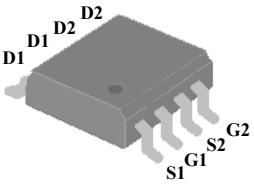
WGM98D10

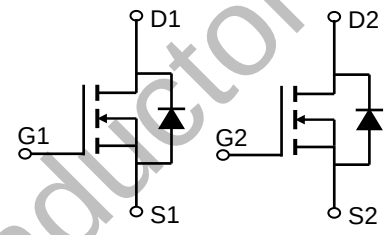
SOP-8

RoHS COMPLIANT



Features:

- ☐ High power and current handing capability
- ☐ Lead free product is acquired
- ☐ Surface mount package
- ☐ Unrivalled Gate Charge :Qg=18 nC (Typ.)
- ☐ BVDSS=100 V,I_D=10.4A
- ☐ R_{DS}(on) :98 mΩ (Typ) @V_G=10V
- ☐ 100% Avalanche Tested



Schematic Diagram

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ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current (T_J = 150 °C)	T_C = 25 °C	I_D	10.4	A
	T_C = 100 °C		6.1	
	T_A = 25 °C		8.5[b, c]	
	T_A = 100 °C		5.5[b, c]	
Pulsed Drain Current		I_{DM}	50	
Continuous Source-Drain Diode Current	T_C = 25 °C	I_S	4.5	
	T_A = 25 °C		2.6[b, c]	
Single Pulse Avalanche Current	L = 0.1 mH	I_{AS}	20	
Single Pulse Avalanche Energy		E_{AS}	20	mJ
Maximum Power Dissipation	T_C = 25 °C	P_D	5.9	W
	T_C = 70 °C		3.8	
	T_A = 25 °C		3.1[b, c]	
	T_A = 70 °C		2[b, c]	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient[b, f]	t ≤ 10 s	R_{thJA}	33	40	°C/W
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	17	21	

Notes:
a. Based on T_C = 25 °C.
b. Surface mounted on 1" x 1" FR4 board.
c. t = 10 s.
d. Maximum under steady state conditions is 80 °C/W.

SPECIFICATIONS (T_J = 25 °C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V_{DS}	V_{GS} = 0 V, I_D = 250 µA	100			V
V_{DS} Temperature Coefficient	$\Delta V_{DS}/T_J$	I_D = 250 µA		172		mV/°C
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			- 10		
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250 µA	1.5		3.0	V
Gate-Source Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 20 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100 V, V_{GS} = 0 V			1	µA
		V_{DS} = 100 V, V_{GS} = 0 V, T_J = 55 °C			10	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} ≥ 10 V, V_{GS} = 10 V	30			A
Drain-Source On-State Resistance[a]	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 5 A		0.098	0.110	Ω
		V_{GS} = 5 V, I_D = 5 A		0.110	0.130	
Forward Transconductance[a]	g_{fs}	V_{DS} = 15 V, I_D = 5 A		23		S
Dynamic[b]						
Input Capacitance	C_{iss}	V_{DS} = 50 V, V_{GS} = 0 V, f = 1 MHz		835		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			37		
Total Gate Charge	Q_g	V_{DS} = 75 V, V_{GS} = 10 V, I_D = 5 A		18	43	nC
		V_{DS} = 75 V, V_{GS} = 8 V, I_D = 5 A		14	35	
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			6.5		
Gate Resistance	R_g	f = 1 MHz		0.85	1.3	Ω
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 50 V, R_L = 10 Ω I_D ≅ 5 A, V_{GEN} = 10 V, R_g = 1 Ω		14	21	ns
Rise Time	t_r			12	18	
Turn-Off Delay Time	$t_{d(off)}$			22	33	
Fall Time	t_f			6	10	
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 50 V, R_L = 10 Ω I_D ≅ 5 A, V_{GEN} = 8 V, R_g = 1 Ω		16	24	
Rise Time	t_r			12	18	
Turn-Off Delay Time	$t_{d(off)}$			20	30	
Fall Time	t_f			7	12	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I_S	T_C = 25 °C			7.7	A
Pulse Diode Forward Current[a]	I_{SM}				50	
Body Diode Voltage	V_{SD}	I_S = 2.6 A		0.77	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F = 5 A, dI/dt = 100 A/µs, T_J = 25 °C		63	95	ns
Body Diode Reverse Recovery Charge	Q_{rr}			110	165	nC
Reverse Recovery Fall Time	t_a			49		ns
Reverse Recovery Rise Time	t_b			14		

Notes:
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2 %
a. Guaranteed by design, not subject to production testing.

