GOSTONE

RoHS COMPLIANT

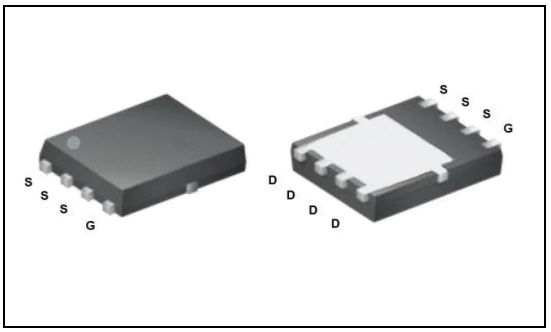
N-Channel 30V,2.4mΩ max, Power MOSFET

GN308A

Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
30	2.4 @ V_{GS} = 10V	110 (1)

PDFN5060

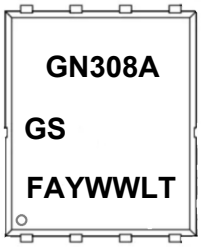


Features

- Low RDS(on) and gate charge
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Application

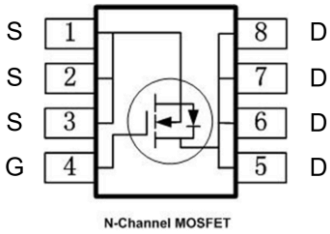
- Power management
- SMPS and general purpose applications
- Uninterruptible Power Supply
- Load Switch



PDFN5060

NOTE:
LOGO - GS
GN308A- Part number code
F - Fab location code
A - Assembly location code
Y - Year code
WW - Week code
L&T - Assembly lot code

Equivalent circuit



Absolute maximum rating@25℃

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	110	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	72	A
I_{DM}	Pulsed Drain Current[2]	440	A
EAS	Single Pulse Avalanche Energy[3]	435	mJ
I_{AS}	Avalanche Current	41.5	A
P_D@T_C=25℃	Total Power Dissipation[4]	70	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristic

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	1.8	℃/W
Thermal resistance, junction-to-ambient (4)	Steady state	$R_{\theta JA}$	58	

Electrical Characteristics (TJ=25℃ unless otherwise noted)

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Static parameter						
Drain to source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0, I_D = 250 μA	30			V
Gate-source threshold voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250 μA	1.2	1.45	2.0	V
Gate-body leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Zero gate voltage drain current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V			1	μA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 30 A		1.8	2.0	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 30 A		2.4	3.0	mΩ
Forward transconductance (5)	g_{fs}	V_{DS} = 5 V, I_D = 30 A		28		S
Gate resistance	R_g	f = 1 MHz		2.5		Ω
Dynamic(5)						
Total gate charge V_{GS} = 10V	Q_g	V_{DS} = 15 V, I_D = 30 A, V_{GS} = 10 V		95		nC
Gate-source charge	Q_{gs}			11		
Gate-drain charge	Q_{gd}			18		
Turn-on delay time	$t_{d(on)}$	V_{DS} = 15 V, I_D = 30 A, V_{GS} = 10 V, R_{GEN} = 2.9 Ω		20		ns
Rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			84		
Fall time	t_f			18		
Input capacitance	C_{iss}	V_{DS} = 15 V, V_{GS} = 0 V, f = 1 MHz		4950		pF
Output capacitance	C_{oss}			520		
Reverse transfer capacitance	C_{rss}			465		

Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current[1,6]	I_S	V_G=V_S=0V , Force Current	---	---	110	A
Pulsed Source Current[2,6]	I_{SM}		---	---	440	A
Diode Forward Voltage[2]	V_{SD}	V_{GS}=0V , I_S=20A , T_J=25℃	---	---	1.2	V

Notes

1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper, t<10sec.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.5mH,I_{AS}=75A

