优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)\ MAX}$	I_D T_A = +25°C
450V	4Ω @ V_{GS} = 10V	0.85A

Description

This new generation complementary MOSFET features low on-resistance and fast switching, making it ideal for high efficiency power management applications.

Applications

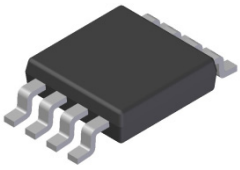
- Motor Control
- Backlighting
- DC-DC Converters
- Power Management Functions

Features

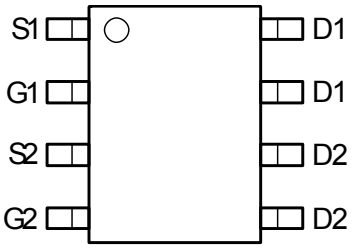
- Low Input Capacitance
- High BVDss Rating for Power Application
- Low Input/Output Leakage

Mechanical Data

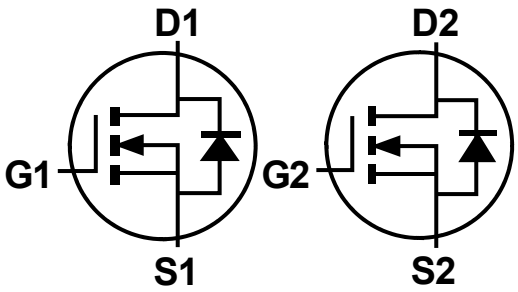
- Case: SO-8
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See diagram below
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.074 grams (approximate)



Top View



Top View
Pin Configuration



Equivalent Circuit

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Units
Drain-Source Voltage		V_{DSS}	450	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current (Note 5) V_{GS} = 10V	Steady State	I_D	0.5	A
	t < 10s		0.62	
	t < 1s		0.85	A
Pulsed Drain Current (10μs pulse, duty cycle = 1%)		I_{DM}	2.2	A
Maximum Body Diode Forward Current (Note 5)		I_S	1.7	A
Avalanche Current (Note 6)	L = 60mH	I_{AS}	1.4	A
	L = 10mH (Note 8)		2.2	
Avalanche Energy (Note 6)	L = 60mH	E_{AS}	56	mJ
	L = 10mH (Note 8)		25	

Thermal Characteristics

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)		P_D	1.64	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady state	$R_{\Theta JA}$	78	°C/W
	t<10s		20.2	°C/W
Thermal Resistance, Junction to Case (Note 5)		$R_{\Theta JC}$	13.3	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	450	—	—	V	V_{GS} = 0V, I_D = 10mA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	V_{DS} = 450V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±30V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	3.5	—	4.5	V	V_{DS} =10V I_D = 1mA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	—	3	4	Ω	V_{GS} = 10V, I_D = 0.4A
Forward Transfer Admittance	$\|Y_{fs}\|$	0.55	1.1	—	S	V_{DS} = 10V, I_D =0.4A
Diode Forward Voltage	V_{SD}	—	0.7	1.2	V	V_{GS} = 0V, I_S = 0.7A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	256	—	pF	V_{DS} = 25V, V_{GS} = 0V f = 1MHz
Output Capacitance	C_{oss}	—	22.5	—		
Reverse Transfer Capacitance	C_{rss}	—	0.83	—		
Gate Resistance	R_G	—	2.3	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 10V)	Q_g	—	6.9	—	nC	V_{DS} = 360V,I_D = 0.7A, V_{GS} = 10V
Gate-Source Charge	Q_{gs}	—	1.4	—		
Gate-Drain Charge	Q_{gd}	—	3.4	—		
Turn-On Delay Time	$t_{D(on)}$	—	7	—	nS	V_{GS} = 10V, R_L = 562Ω, R_G = 10Ω, I_D = 0.4A
Turn-On Rise Time	t_r	—	6.4	—		
Turn-Off Delay Time	$t_{D(off)}$	—	18.9	—		
Turn-Off Fall Time	t_f	—	56.6	—		
Body Diode Reverse Recovery Time	t_{rr}	—	103	—	nS	I_F = 1A, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q_{rr}	—	314	—	nC	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
6. I_{AR} and E_{AR} rating are based on low frequency and duty cycles to keep T_J = +25°C.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