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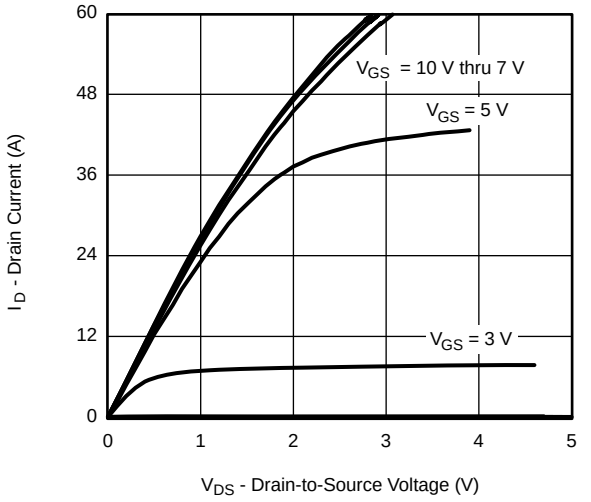
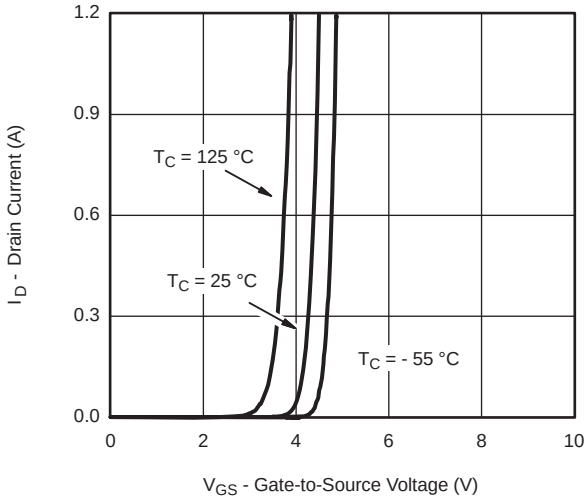
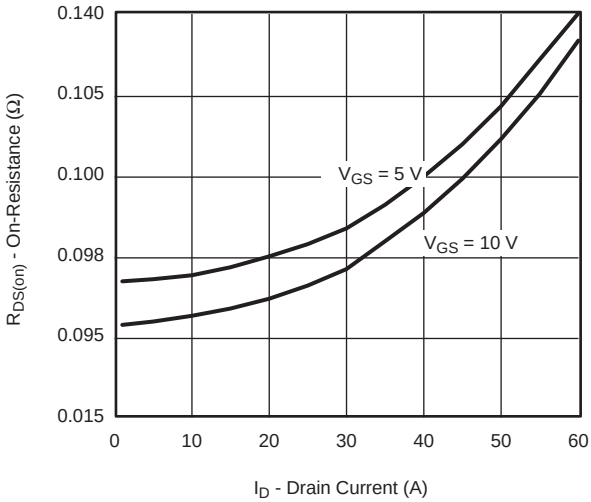
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