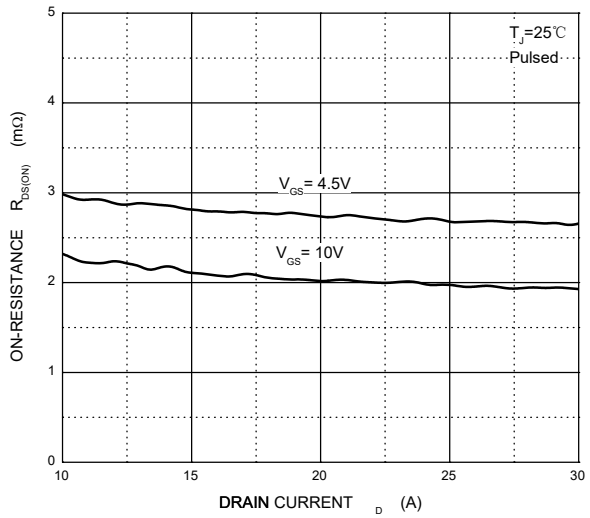
4.The power dissipation is limited by 150℃ junction temperature

5.Guaranteed by design, not subject to production testing.

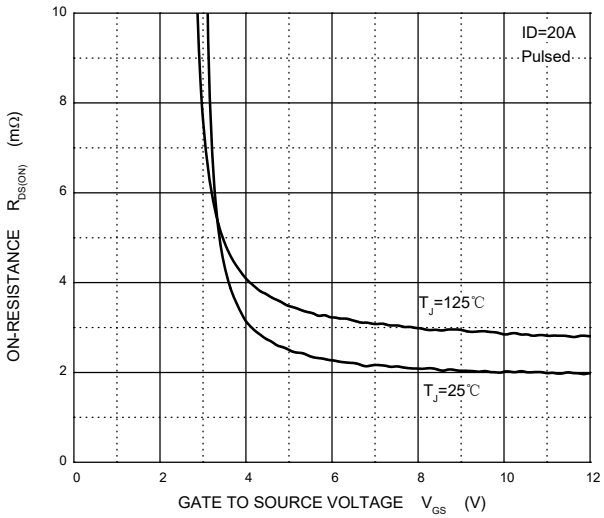
6.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Performance Characteristics

