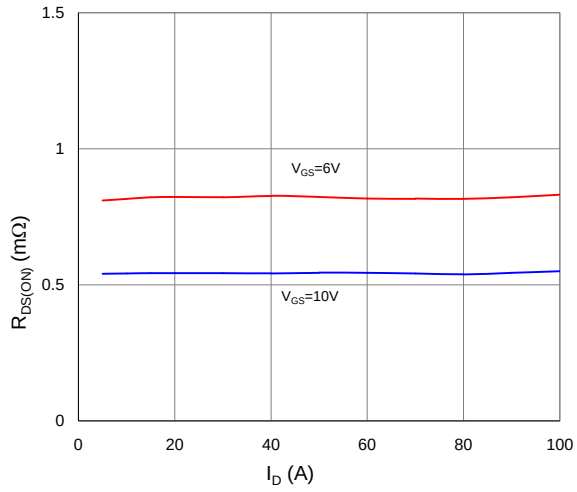


Figure 4. Normalized On-Resistance vs. Junction Temperature

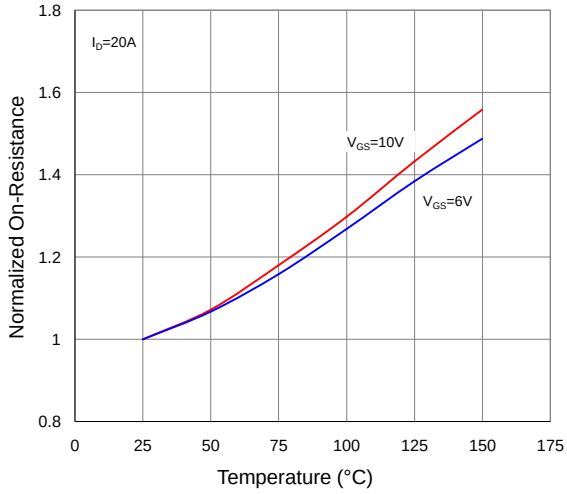


Figure 5. Typical Transfer Characteristics

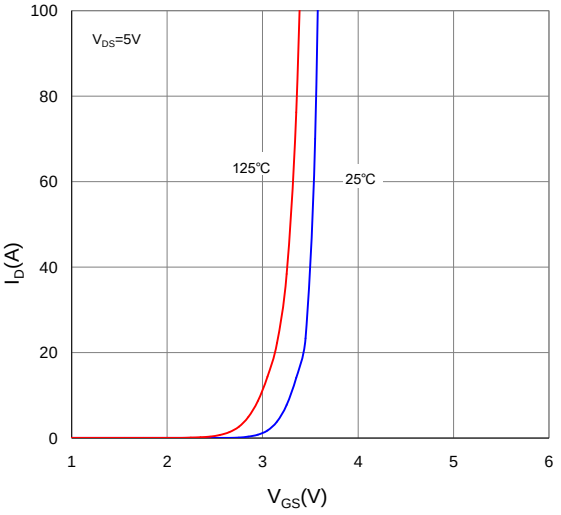


Figure 6. Typical Source-Drain Diode Forward Voltage

