HGM290N10SL P-1

100V N-Ch Power MOSFET

Feature

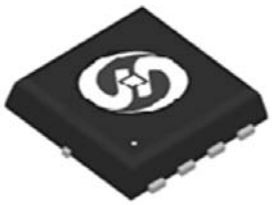
◇ High Speed Power Switching, Logic Level
◇ Enhanced Body diode dv/dt capability
◇ Enhanced Avalanche Ruggedness
◇ 100% UIS Tested, 100% Rg Tested
◇ Lead Free, Halogen Free

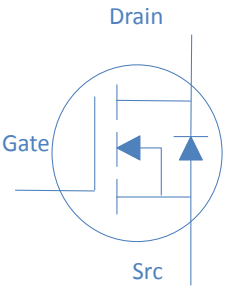
V_{DS}		100	V
$R_{DS(on),typ}$	V_{GS}=10V	22.0	mΩ
$R_{DS(on),typ}$	V_{GS}=4.5V	26	mΩ
$I_{D\ (Sillicon\ Limited)}$		21	A

Application

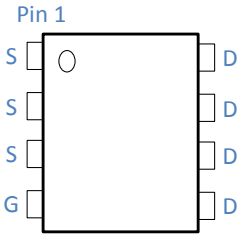
◇ Synchronous Rectification in SMPS
◇ Hard Switching and High Speed Circuit
◇ DC/DC in Telecoms and Inductrial

DFN3.3x3.3





Part Number	Package	Marking
HGM290N10SL	DFN 3.3*3.3	GM290N10L



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℃	21	A
		T_C=100℃	13	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	60	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25℃	20	mJ
Power Dissipation	P_D	T_C=25℃	25	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	$R_{\theta JC}$	5	℃/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	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.4	2	2.4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=100V, T_j=25℃	-	-	1	μA
		V_{GS}=0V, V_{DS}=100V, 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=8A	-	22	29	mΩ
		V_{GS}=4.5V, I_D=6A	-	26	36	
Transconductance	g_{fs}	V_{DS}=5V, I_D=8A	-	4.7	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.5	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	930	-	pF
Output Capacitance	C_{oss}		-	62	-	
Reverse Transfer Capacitance	C_{rss}		-	5.3	-	
Total Gate Charge	Q_g(10V)	V_{DD}=50V, I_D=8A, V_{GS}=10V	-	13.5	-	nC
Total Gate Charge	Q_g(4.5V)		-	6.5	-	
Gate to Source Charge	Q_{gs}		-	2.8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	2.0	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=8A, V_{GS}=10V, R_G=10Ω,	-	7	-	ns
Rise time	t_r		-	4	-	
Turn off Delay Time	$t_{d(off)}$		-	20	-	
Fall Time	t_f		-	4	-	

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=50V, I_F=8A, dI_F/dt=500A/μs	-	25	-	ns
Reverse Recovery Charge	Q_{rr}		-	33	-	nC