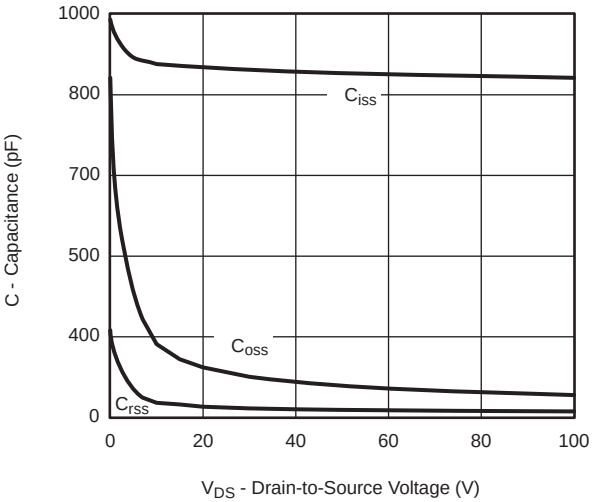
Output Characteristics



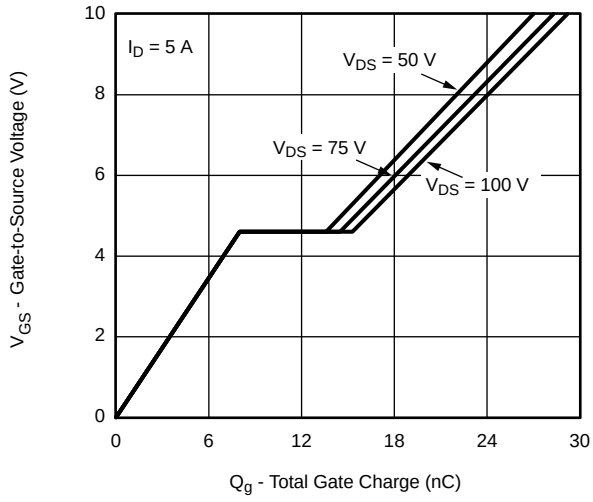
Transfer Characteristics



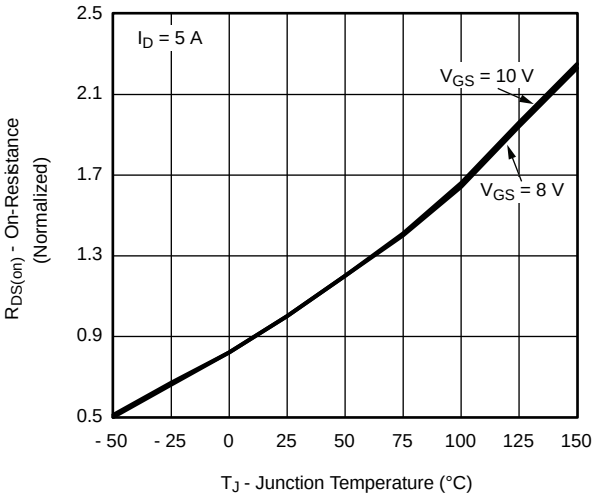
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

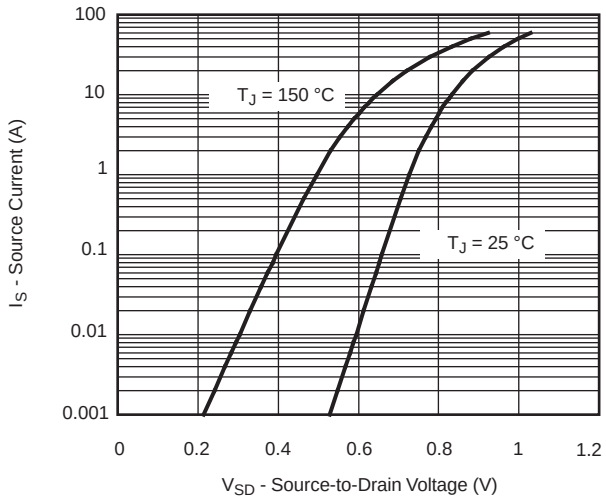


Gate Charge

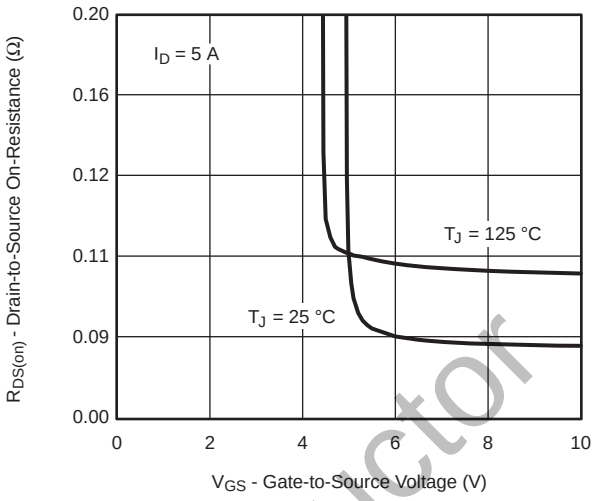


On-Resistance vs. Junction Temperature

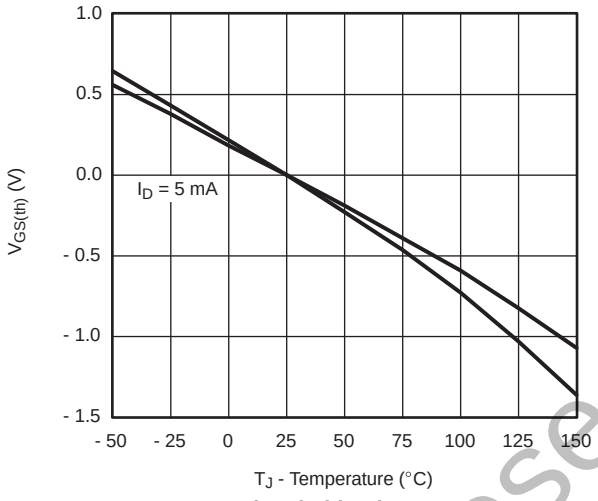
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



