WG Dual N -channel Enhancement Mode Power MOSFET

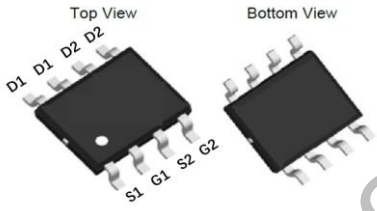
WG9926A

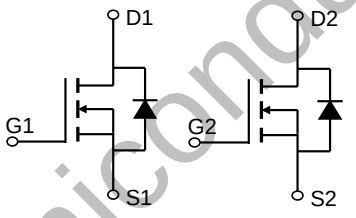
Features:

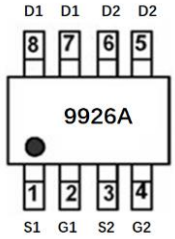
- ☐ Advanced Trench Technology
- ☐ Excellent $R_{DS(ON)}$ and Low Gate Charge
- ☐ Lead Free
- ☐ BVDSS=20V,I_D=6.8A
- ☐ $R_{DS(ON)}$ < 17mΩ @ V_{GS} = 4.5V
- ☐ $R_{DS(ON)}$ < 21mΩ @ V_{GS} = 2.5V

SOP-8

RoHS COMPLIANT







Schematic Diagram

Absolute Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		20	V
V_{GS}	Gate-to-Source Voltage		±12	V
I_D	Continuous Drain Current	T_A = 25°C	6.8	A
		T_A = 100°C	4.1	
I_{DM}	Pulsed Drain Current [1]		26	A
E_{AS}	Single Pulsed Avalanche Energy [2]		16	mJ
P_D	Power Dissipation	T_A = 25°C	1.8	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient [3]		70	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°C

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Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D = 250μA, V_{GS} = 0V	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 20V, V_{GS} = 0V	-	-	1.0	μA
I_{GSS}	Gate-Body Leakage Current	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	0.5	0.75	1.0	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 4.5V, I_D = 6.5A	-	13	17	mΩ
		V_{GS} = 2.5V, I_D = 5A	-	17	21	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 10V, f = 1MHz	-	712	-	pF
C_{oss}	Output Capacitance		-	116	-	pF
C_{rss}	Reverse Transfer Capacitance		-	103	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 4.5V V_{DD} = 10V, I_D = 3A	-	9	-	nC
Q_{gs}	Gate Source Charge		-	1.5	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	2.5	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 4.5V, V_{DD} = 10V I_D= 3A, R_{GEN} = 3Ω	-	5	-	ns
t_r	Turn-On Rise Time		-	16	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	23	-	ns
t_f	Turn-Off Fall Time		-	7	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	6.8	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	26	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 6.5A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I_F = 3A, di/dt = 100A/us	-	7	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	2	-	nC

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25C, V_{DD}=10V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=8A

3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

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Typical Performance Characteristics

