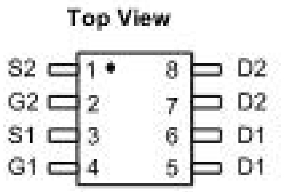
30V *Dual N-channel MOSFET*

Description

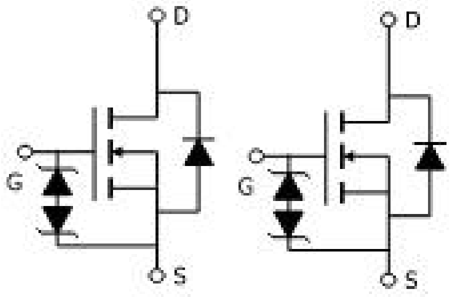
The SM4818 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.



SOIC-8

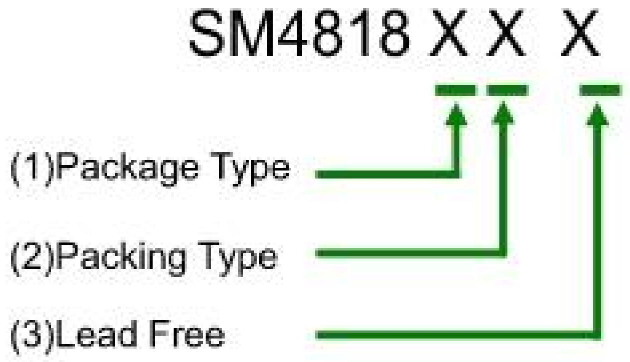
General Features

V_{DS}	30V
I_D(at V_{GS}=10V)	8A
$R_{DS(ON)}$ (at V_{GS}=10V)	<19mΩ
$R_{DS(ON)}$ (at V_{GS} = 4.5V)	< 23mΩ



◆ Ordering Information

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
SM4818PRL	SM4818SRG	SOP-8	S2	G2	S1	G1	D1	D1	D2	D2	Tape Reel



(1) P：SOP-8

(2) R：Tape Reel

(3) G：Halogen Free；L：Lead Free

◆ Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	8	A
	T_A=70℃		6.5	
Pulsed Drain Current [C]		I_{DM}	48	
Avalanche Current [C]		I_{AS}, I_{AR}	19	A
Avalanche energy L=0.1mH [C]		E_{AS}, E_{AR}	18	mJ
Power Dissipation [B]	T_A=25℃	P_D	2	W
	T_A=70℃		1.3	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	℃

a:Fused current that based on wire numbers and diameter

b:Repetitive Rating: Pulse width limited by the maximum junction temperature

c:1-in^2 2oz Cu PCB board

◆ Electrical Characteristics (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250µA, V_{GS}=0V	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V			1	µA
		T_J=55℃			5	
I_{GSS}	Gate-Body leakage current	V_{DS}=0V, V_{GS}= ±20V			10	µA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} I_D=250µA	1.2	1.8	2.4	V
$I_{D(ON)}$	On state drain current	V_{GS}=10V, V_{DS}=5V	30			A
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=8A		15.5	19	mΩ
		T_J=125℃		21	25	
		V_{GS}=4.5V, I_D=4A		18.5	23	mΩ
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=8A		30		S
V_{SD}	Diode Forward Voltage	I_S=1A,V_{GS}=0V		0.75	1	V
I_S	Maximum Body-Diode Continuous Current				2.5	A
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz	600	740	888	pF
C_{oss}	Output Capacitance		77	110	145	pF
C_{rss}	Reverse Transfer Capacitance		50	82	115	pF
R_g	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	0.5	1.1	1.7	Ω
SWITCHING PARAMETERS						
Q_g(10V)	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=8A	12	15	18	nC
Q_g(4.5V)	Total Gate Charge		6	7.5	9	nC
Q_{gs}	Gate Source Charge			2.5		nC
Q_{gd}	Gate Drain Charge			3		nC
$t_{D(on)}$	Turn-On DelayTime	V_{GS}=10V, V_{DS}=15V, R_L=1.8Ω, R_{GEN}=3Ω		5		ns
t_r	Turn-On Rise Time			3.5		ns
$t_{D(off)}$	Turn-Off DelayTime			19		ns
t_f	Turn-Off Fall Time			3.5		ns
t_{rr}	Body Diode Reverse Recovery Time	I_F=8A, dI/dt=500A/µs	6	8	10	ns
Q_{rr}	Body Diode Reverse Recovery Charge	I_F=8A, dI/dt=500A/µs	14	18	22	nC