Fig 1. Typical Output Characteristics

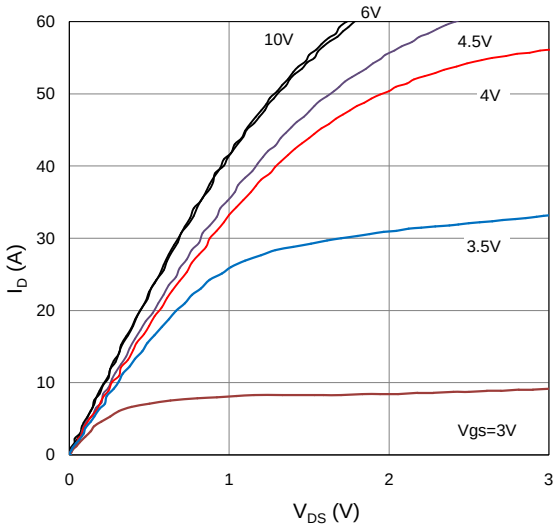


Figure 2. On-Resistance vs. Gate-Source Voltage

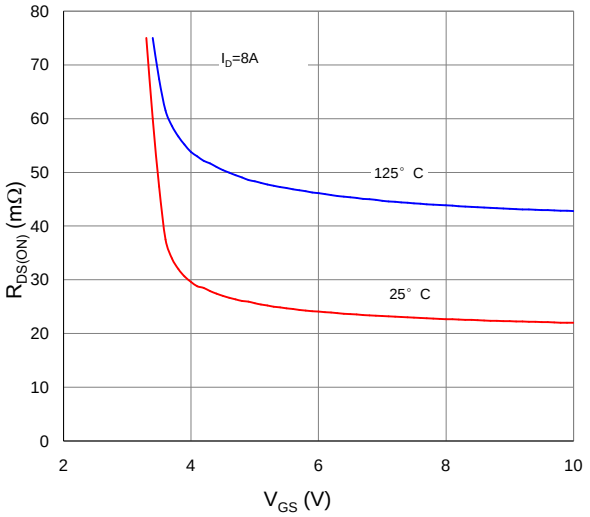


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

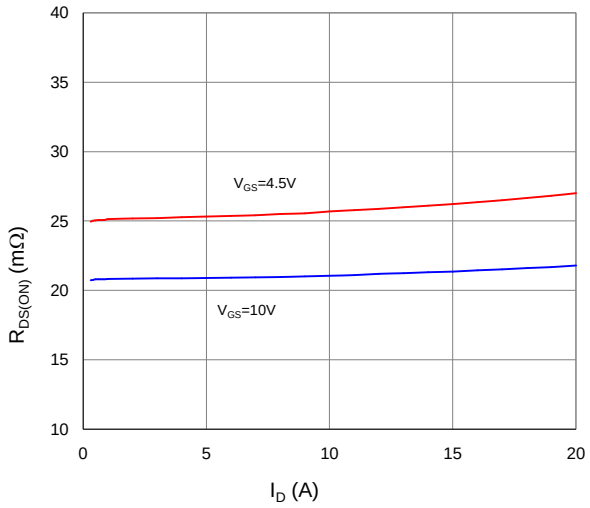


Figure 4. Normalized On-Resistance vs. Junction Temperature