Figure 1: Output Characteristics

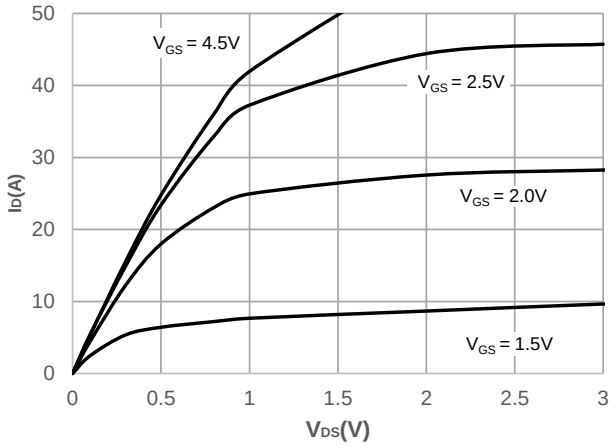


Figure 2: Typical Transfer Characteristics

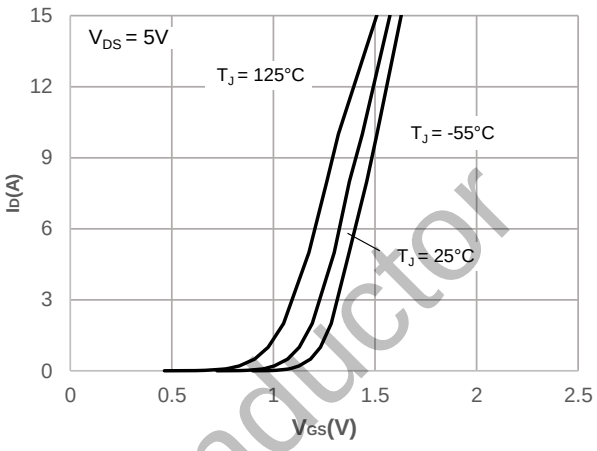


Figure 3: On-resistance vs. Drain Current

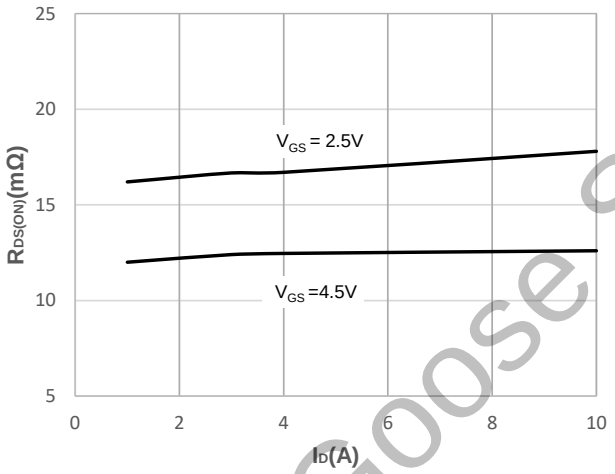


Figure 4: Body Diode Characteristics