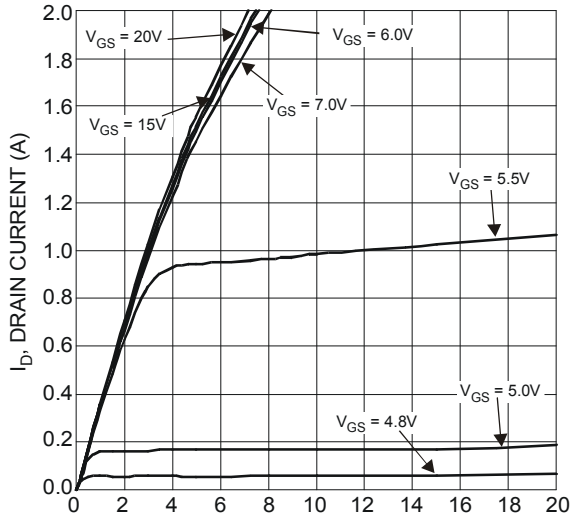


Figure 1 Typical Output Characteristics

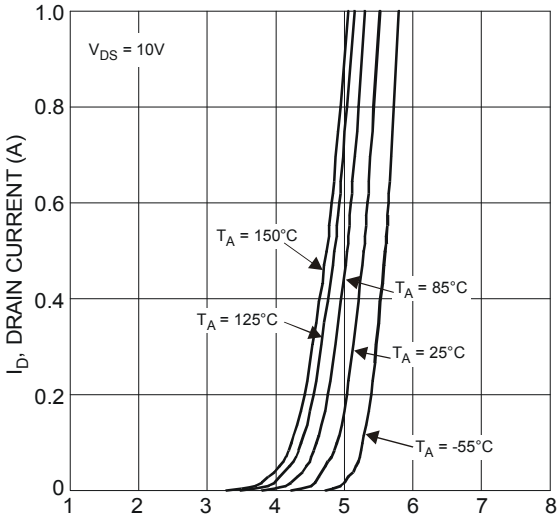


Figure 2 Typical Transfer Characteristics

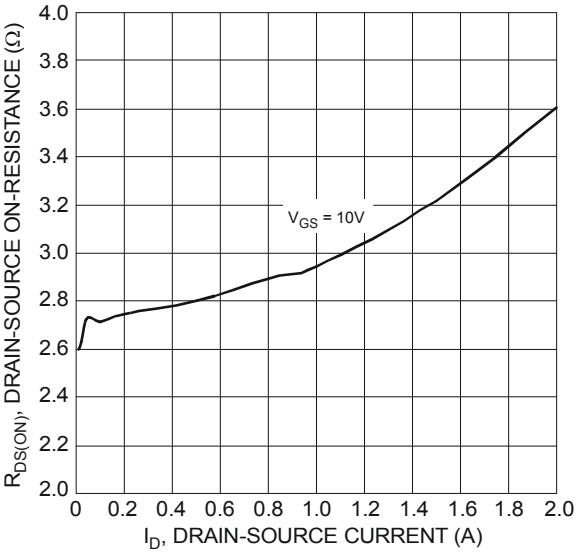


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

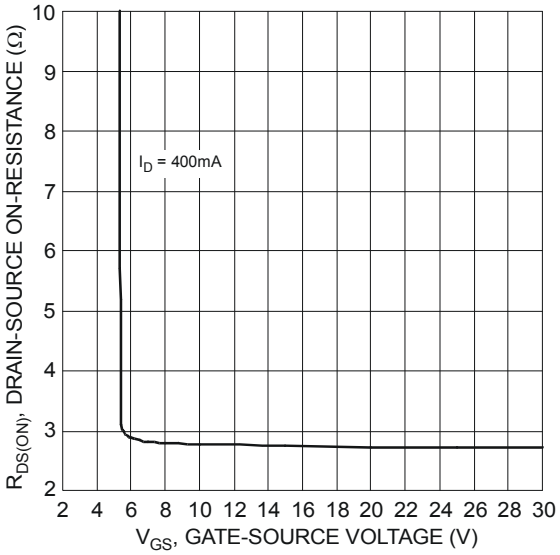