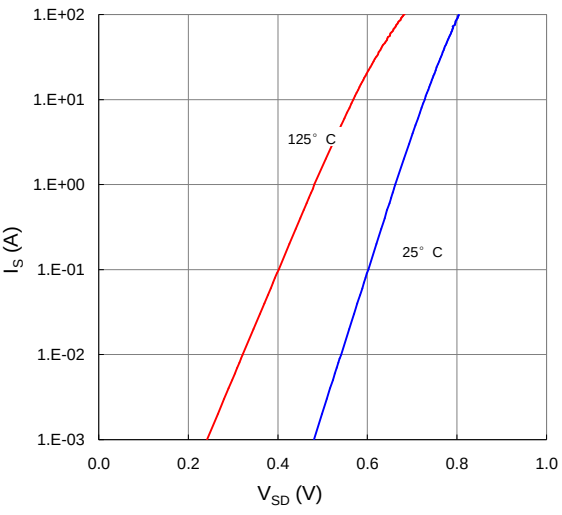


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

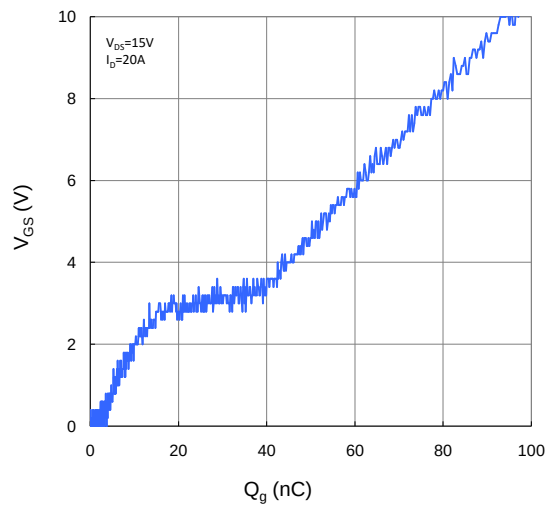


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

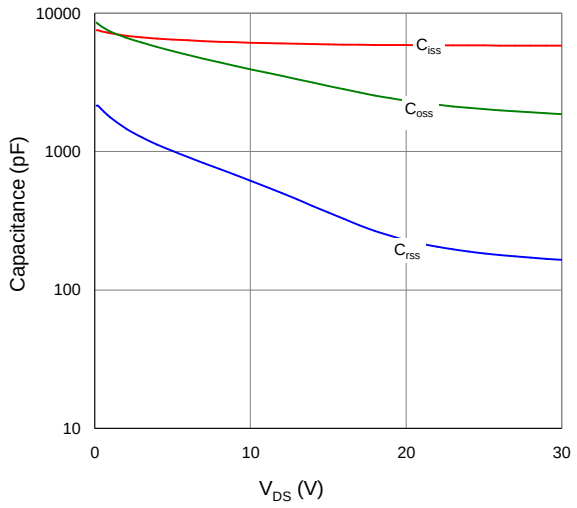