Note: Pulse Test: Pulse Width ≤300us, Duty Cycle≤2%

d: Guaranteed by design: not subject to production testing

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

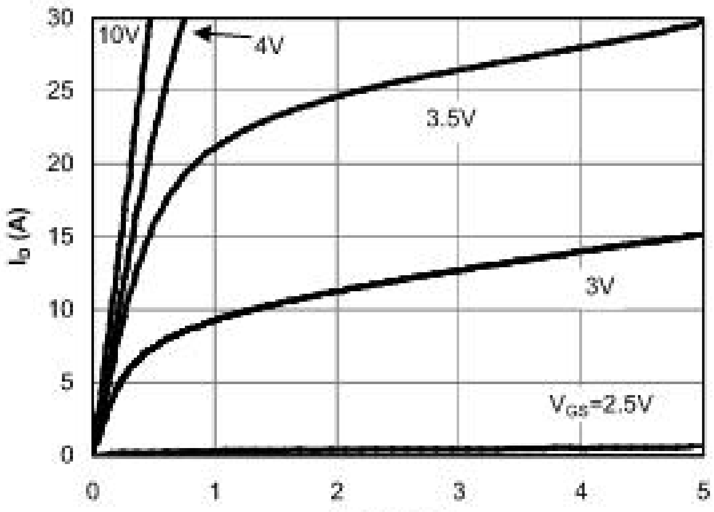


Fig 1: On-Region Characteristics (Note E)

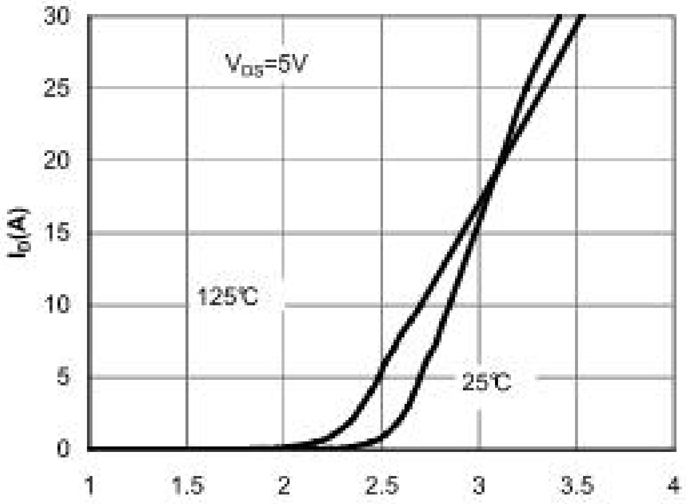


Figure 2: Transfer Characteristics (Note E)