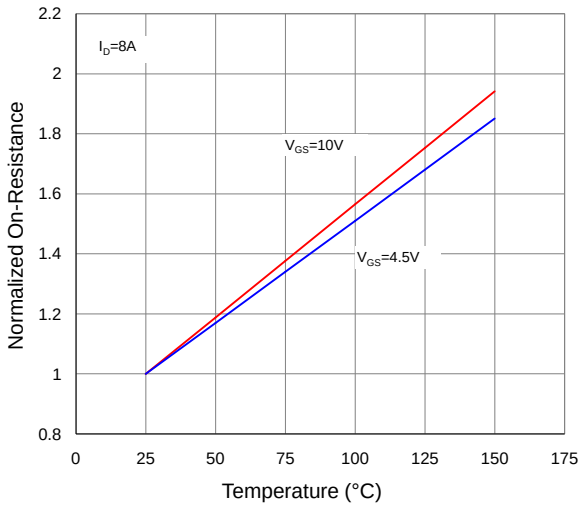


Figure 5. Typical Transfer Characteristics

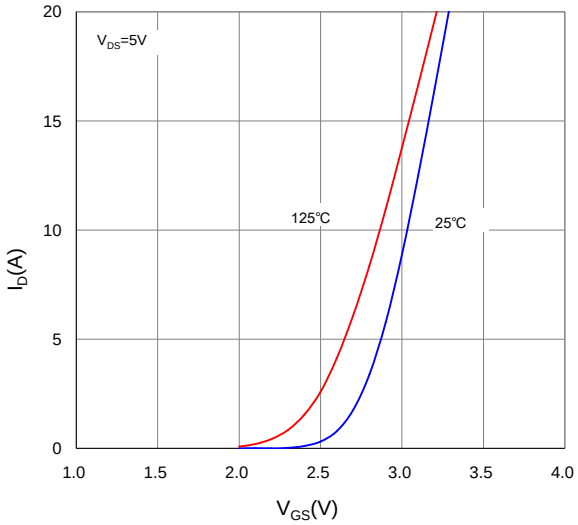


Figure 6. Typical Source-Drain Diode Forward Voltage

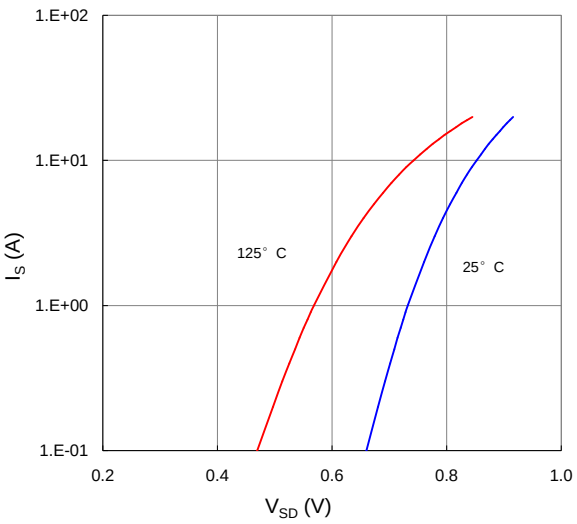


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

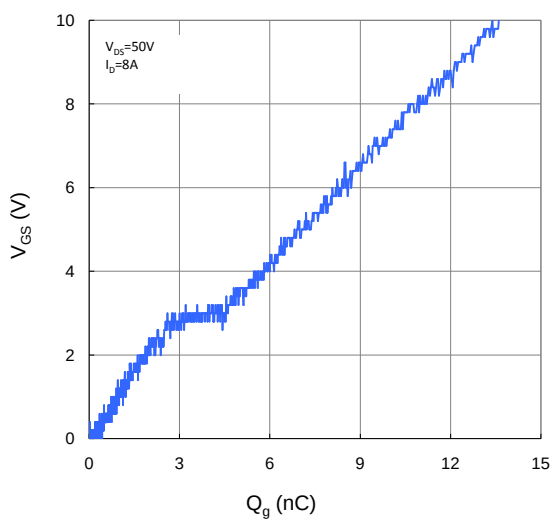


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