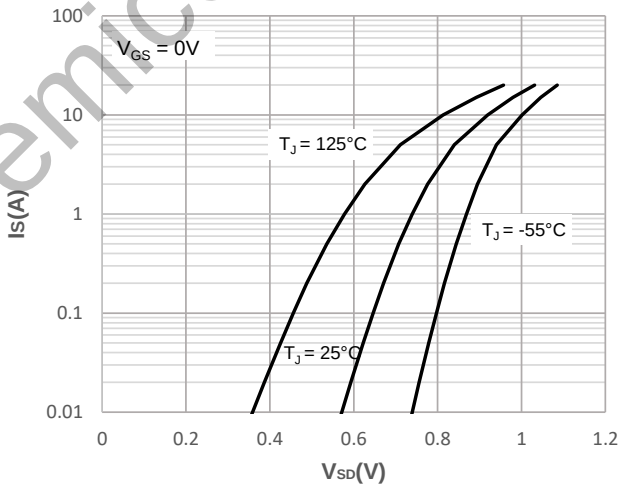


Figure 5: Gate Charge Characteristics

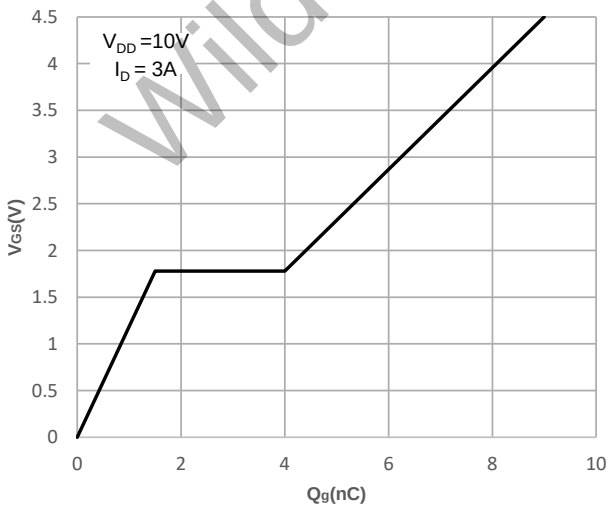
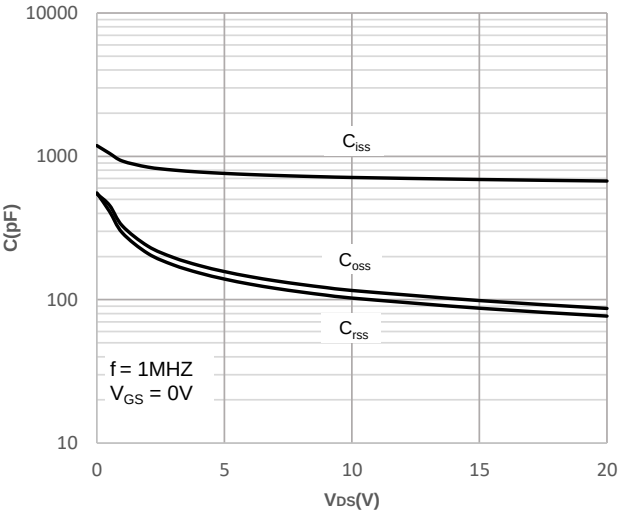


Figure 6: Capacitance Characteristics



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Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

