

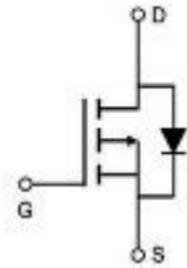
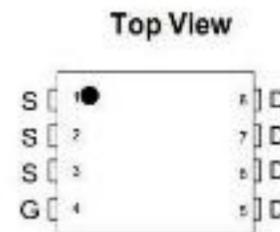
-40V P - Channel MOSFET

Description

-40V /-10A Power MOSFET

Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=4.5V$

Pb-free lead plating; RoHS compliant

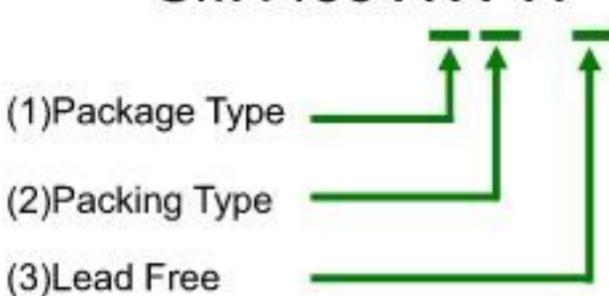


General Features

V_{DS}	-40	V
$R_{DS(on),TYP@VGS=10V}$	14.0	m Ω
$R_{DS(on),TYP@VGS=4.5}$	22.0	m Ω
I_D	-10	A

- High power and current handling capability
- Lead free product is acquired
- Surface mount package

◆ Ordering Information

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
SM4485PRL	SM4485PRG	SOP-8	S	S	S	G	D	D	D	D	Tape Reel
SM4485 X X X 			(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	Limit	Unit
Drain-Source Voltage	V _{DS}	- 40	V
Gate-Source Voltage	V _{GS}	± 20	V
Drain Current-Continuous	I _D	-10.0	A
Drain Current-Pulsed ^(Note 1)	I _{DM}	-16.0	A
Maximum Power Dissipation	P _D	3.1	W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 To 150	°C

a:Fused current that based on wire numbers and diameter

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

c:1-in² 2oz Cu PCB board

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	- 40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V	-	-	-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics ^(Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.3	-1.9	-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-17A	-	14.0	20.0	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-6.2A	-	96	-	S
Dynamic Characteristics ^(Note4)						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-15V, f=1MHz	-	2500	-	PF
Output Capacitance	C _{oss}		-	260	-	PF
Reverse Transfer Capacitance	C _{rss}		-	180	-	PF
Switching Characteristics ^(Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{GS} =-10V, V _{DS} =-15V, RL=0.75Ω, RGEN=3Ω	-	19	-	nS
Turn-on Rise Time	t _r		-	15.2	-	nS
Turn-Off Delay Time	t _{d(off)}		-	53.2	-	nS
Turn-Off Fall Time	t _f		-	17.1	-	nS
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-15V, I _D =-17A	-	18.6	-	nC
Gate-Source Charge	Q _{gs}		-	6.02	-	nC
Gate-Drain Charge	Q _{gd}		-	8.6	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage ^(Note 3)	V _{SD}	I _S =-1A, V _{GS} =0V	-	-	-1	V

