DUAL P-Channel Enhancement Mode Power MOSFET

Description

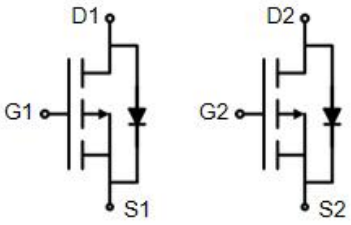
The G400P06S2 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

General Features

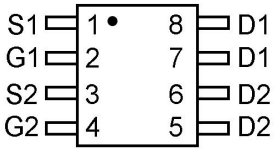
- V_{DS} -60V
- I_D (at V_{GS} = -10V) -6A
- $R_{DS(ON)}$ (at V_{GS} = -10V) < 40mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

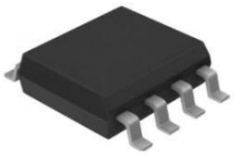
- Power switch
- DC/DC converters



Schematic diagram



pin assignment



SOP-8 Dual

Ordering Information

Device	Package	Marking	Packaging
G400P06S2	SOP-8 Dual	G400P06D	4000pcs/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-60	V
Continuous Drain Current	T_C = 25ºC	I_D	-6	A
	T_C = 100ºC		-3.8	
Pulsed Drain Current (note1)		I_{DM}	-24	A
Gate-Source Voltage		V_{GS}	±20	V
Power Dissipation		P_D	2.5	W
Single pulse avalanche energy (note2)		E_{AS}	56	mJ
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 To 150	ºC

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient, t≤10s	R_{thJA}	50	ºC/W

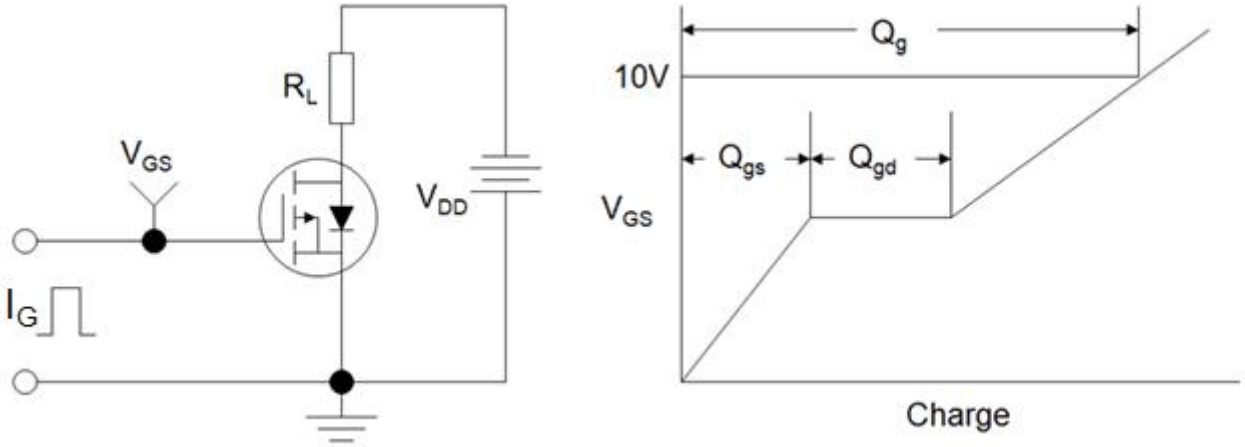
Specifications T_J = 25ºC, unless otherwise noted

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -60V, V_{GS} = 0V	--	--	-1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-2.0	-2.4	-3.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -5A	--	33	40	mΩ
Forward Transconductance	g_{FS}	V_{DS} = -5V,I_D = -5A	--	16	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -30V, f = 1.0MHz	--	2600	--	pF
Output Capacitance	C_{oss}		--	120	--	
Reverse Transfer Capacitance	C_{rss}		--	115	--	
Total Gate Charge	Q_g	V_{DD} = -30V, I_D = -5A, V_{GS} = -10V	--	44	--	nC
Gate-Source Charge	Q_{gs}		--	9	--	
Gate-Drain Charge	Q_{gd}		--	10	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -30V, I_D = -5A, R_G = 3Ω	--	10	--	ns
Turn-on Rise Time	t_r		--	6	--	
Turn-off Delay Time	$t_{d(off)}$		--	47	--	
Turn-off Fall Time	t_f		--	12	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	-6	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = -5A, V_{GS} = 0V	--	--	-1.2	V
Reverse Recovery Charge	Q_{rr}	I_F = -5A, V_{GS} = 0V di/dt=-500A/us	--	107	--	nC
Reverse Recovery Time	T_{rr}		--	23	--	ns