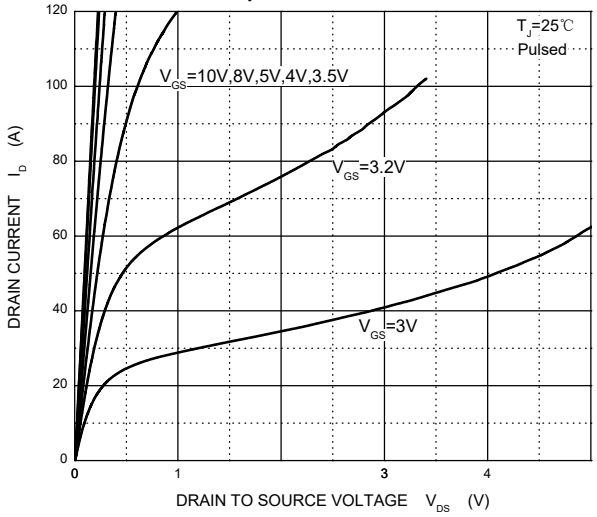
$R_{DS(ON)}$ —— I_D



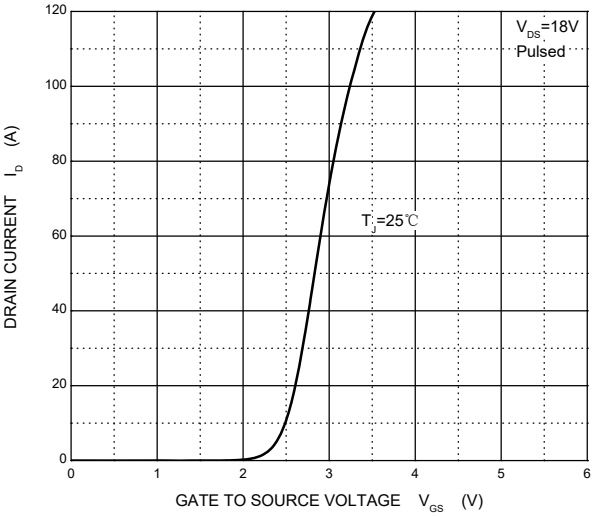
$R_{DS(ON)}$—— V_{GS}



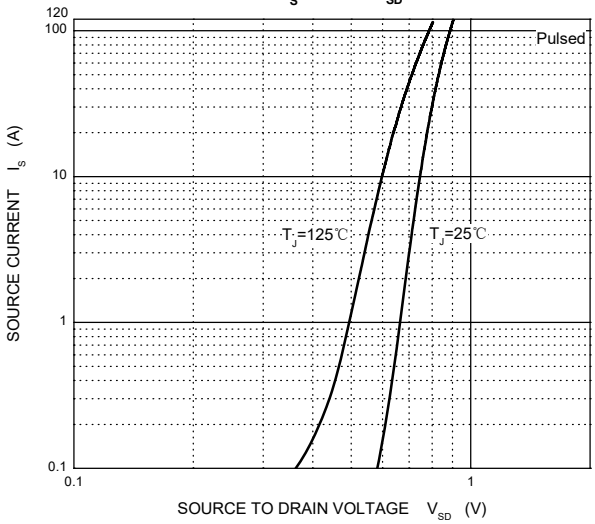
Output Characteristics



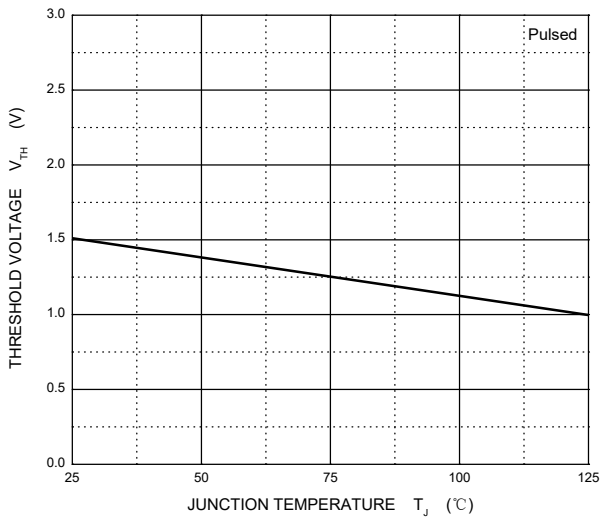
Transfer Characteristics



I_S —— V_{SD}

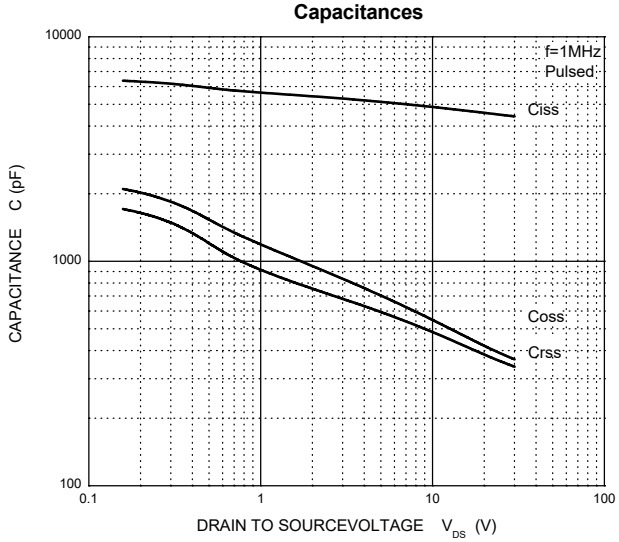


Threshold Voltage