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

d: Guaranteed by design: not subject to production testing

Typical Electrical and Thermal Characteristics

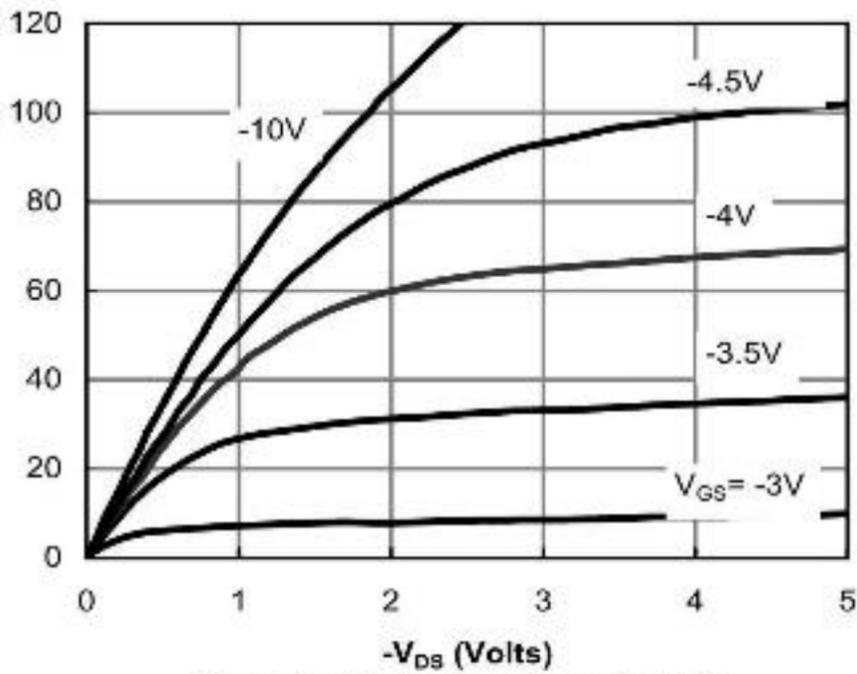


Figure 1: On-Region Characteristics