Figure 4 Typical Transfer Characteristic

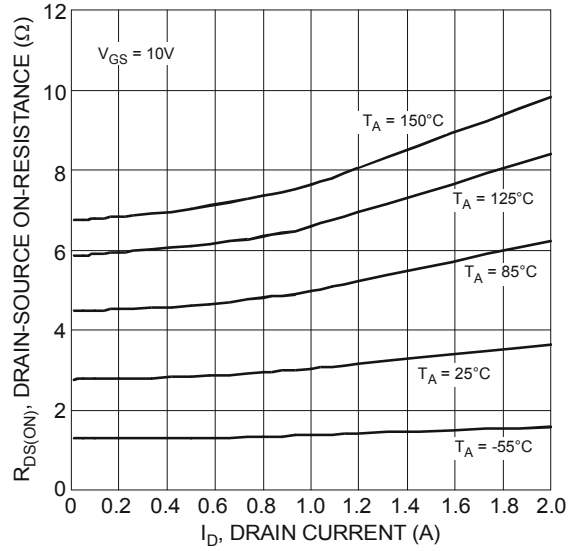


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

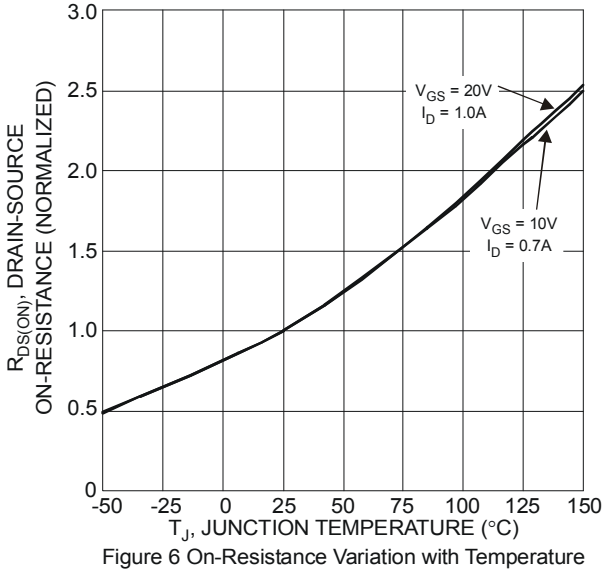


Figure 6 On-Resistance Variation with Temperature

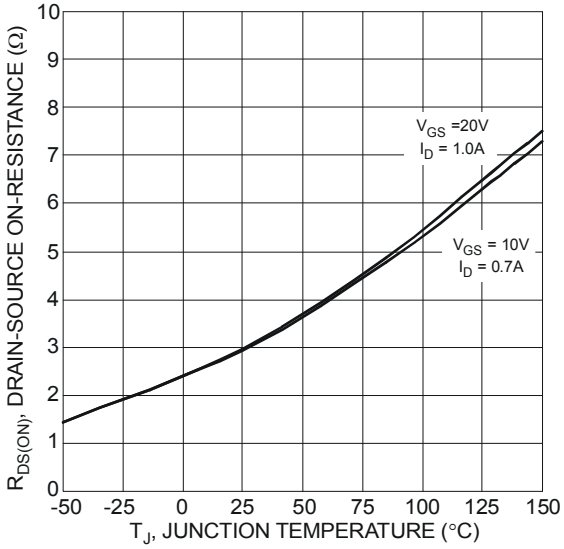


Figure 7 On-Resistance Variation with Temperature

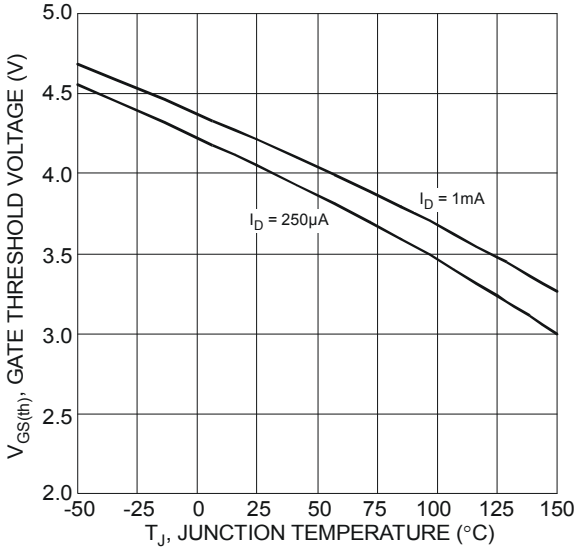