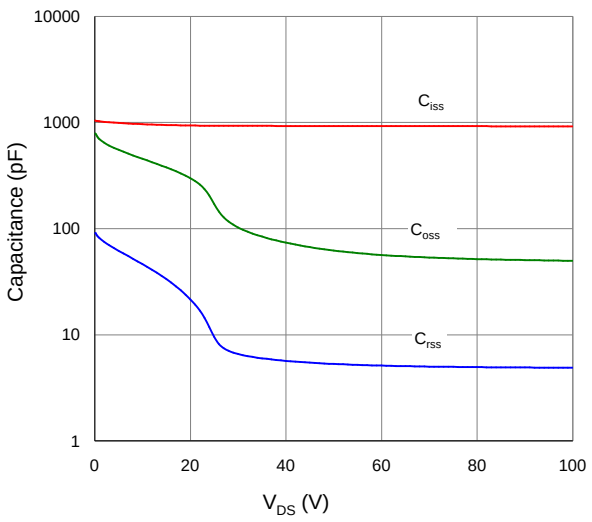


Figure 9. Maximum Safe Operating Area

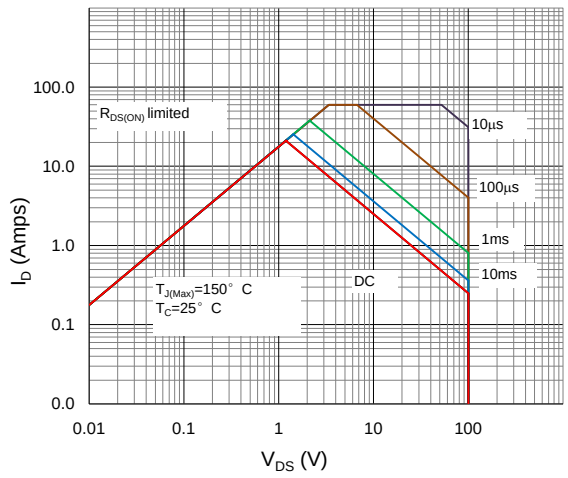


Figure 10. Maximun Drain Current vs. Case Temperature

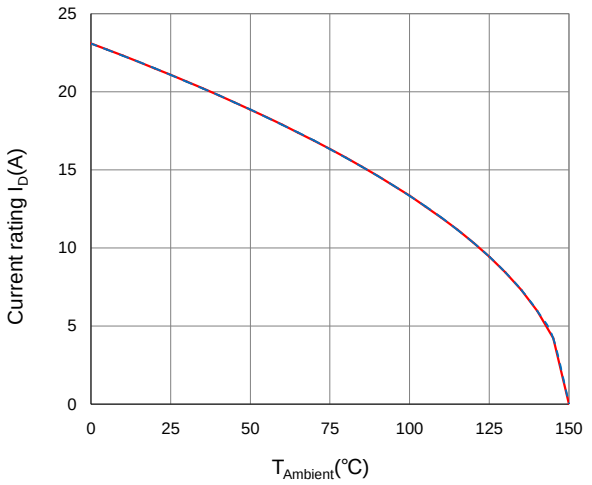
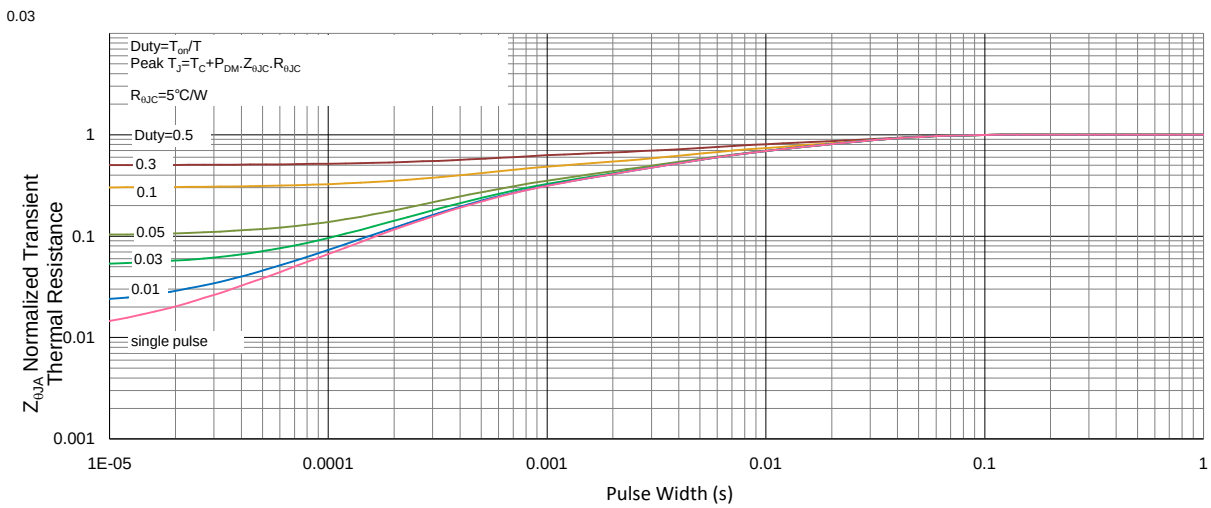
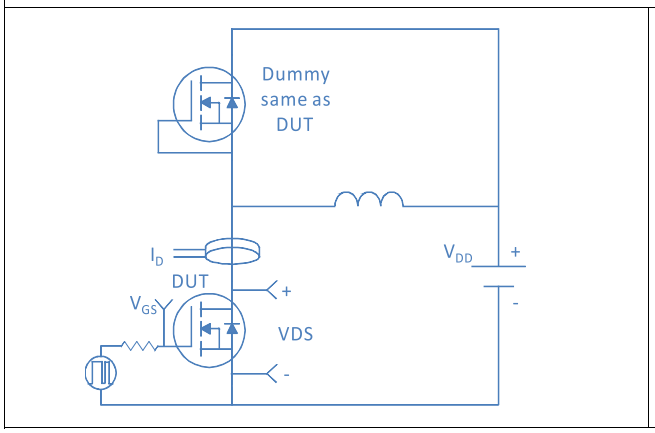
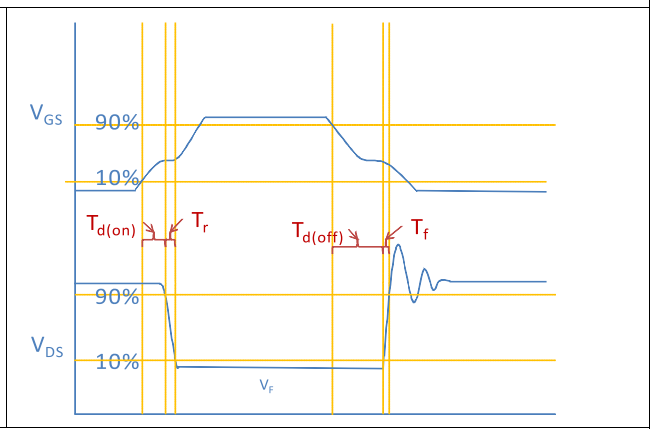