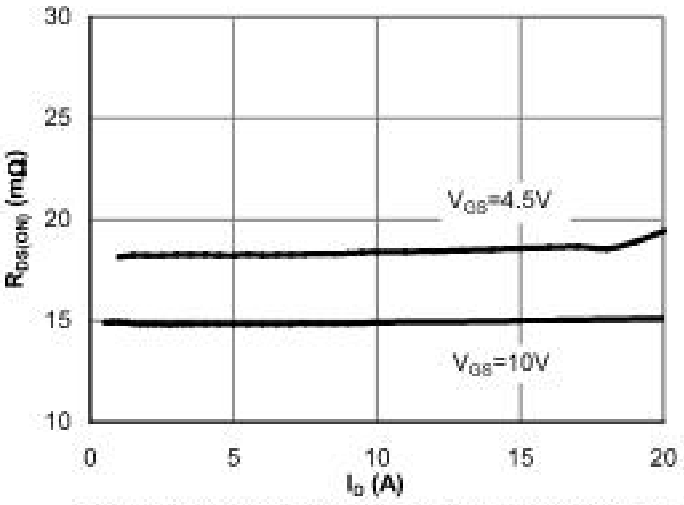


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

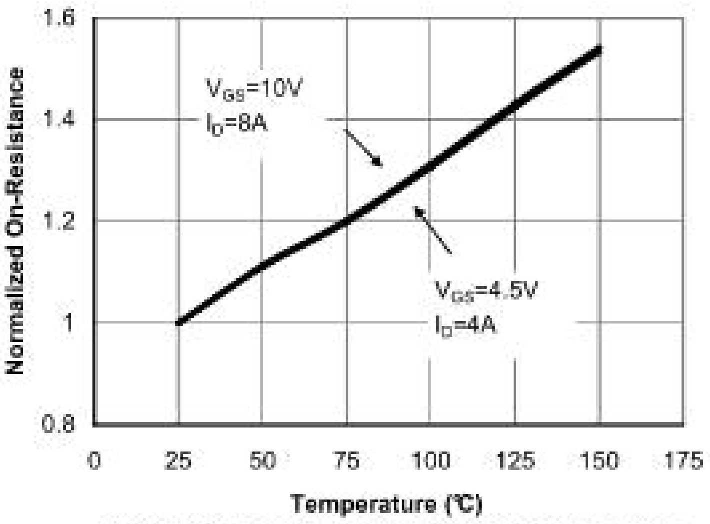


Figure 4: On-Resistance vs. Junction Temperature (Note E)