Figure 8 Gate Threshold Variation vs. Ambient Temperature

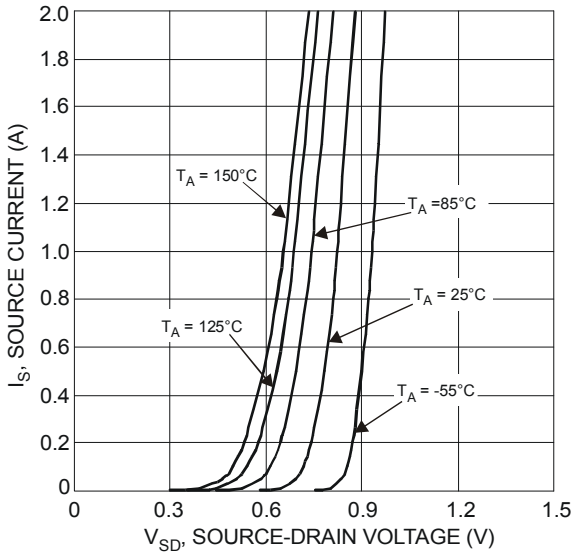


Figure 9 Diode Forward Voltage vs. Current

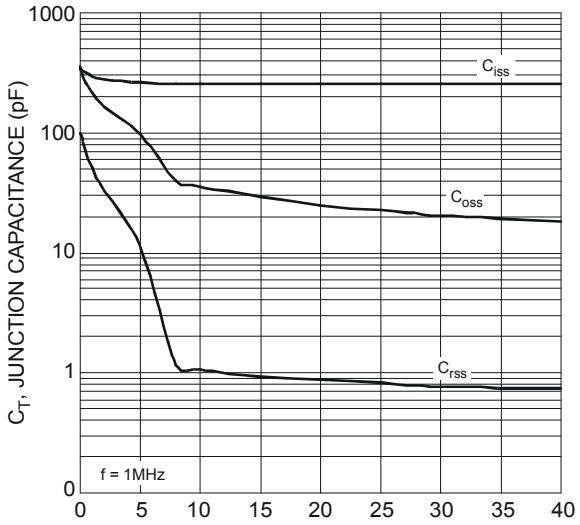


Figure 10 Typical Junction Capacitance

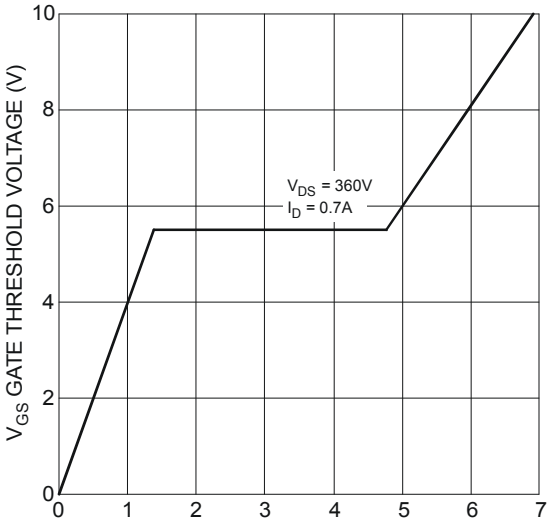


Figure 11 Gate Charge