Figure 9. Maximum Safe Operating Area

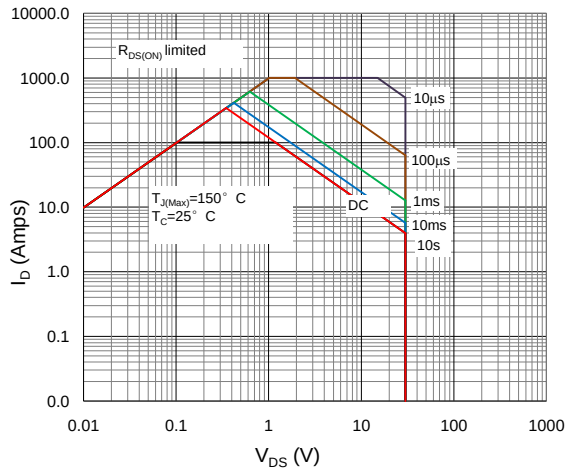


Figure 10. Maximun Drain Current vs. Case Temperature

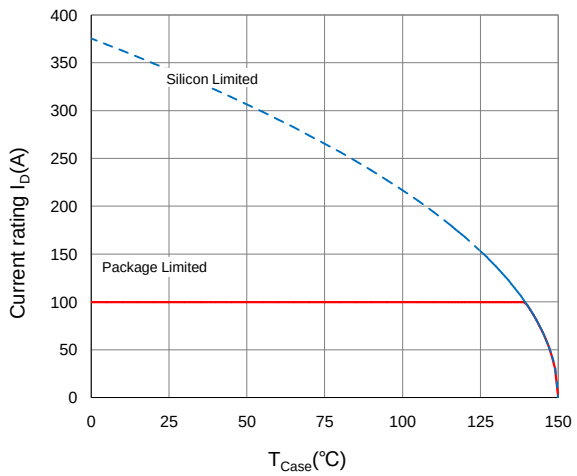
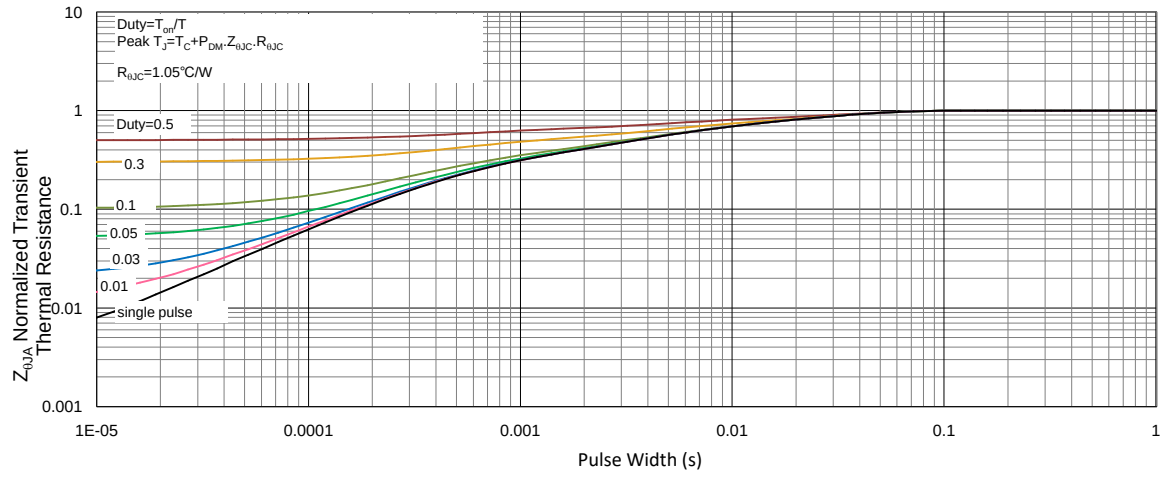
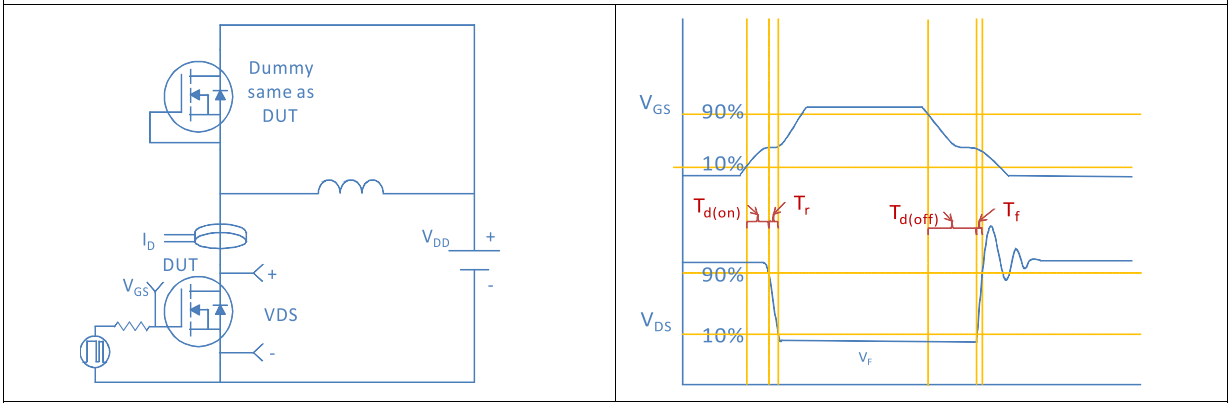