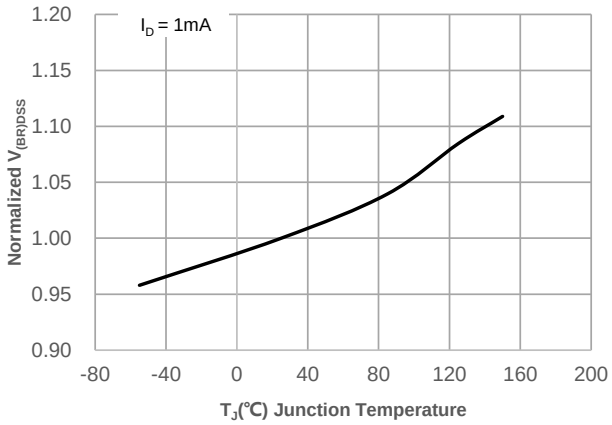


Figure 8: Normalized on Resistance vs. Junction Temperature

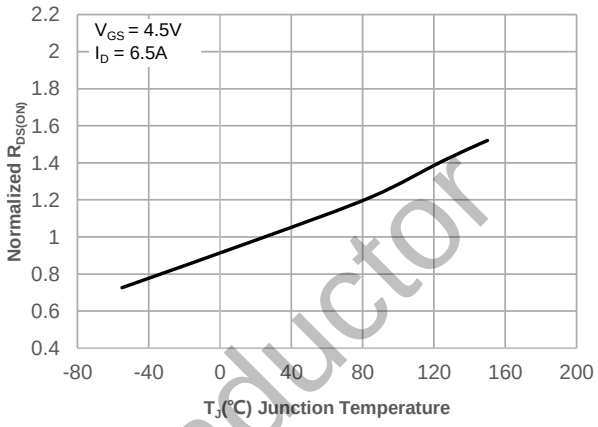


Figure 9: Maximum Safe Operating Area

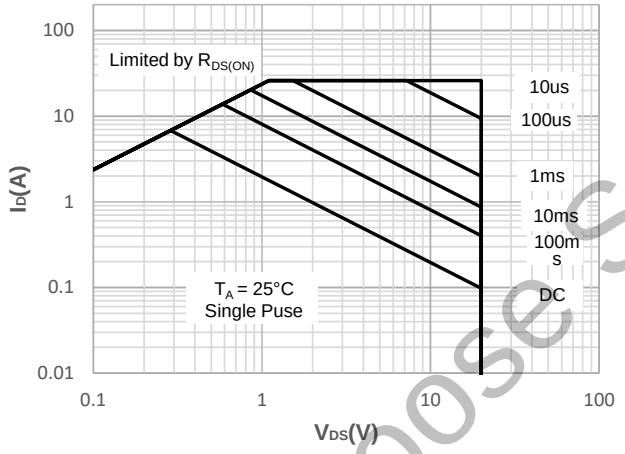


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

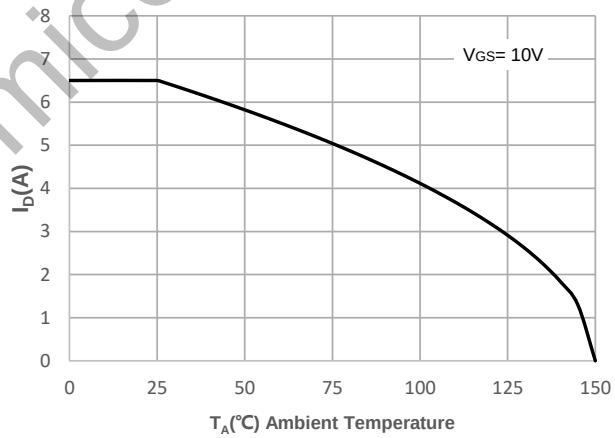


Figure 11: Normalized Maximum Transient Thermal Impedance

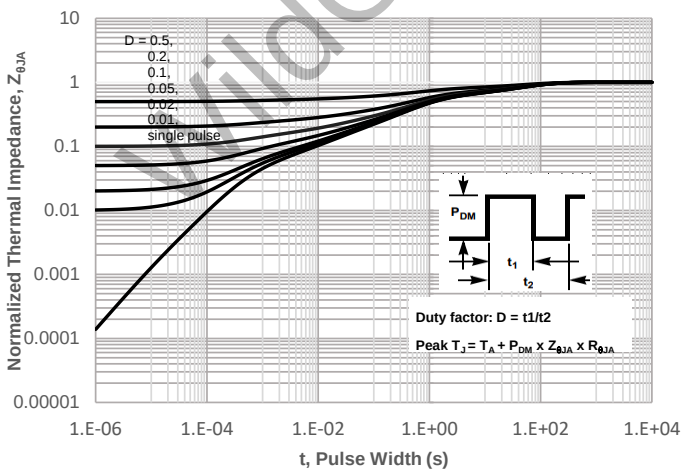
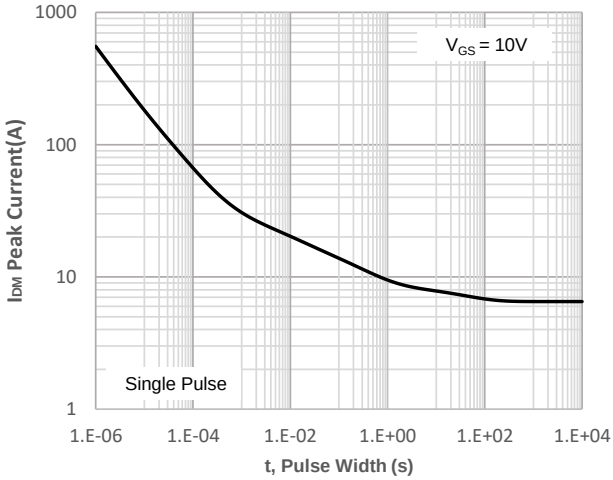