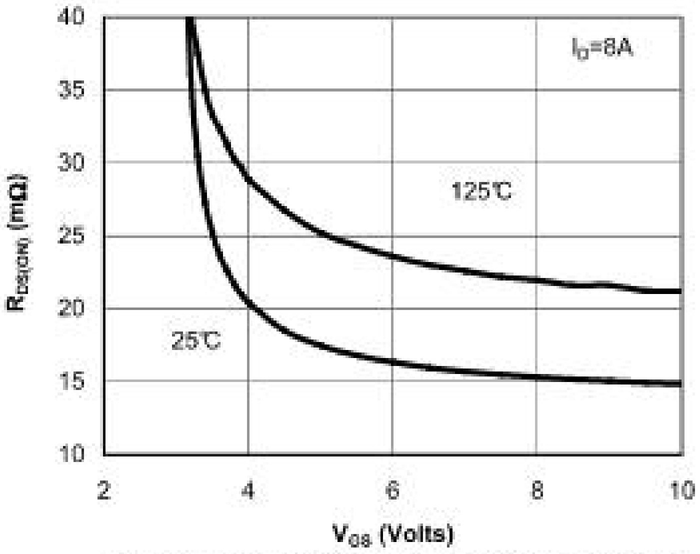


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

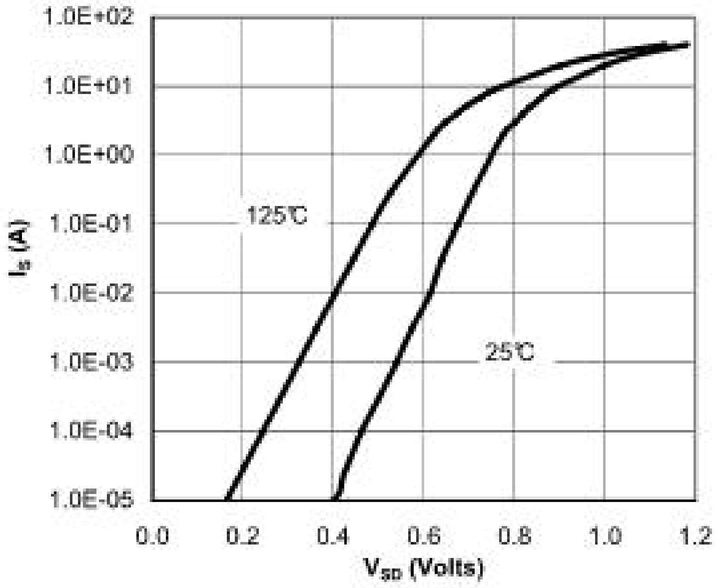


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

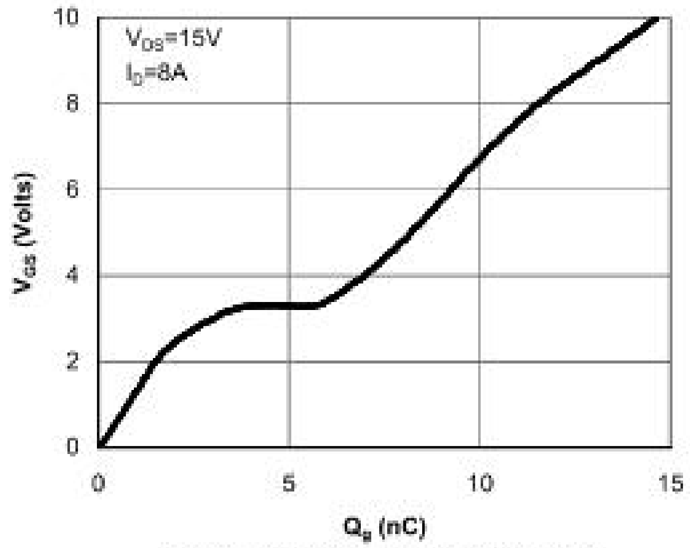


Figure 7: Gate-Charge Characteristics

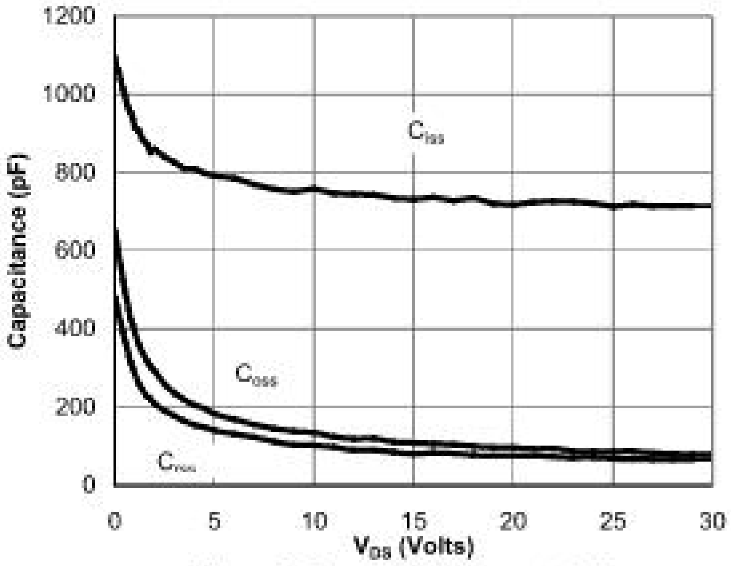


Figure 8: Capacitance Characteristics

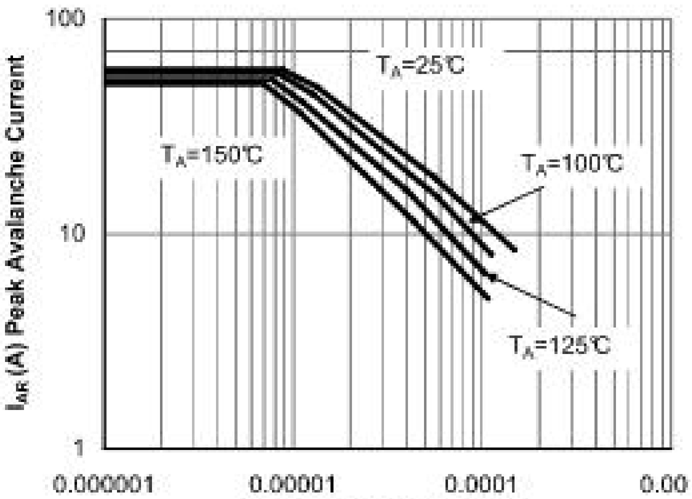


Figure 9: Single Pulse Avalanche capability (Note C)

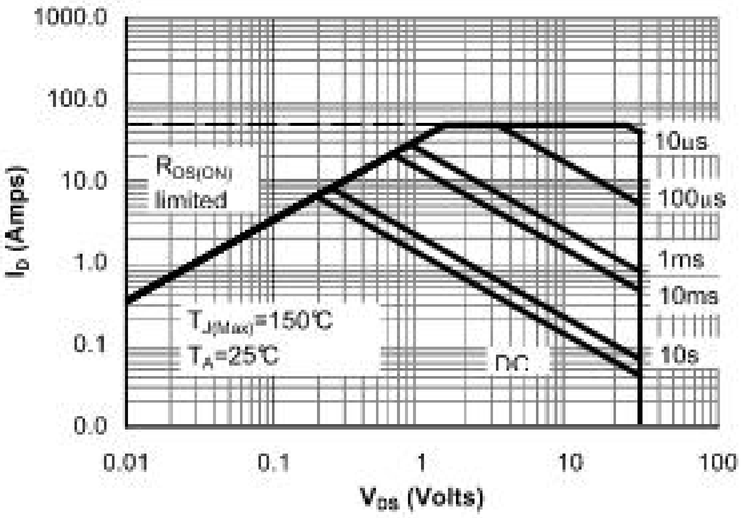


Figure 10: Maximum Forward Biased Safe Operating Area (Note F)