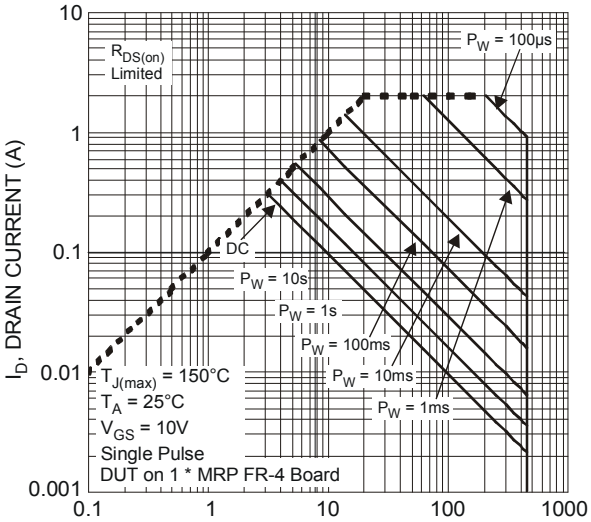


Figure 12 SOA, Safe Operation Area

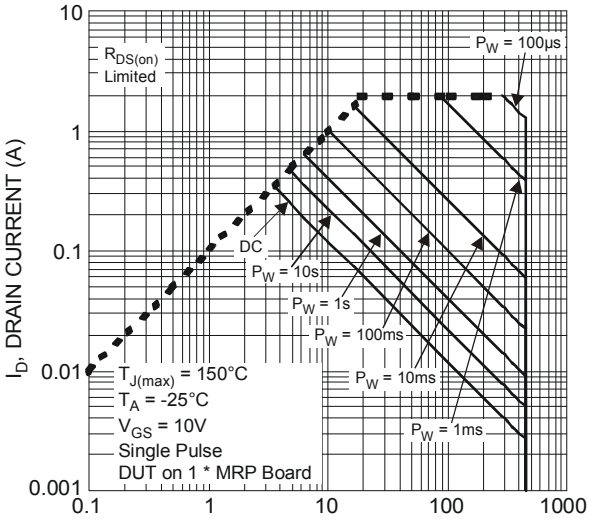


Figure 13 SOA, Safe Operation Area

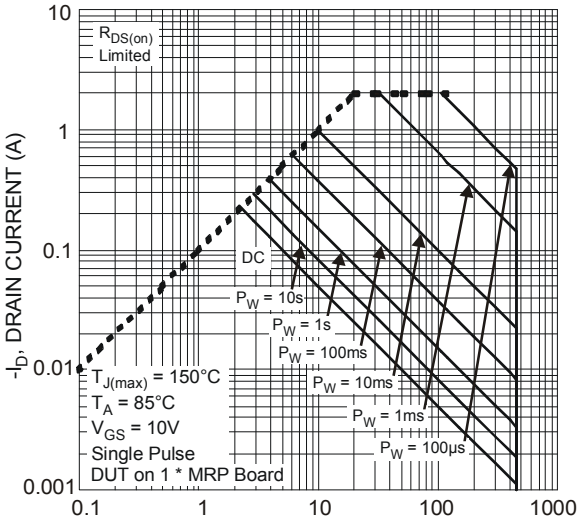


Figure 14 SOA, Safe Operation Area

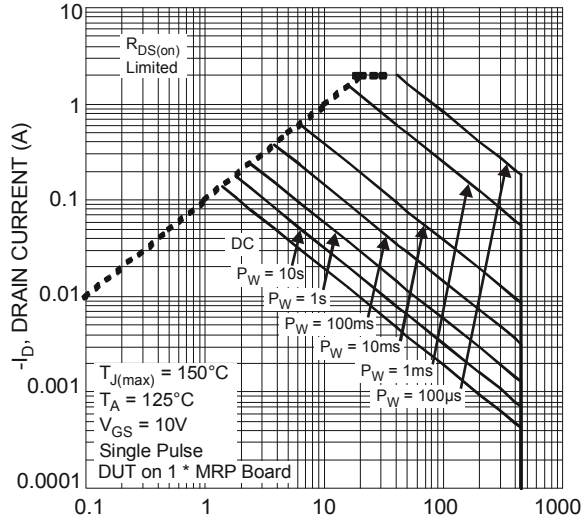


Figure 15 SOA, Safe Operation Area

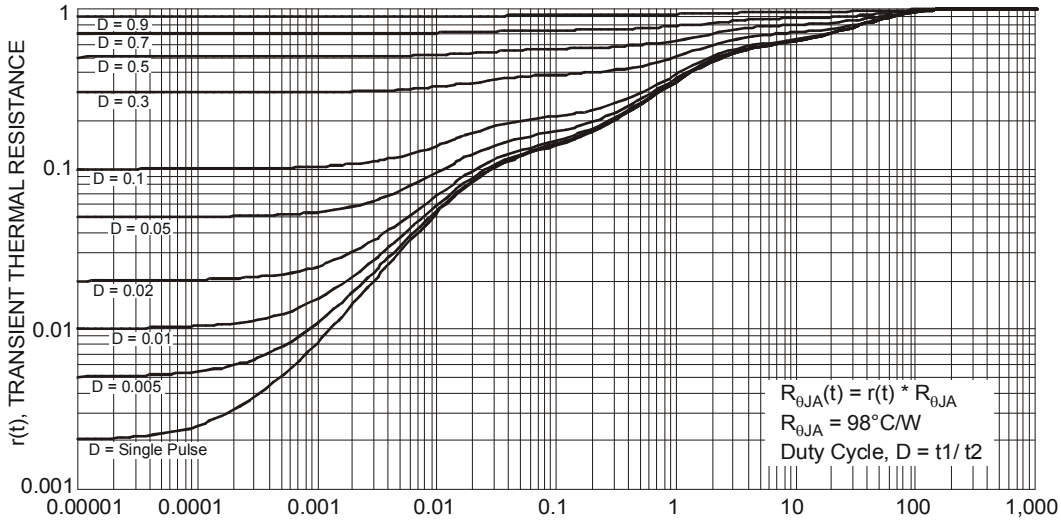