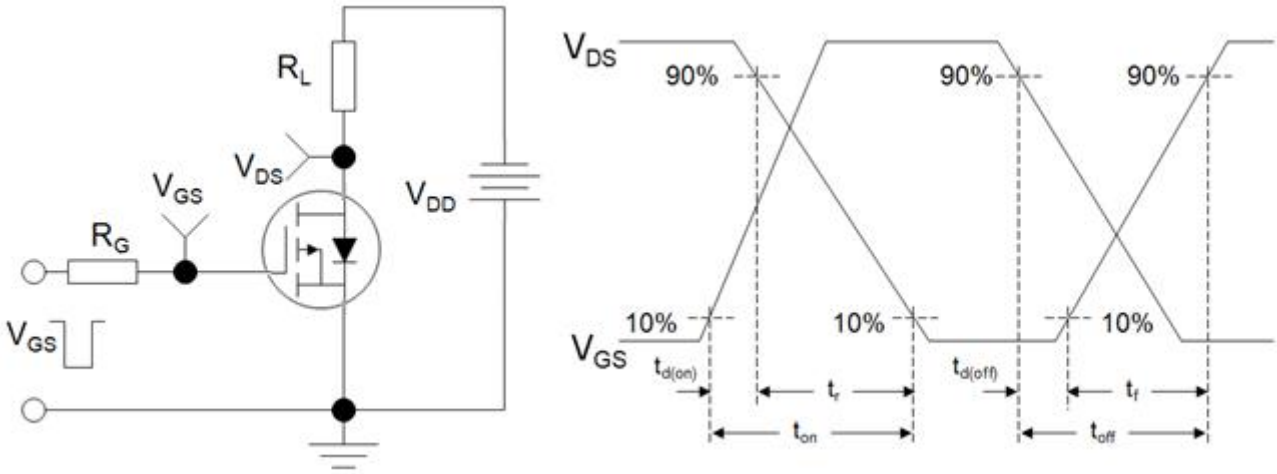
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition : Tj=25℃ ,VDD=-50V,VGS=-10V,L=0.5mH,Rg=25Ω
   The table shows the minimum avalanche energy, which is 156mJ when the device is tested until failure
3. Identical low side and high side switch with identical R_G

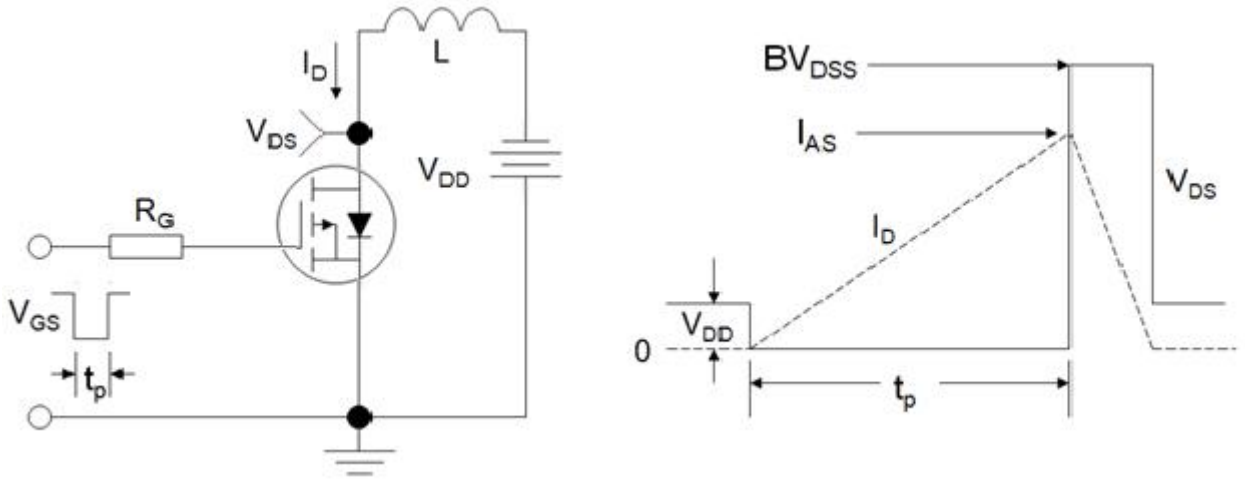
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