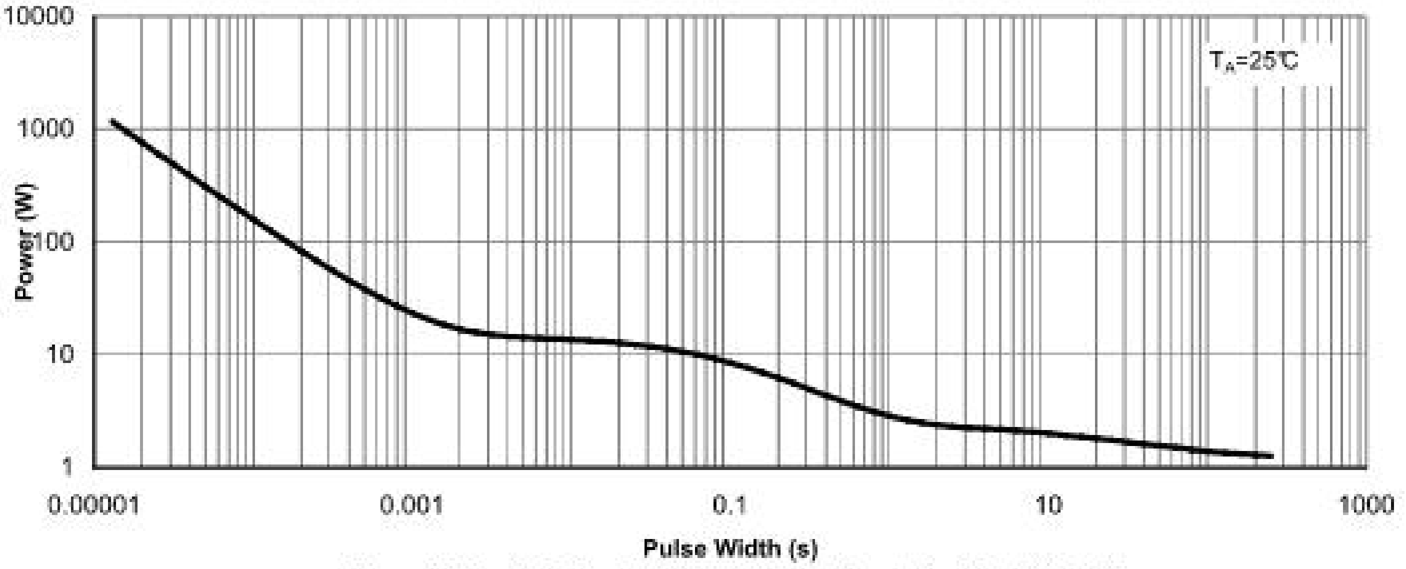


Figure 11: Single Pulse Power Rating Junction-to-Ambient (Note F)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