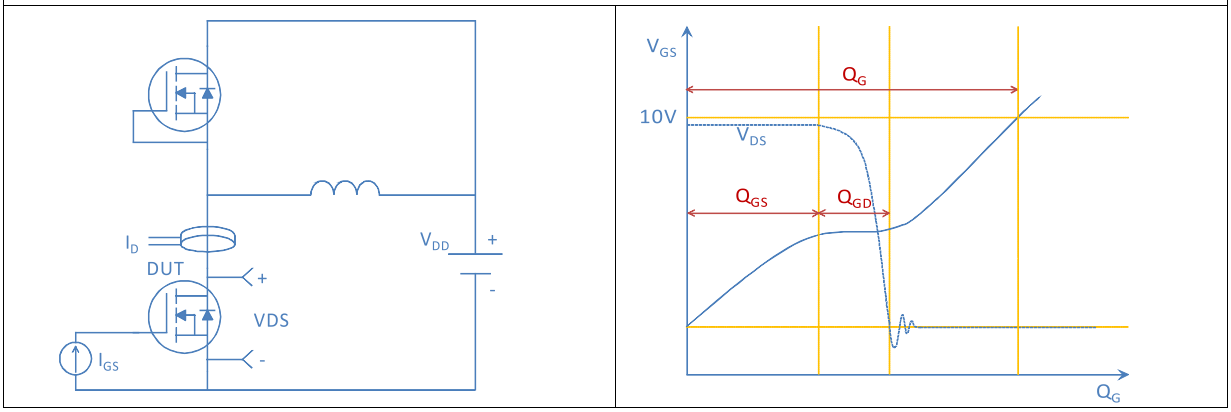
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



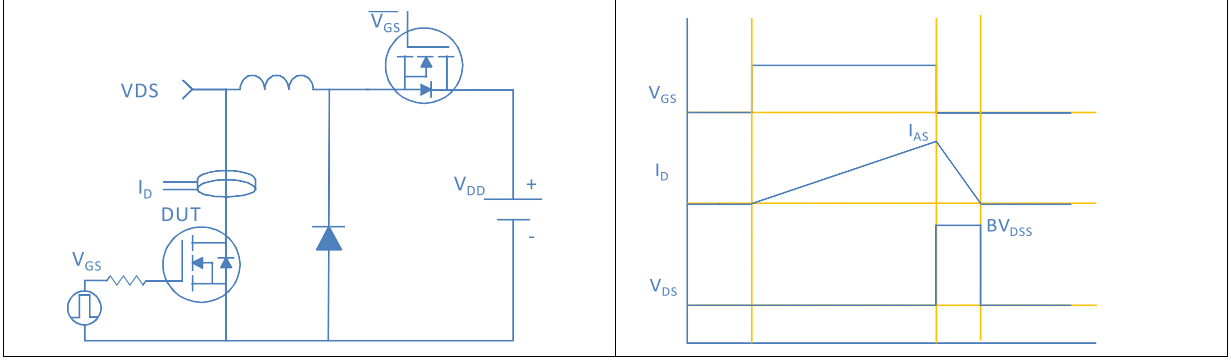
Inductive switching Test



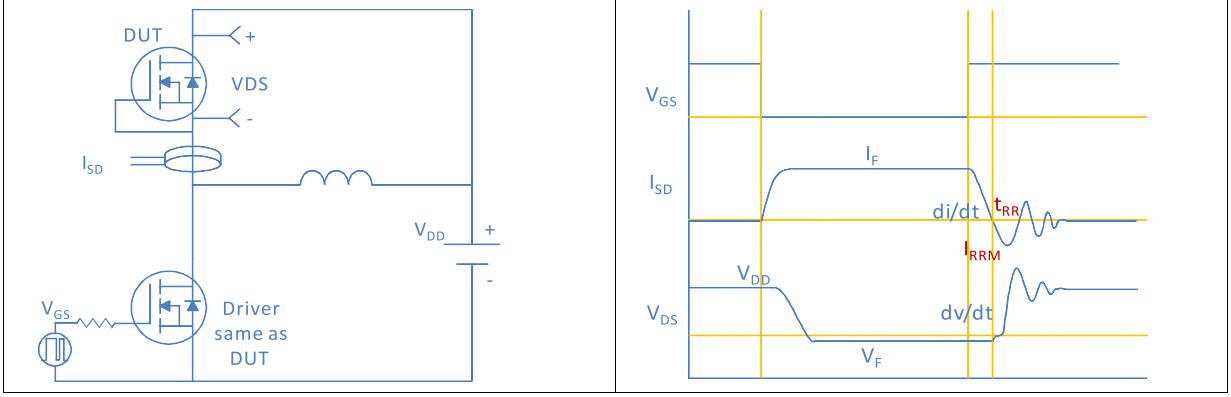
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