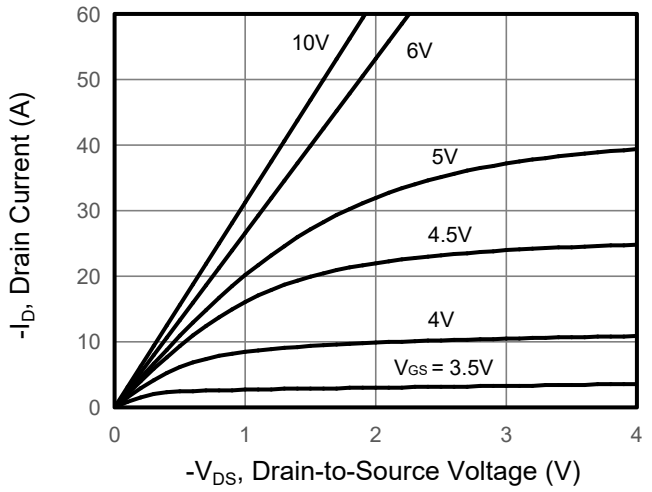


Figure 2. Transfer Characteristics

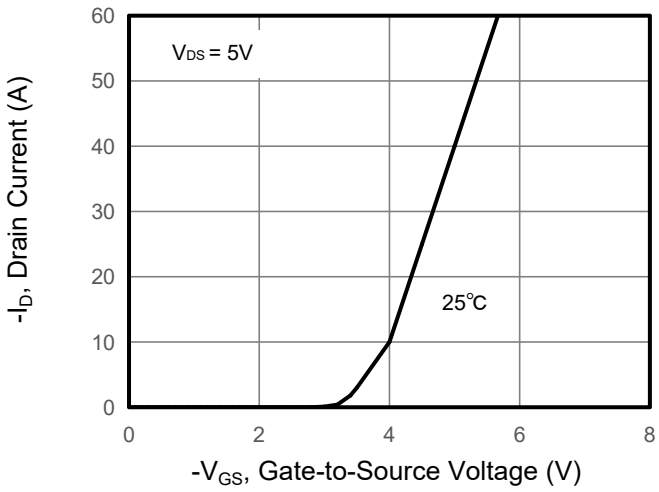


Figure 3.Drain Source On Resistance

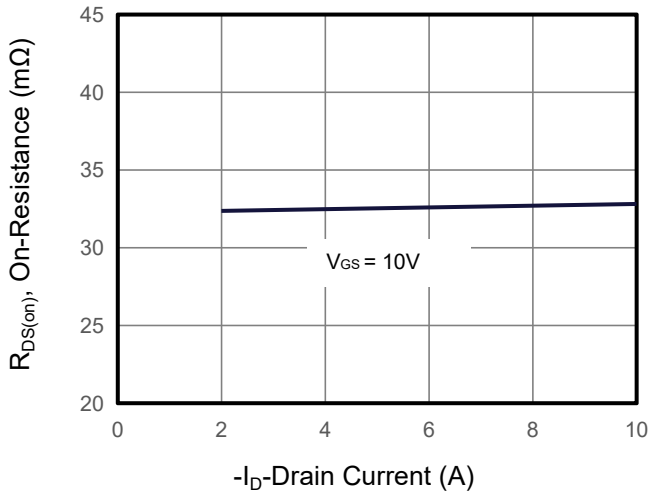