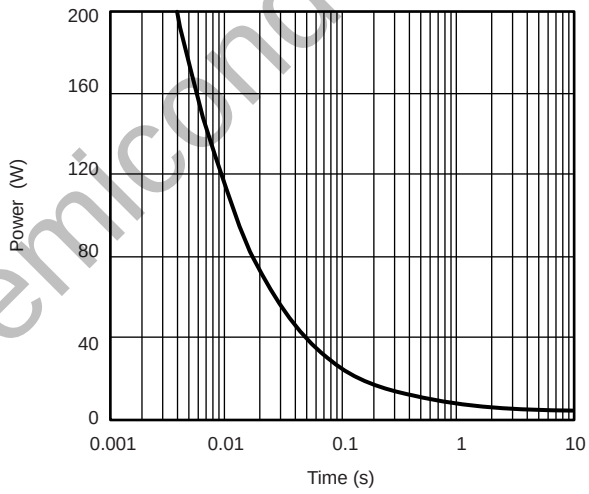
Source-Drain Diode Forward Voltage



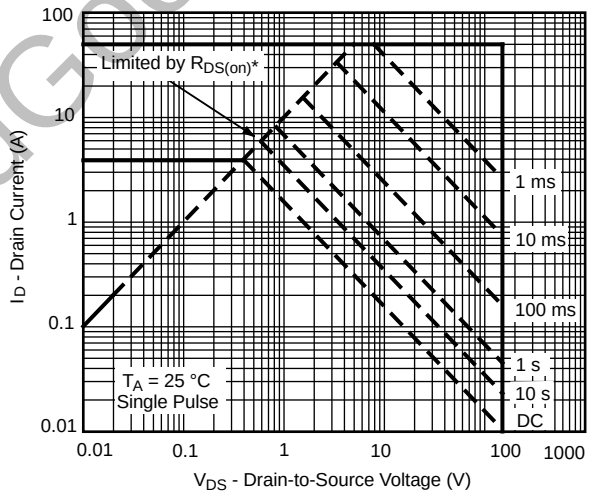
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power, Junction-to-Ambient



* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

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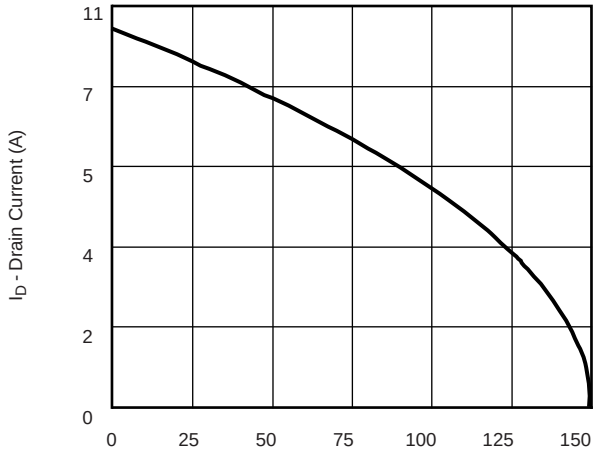
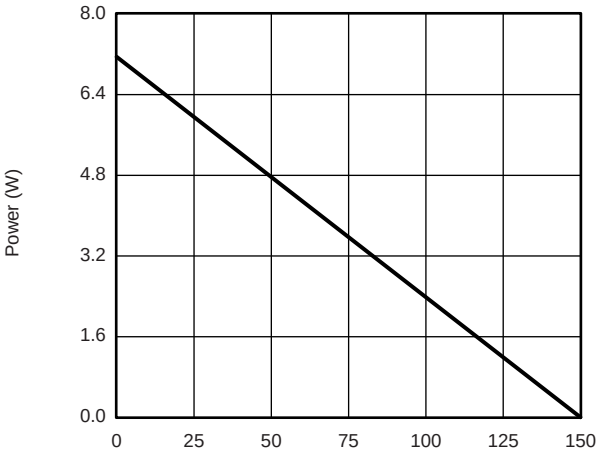
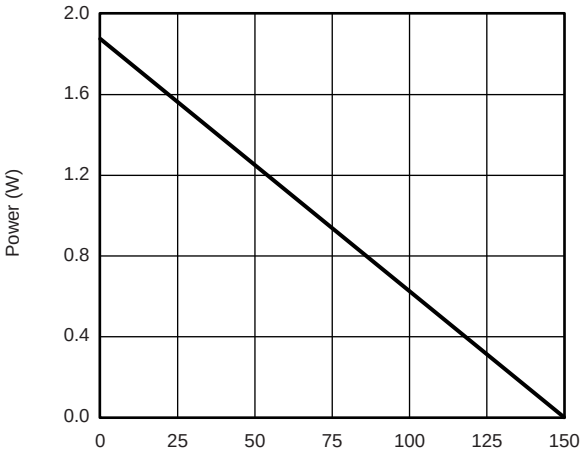
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Current Derating*