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

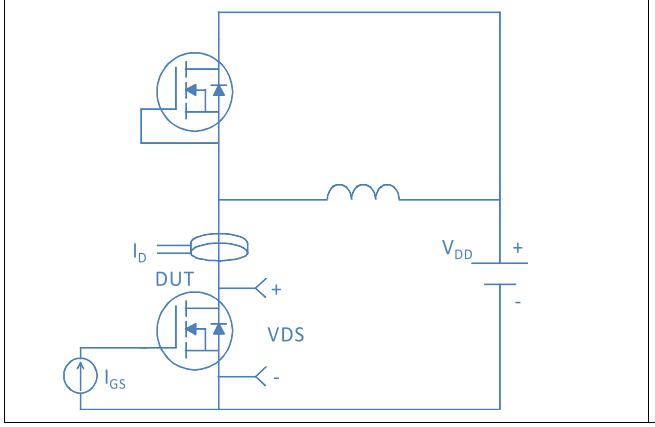


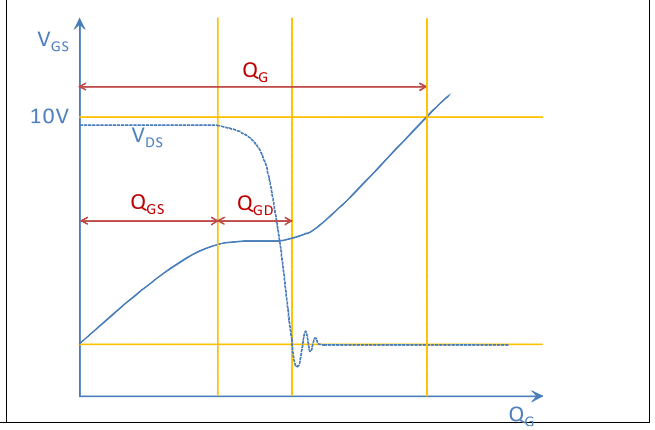
Inductive switching Test



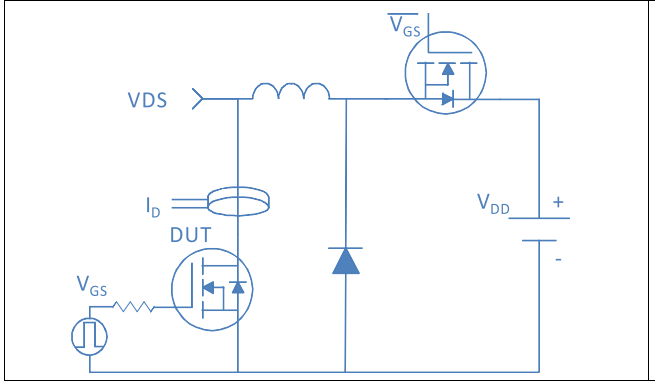


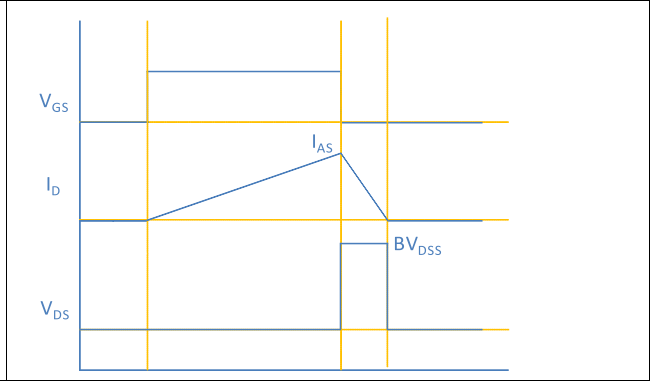
Gate Charge Test



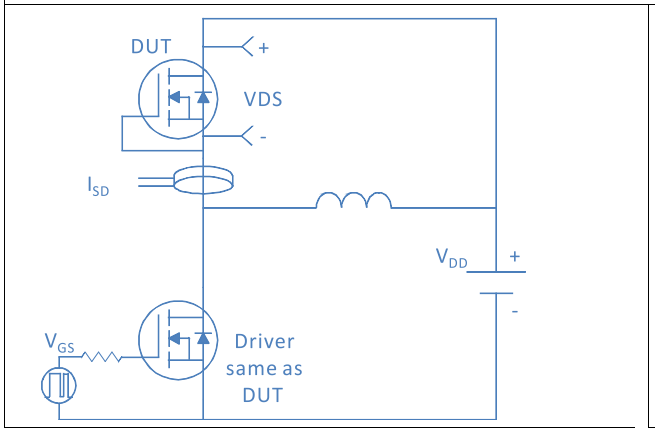