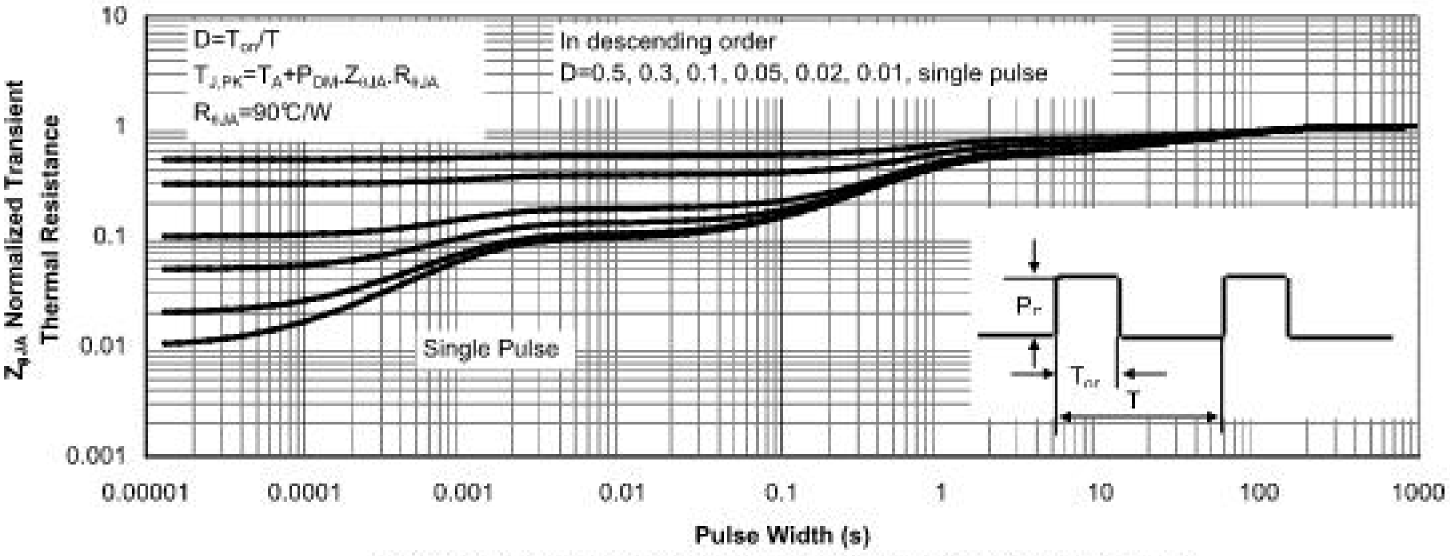
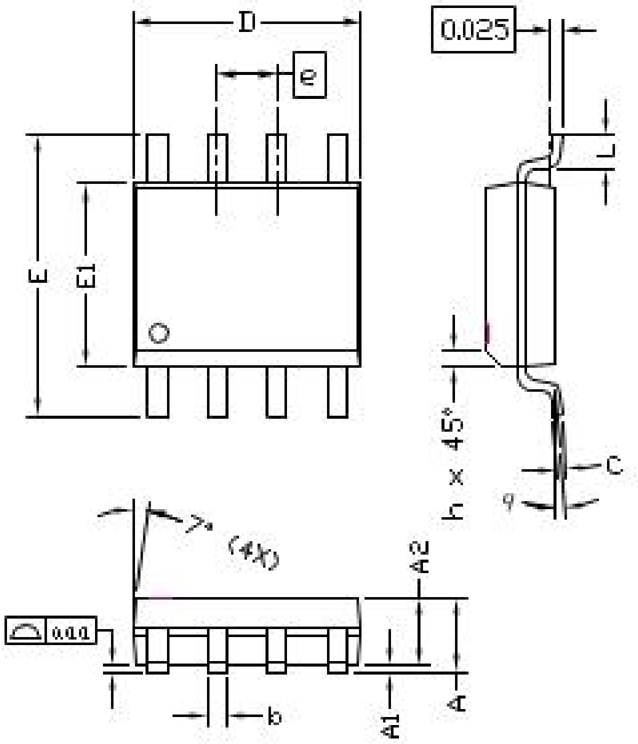


Figure 12: Normalized Maximum Transient Thermal Impedance (Note F)

SO-8 Package Data



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.45	1.50	1.55	0.057	0.059	0.061
A1	0.00	- - -	0.10	0.000	- - -	0.004
A2	- - -	1.45	- - -	- - -	0.057	- - -
b	0.33	- - -	0.51	0.013	- - -	0.020
c	0.19	- - -	0.25	0.007	- - -	0.010
D	4.80	- - -	5.00	0.189	- - -	0.197
E1	3.80	- - -	4.00	0.150	- - -	0.157
e	1.27 BSC			0.050 BSC		
E	5.80	- - -	6.20	0.228	- - -	0.244
h	0.25	- - -	0.50	0.010	- - -	0.020
L	0.40	- - -	1.27	0.016	- - -	0.050
aaa	- - -	- - -	0.10	- - -	- - -	0.004
q	0°	- - -	8°	0°	- - -	8°

NOTE:

1. LEAD FINISH: 150 MICROINCHES (3.8 um) MIN. THICKNESS OF Tin/Lead (SOLDER) PLATED ON LEAD
2. TOLERANCE ±0.100 mm (4 mil) UNLESS OTHERWISE SPECIFIED
3. COPLANARITY : 0.1000 mm
4. DIMENSION L IS MEASURED IN GAGE PLANE