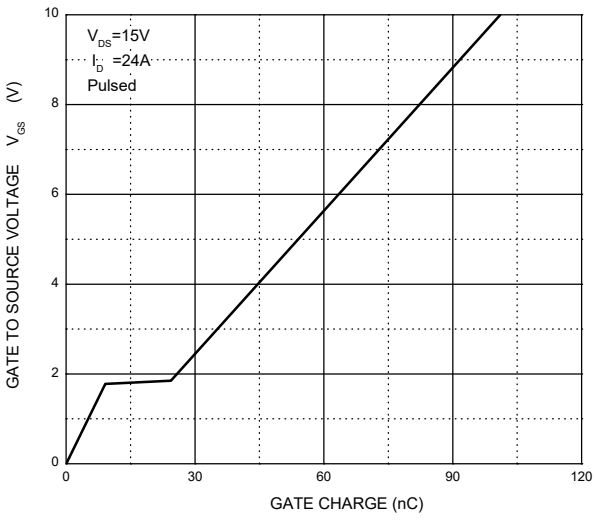


Typical Performance Characteristics

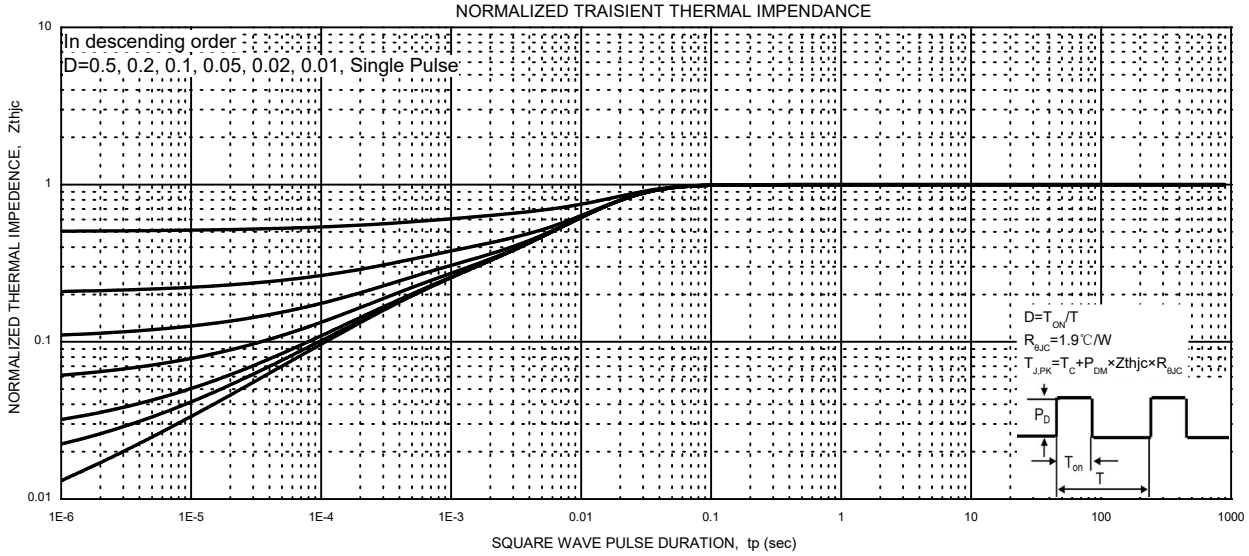
Capacitances



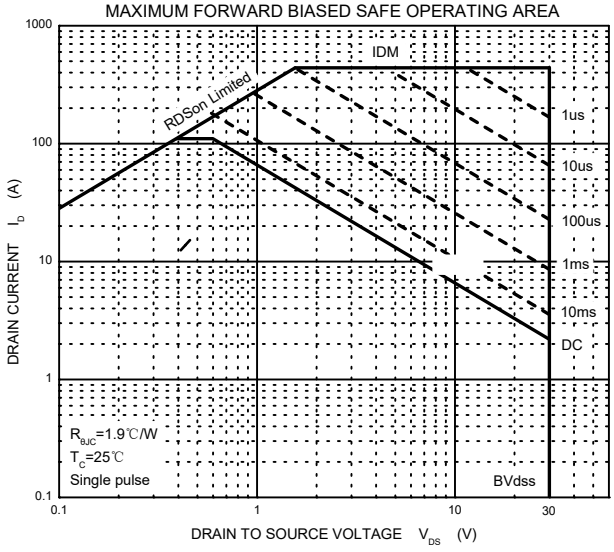
Gate Charge



NORMALIZED TRAISIENT THERMAL IMPENDANCE

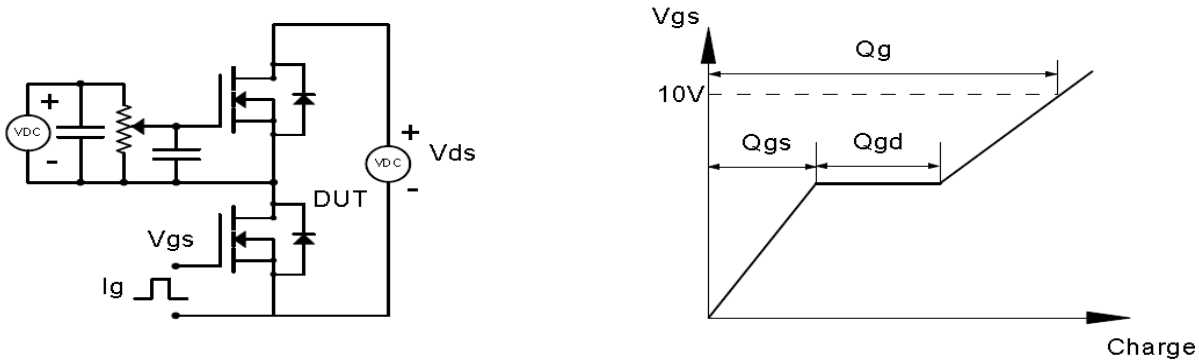


MAXIMUM FORWARD BIASED SAFE OPERATING AREA

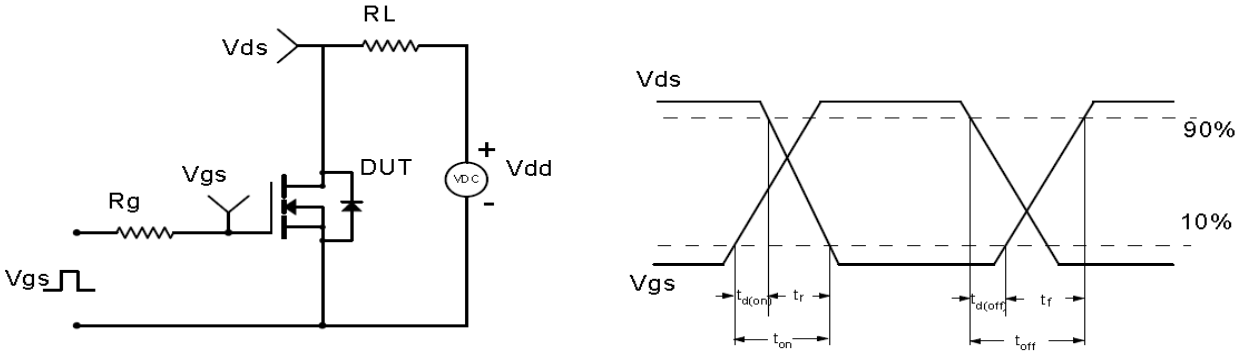