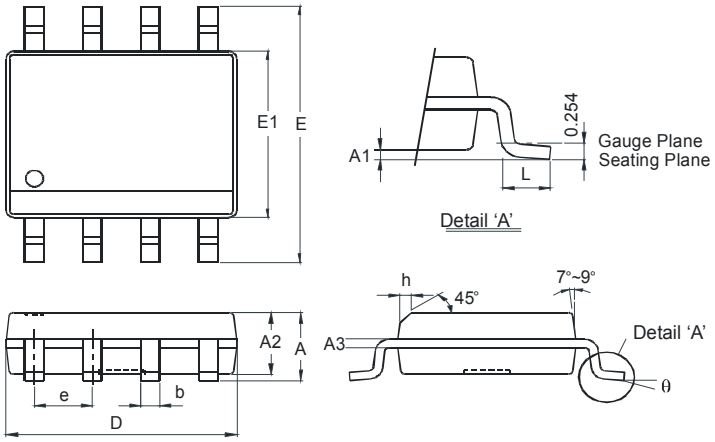


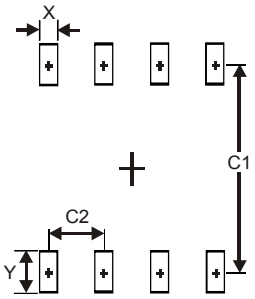
Figure 16 Transient Thermal Resistance

Package Outline Dimensions



SO-8		
Dim	**Min**	**Max**
A	—	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	—	0.35
L	0.62	0.82
θ	0°	8°
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27