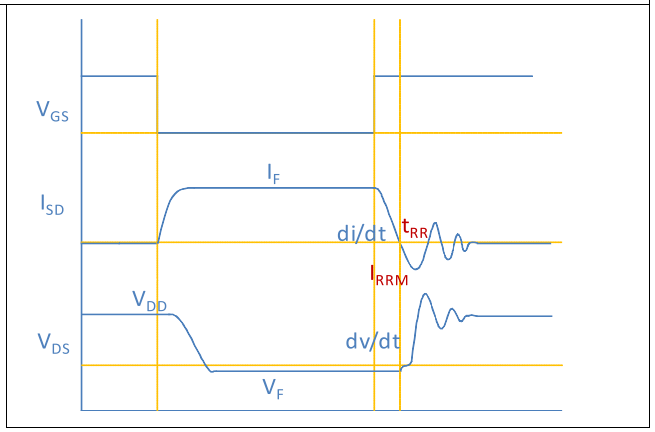
Uclamped Inductive Switching (UIS) Test





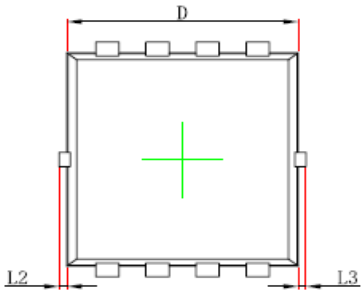
Diode Recovery Test



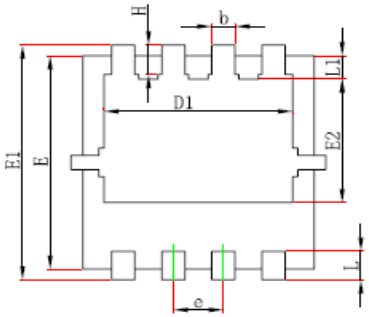


Package Outline

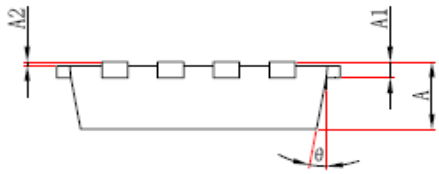
DFN3.3*3.3_P, 8 Leads



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°