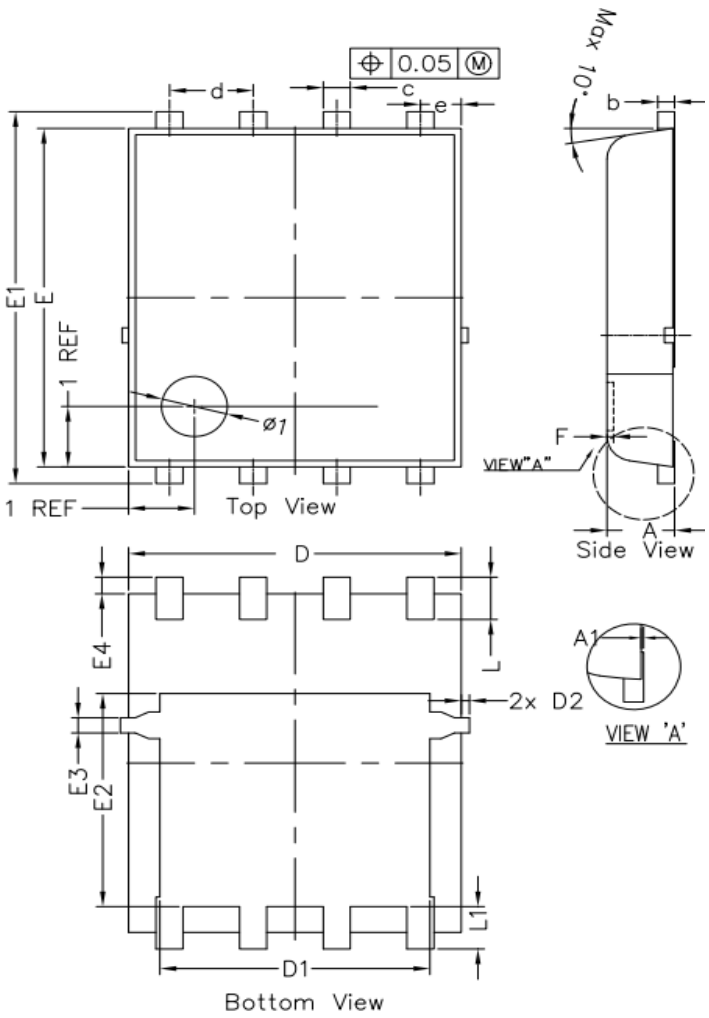


Diode Recovery Test



Package Outline

DFN5*6, 8 leads



SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
* A	0.900	1.000	1.100	0.035	0.039	0.043
A1	0.000	---	0.050	0.000	----	0.002
b	0.246	0.254	0.312	0.010	0.010	0.012
* c	0.310	0.410	0.510	0.012	0.016	0.020
d		1.27 BSC			0.050 BSC	
* D	4.950	5.050	5.150	0.195	0.199	0.203
D1	4.000	4.100	4.200	0.157	0.161	0.165
* D2	---	---	0.125	---	---	0.005
e		0.62 BSC			0.024 BSC	
* E	5.500	5.600	5.700	0.217	0.220	0.224
* E1	6.050	6.150	6.250	0.238	0.242	0.246
E2	3.425	3.525	3.625	0.135	0.139	0.143
E3	0.150	0.250	0.350	0.006	0.010	0.014
* E4	0.175	0.275	0.375	0.007	0.011	0.015
F	-	-	0.100	-	-	0.004
* L	0.500	0.600	0.700	0.02	0.02	0.03
L1	0.600	0.700	0.800	0.02	0.03	0.03