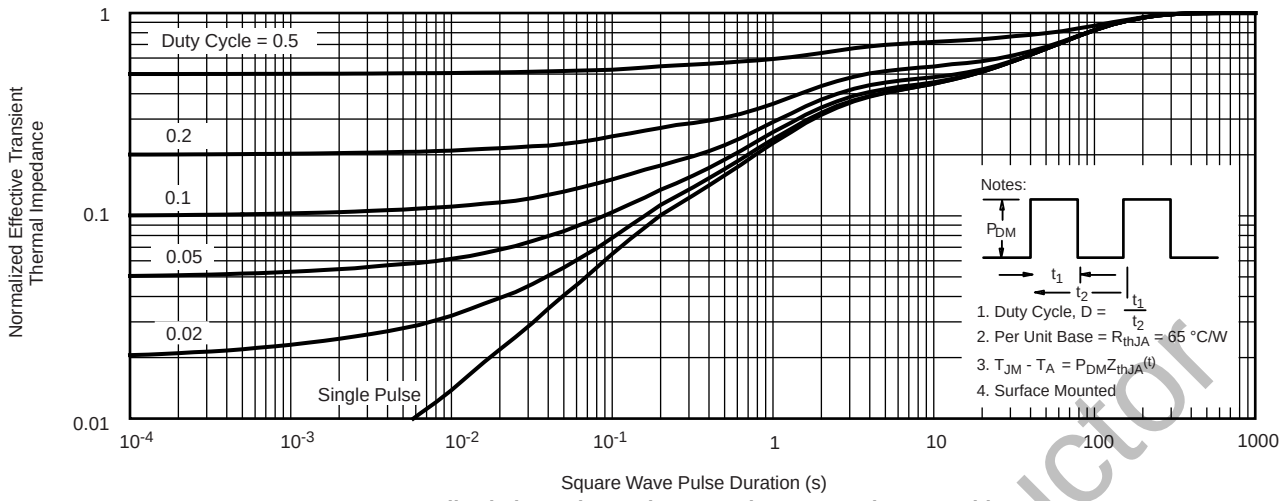
Power, Junction-to-Case



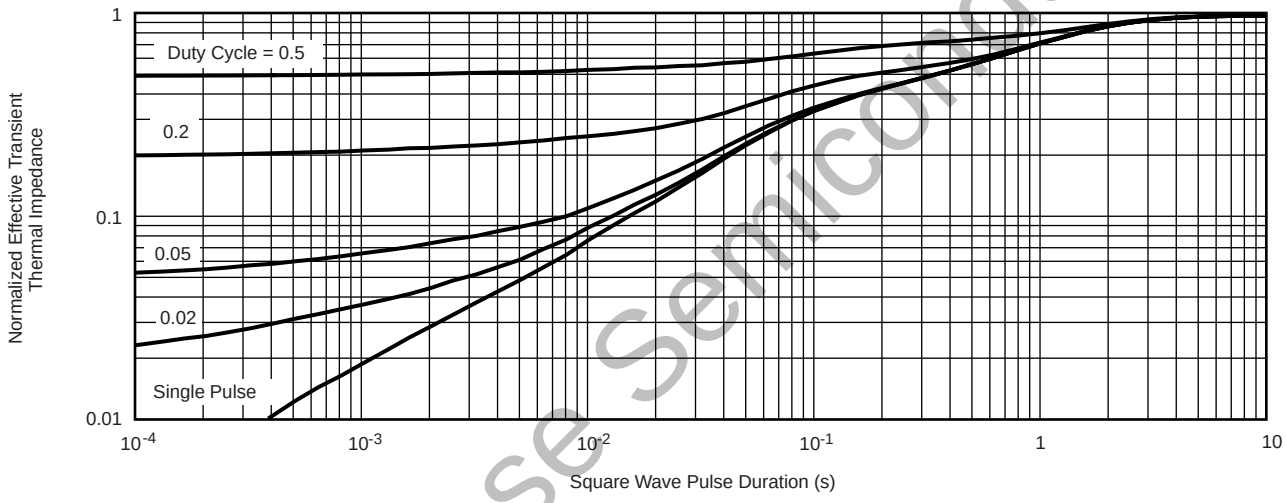
Power, Junction-to-Ambient

* The power dissipation P_D is based on $T_{J(max)}$ = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