Figure 4. Gate Charge

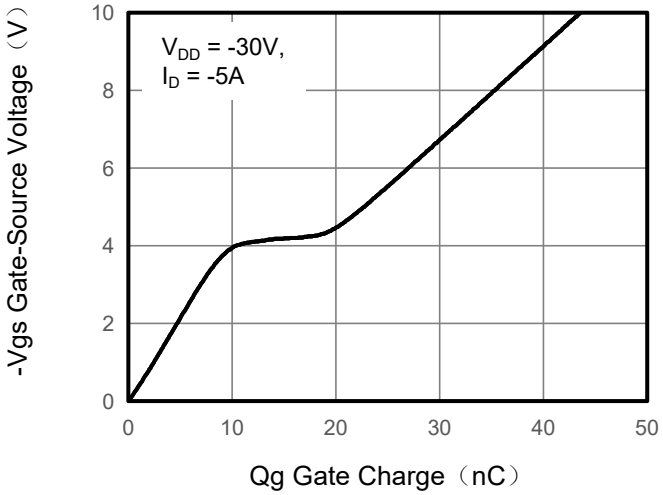


Figure 5. Capacitance

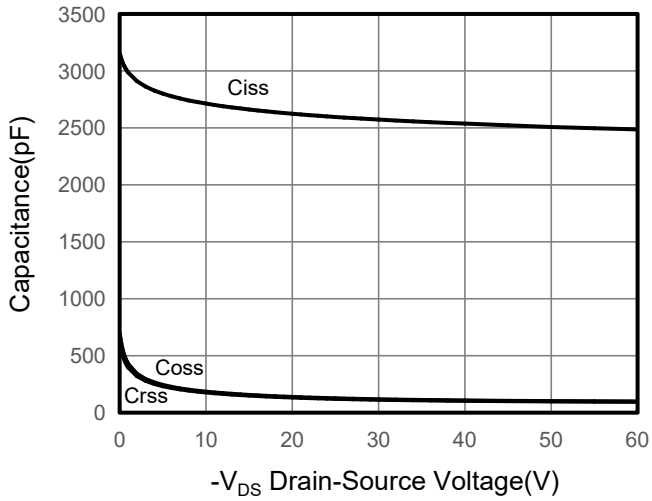
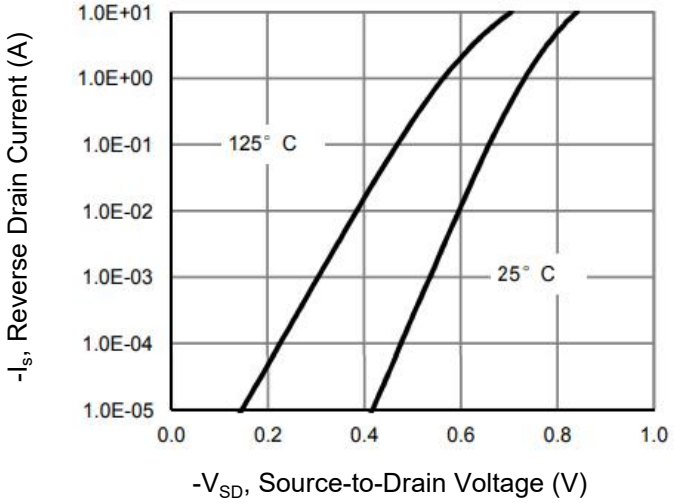