Figure 12: Peak Current Capacity



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Test Circuit

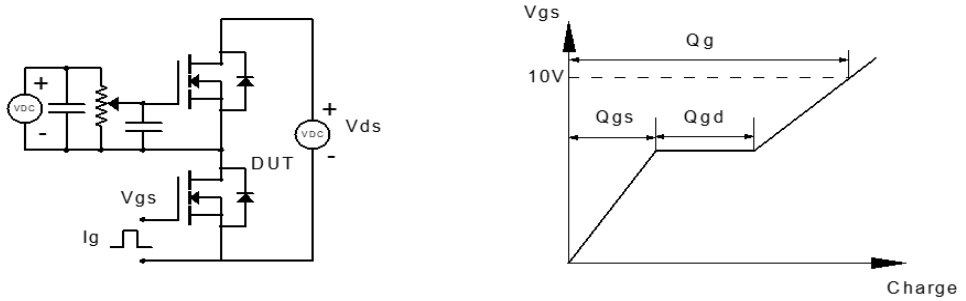


Figure 1: Gate Charge Test Circuit & Waveform

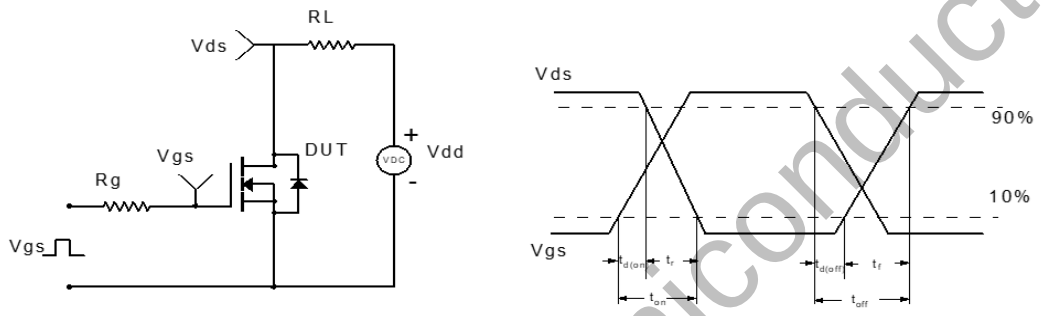


Figure 2: Resistive Switching Test Circuit & Waveform

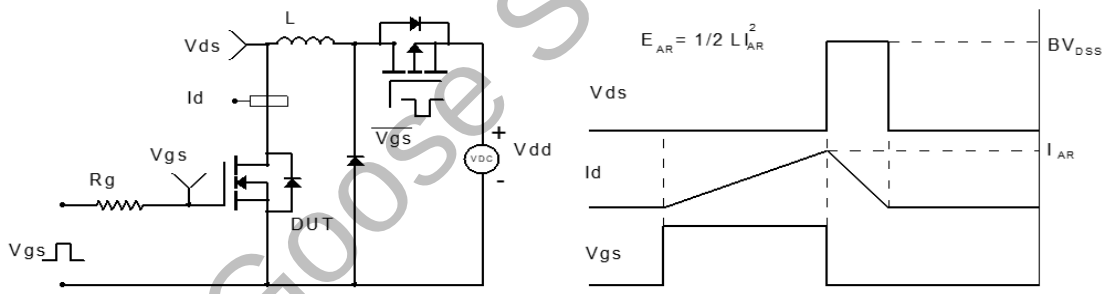


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

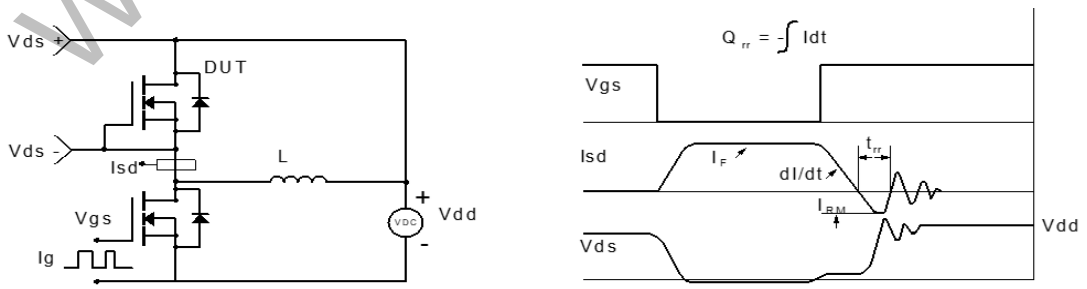


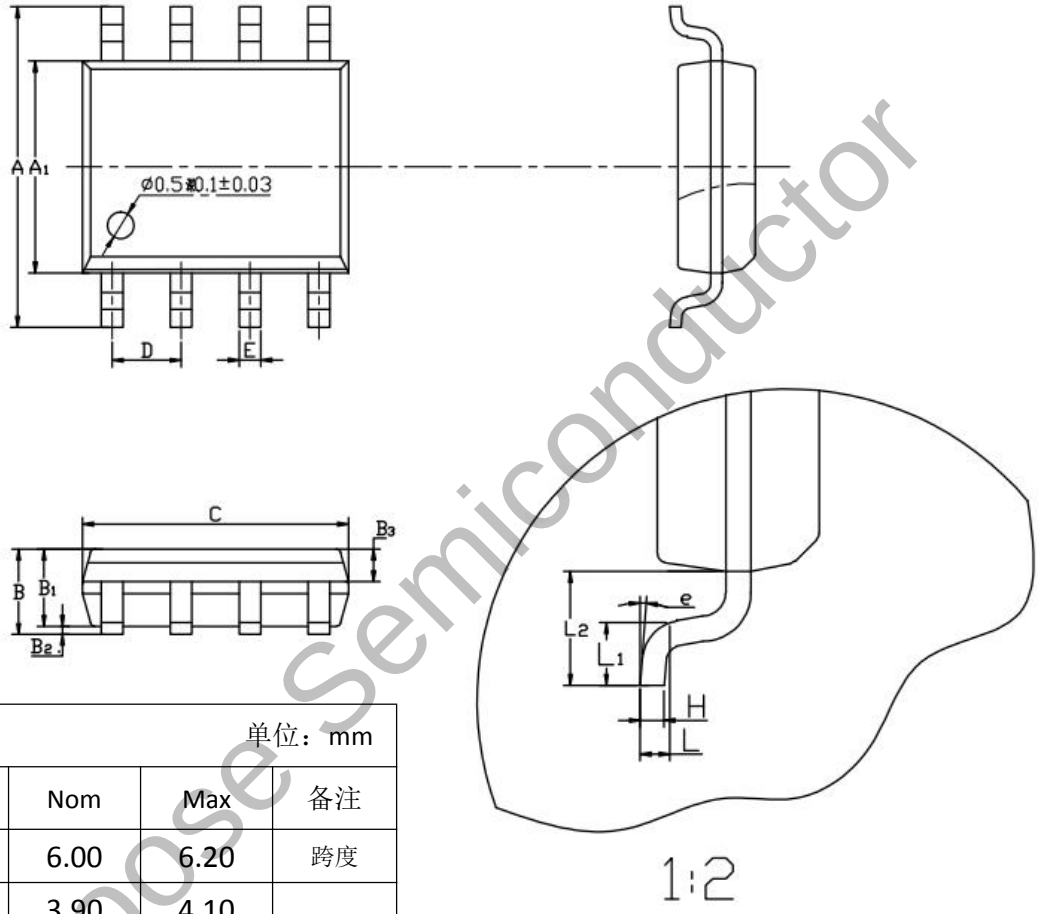
Figure 4: Diode Recovery Test Circuit & Waveform

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Package Dimension

SOP-8

Unit: mm



尺寸数据：			单位：mm	
标注	Min	Nom	Max	备注
A	5.80	6.00	6.20	跨度
A1	3.70	3.90	4.10	
B	1.50	1.60	1.75	
B1	1.30	1.40	1.50	
B2	0.05	0.125	0.2	站高
B3	0.60	0.70	0.75	
C	4.75	4.85	5.05	
D	1.27BSC			
E	0.39	0.44	0.49	
H	0.10	0.20	0.25	
L	0.25BSC			
L1	0.40	0.6	0.8	
L2	0.95	1.05	1.20	脚长
e	0	4°	8°	

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