Test Circuit & Waveform

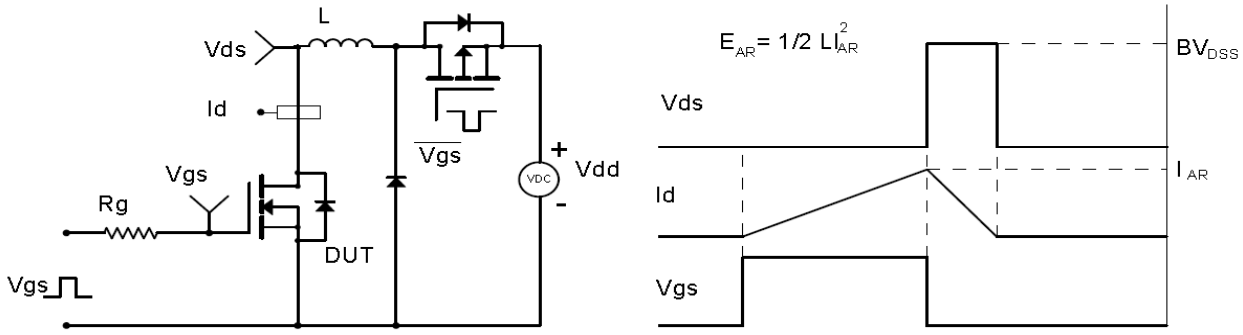
Gate Charge Test Circuit & Waveform



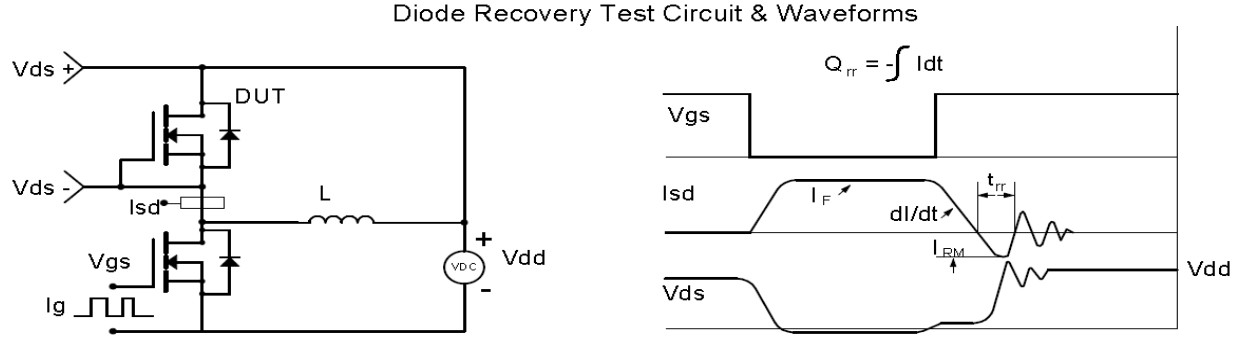
Resistive Switching Test Circuit & Waveforms



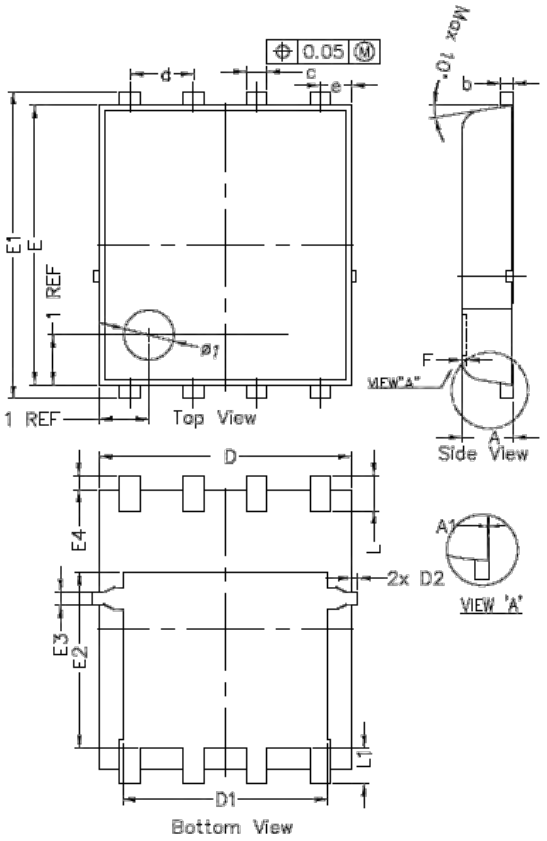
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Outline Drawing PDFN5060



Dim	Millimeters		
	Min	Nom	Max
A	0.900	1.000	1.100
A1	0.000	---	0.050
b	0.246	0.254	0.312
c	0.310	0.410	0.510
d		1.27BSC	
D	4.950	5.050	5.150
D1	4.000	4.100	4.200
D2	---	---	0.125
e		0.62BSC	
E	5.500	5.600	5.700
E1	6.050	6.150	6.250
E2	3.425	3.525	3.625
E3	0.150	0.250	0.350
E4	0.175	0.275	0.375
F	---	---	0.100
L	0.500	0.600	0.700
L1	0.600	0.700	0.800

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