Figure 6. Source-Drain Diode Forward



Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Drain-Source On-Resistance

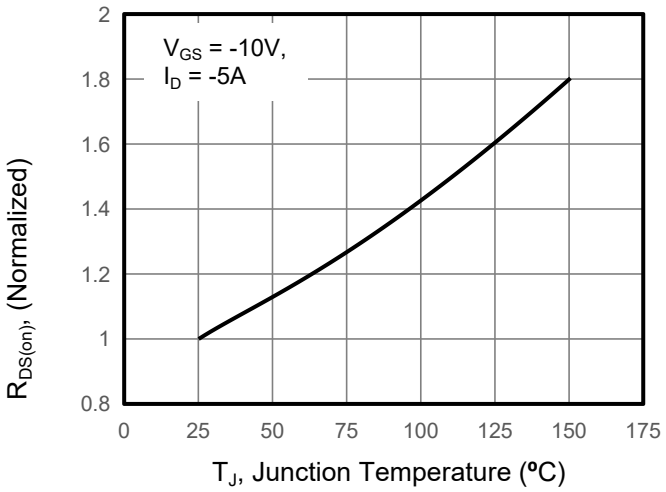


Figure 8. Safe Operation Area

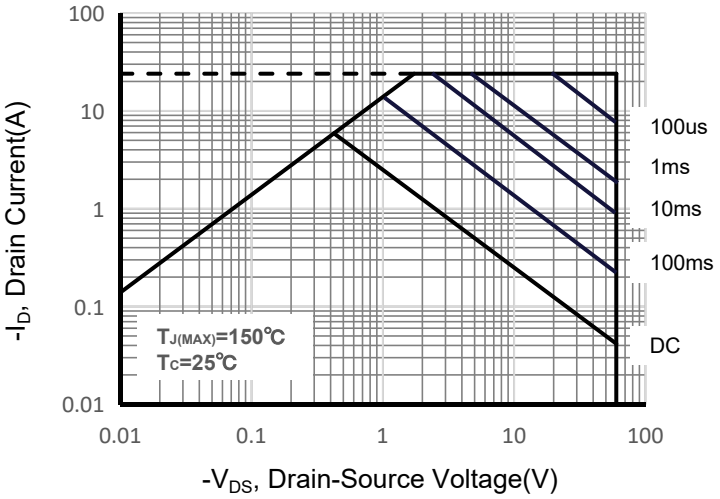


Figure 9. Maximum Continuous Drain Current vs Case Temperature

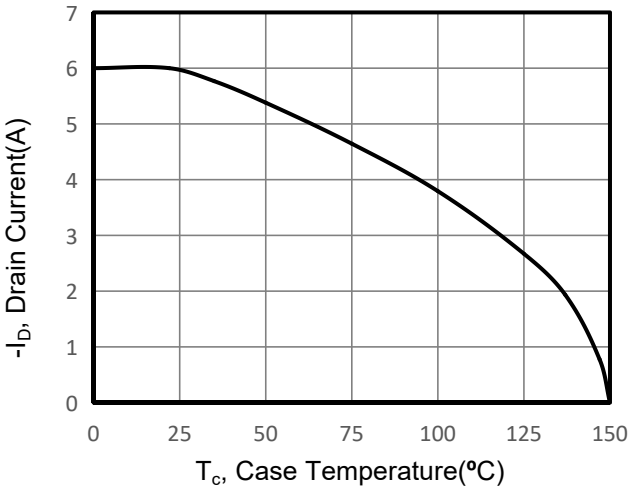
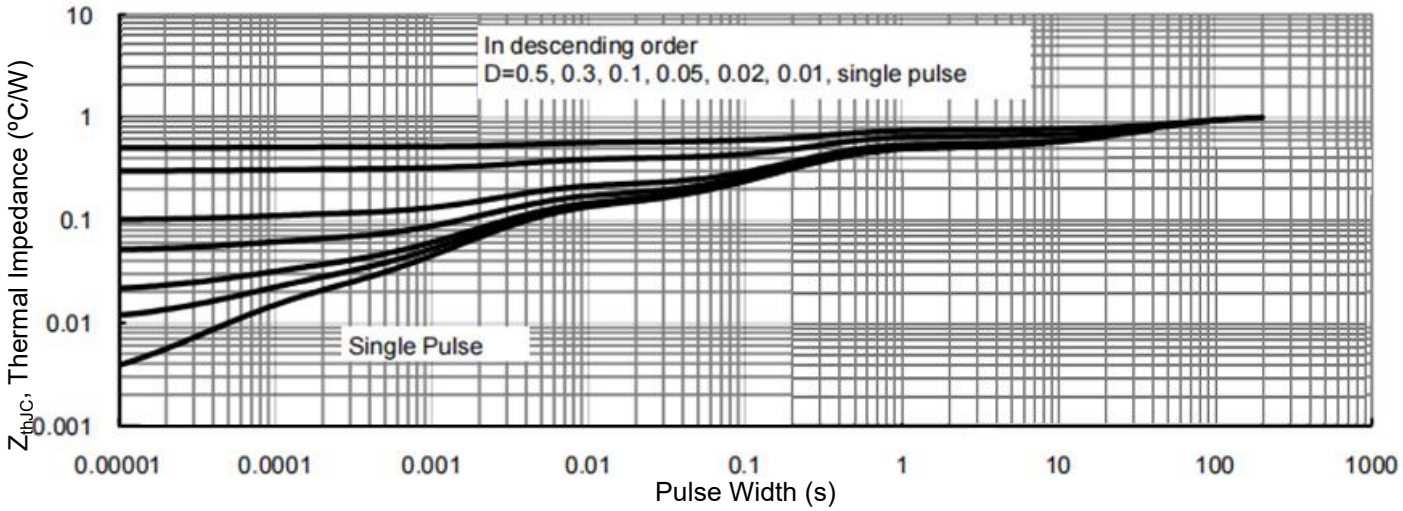
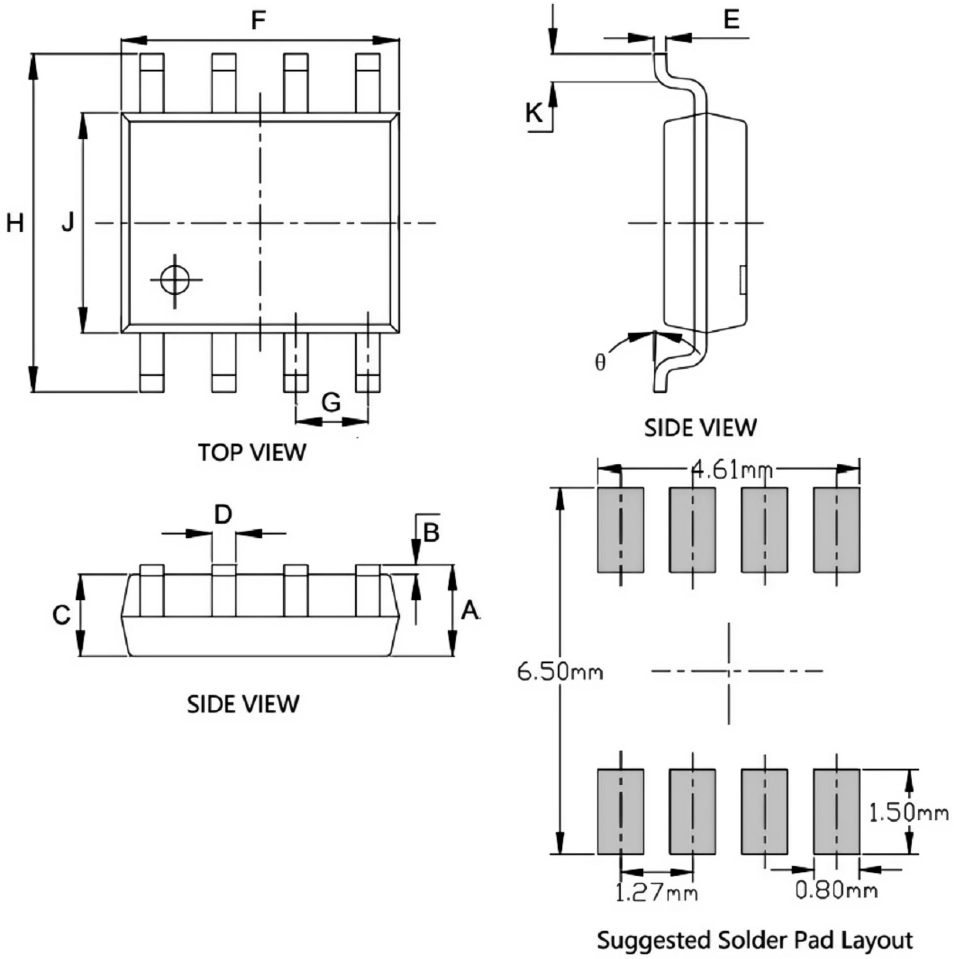


Figure 10. Normalized Maximum Transient Thermal Impedance



SOP-8 DUAL Package Information



DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.053	0.069	1.350	1.750
B	0.004	0.010	0.100	0.250
C	0.053	0.061	1.350	1.550
D	0.013	0.020	0.330	0.510
E	0.007	0.010	0.170	0.250
F	0.189	0.197	4.800	5.000
G	0.050BSC		1.270BSC	
H	0.228	0.244	5.800	6.200
J	0.150	0.157	3.800	4.000
K	0.016	0.050	0.400	1.270
θ	0°	8°	0°	8°

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:+/-0.05mm.
3.The pad layout is for reference purposes only.