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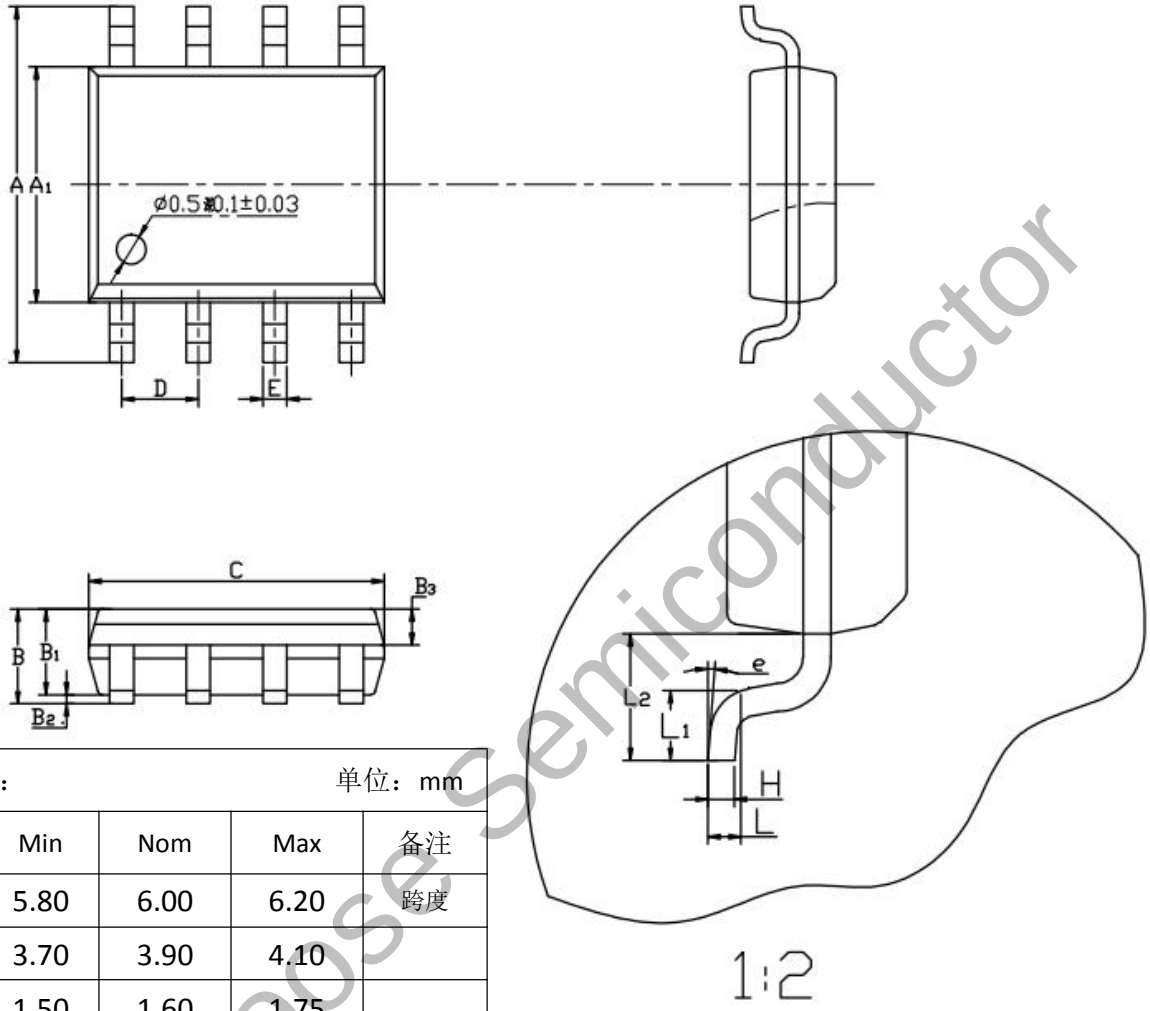
Package Dimension

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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