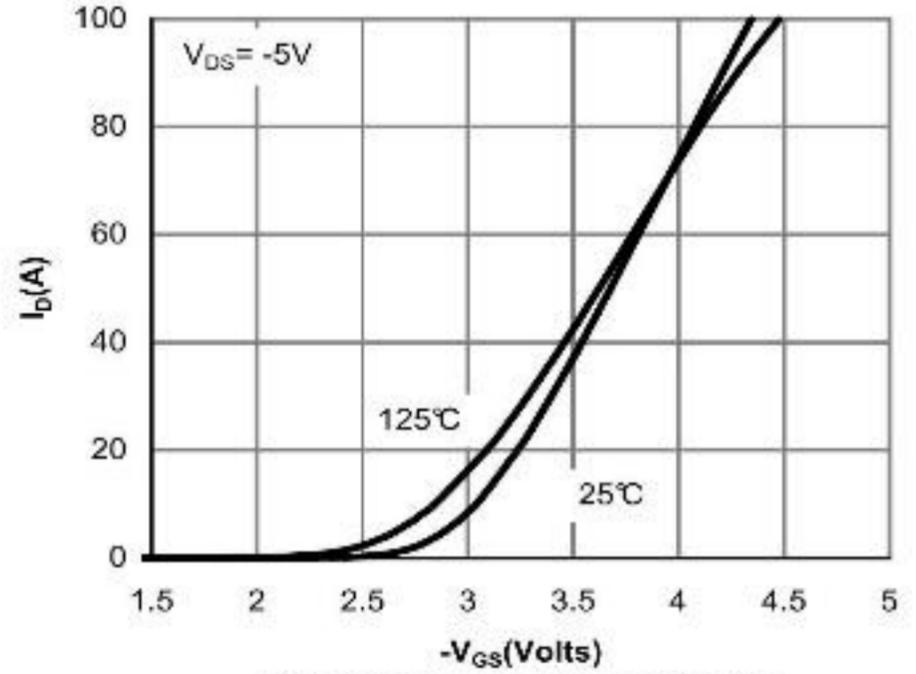


Figure 2: Transfer Characteristics

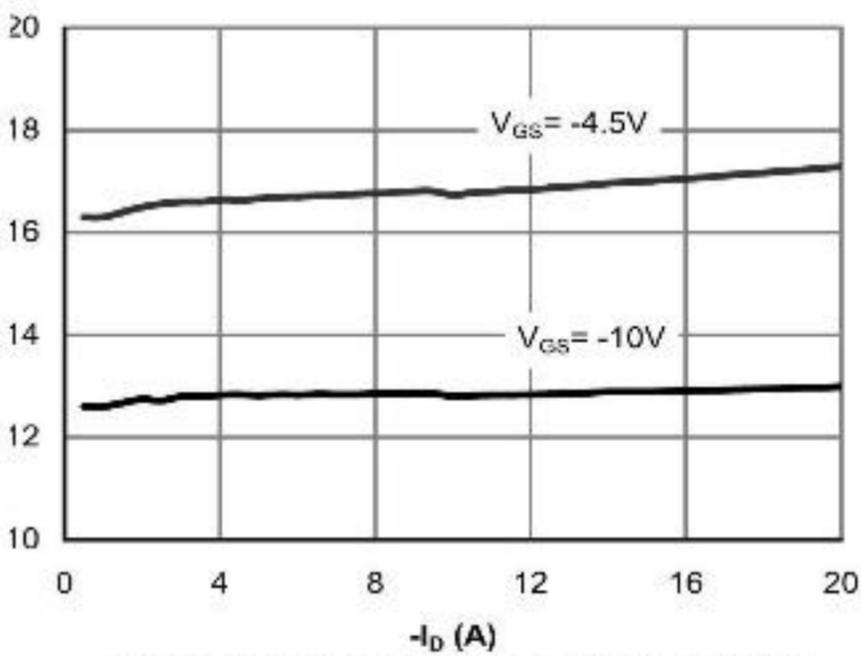


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

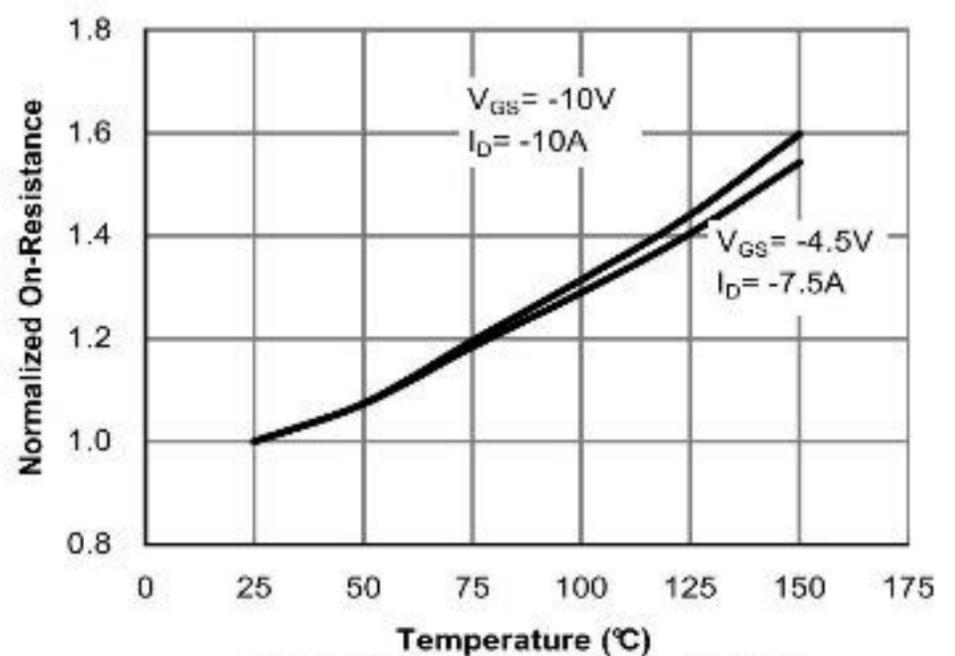
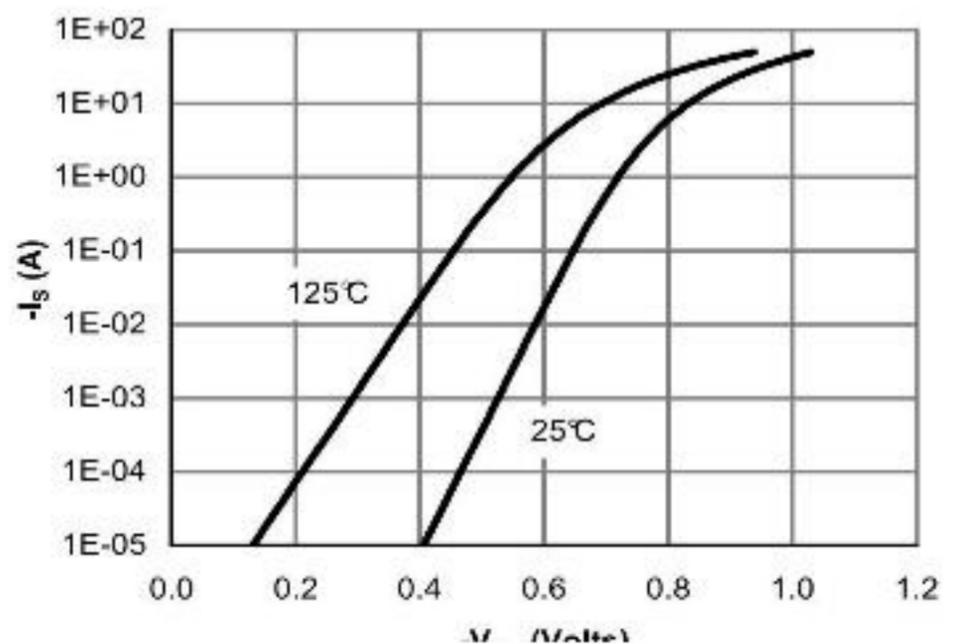
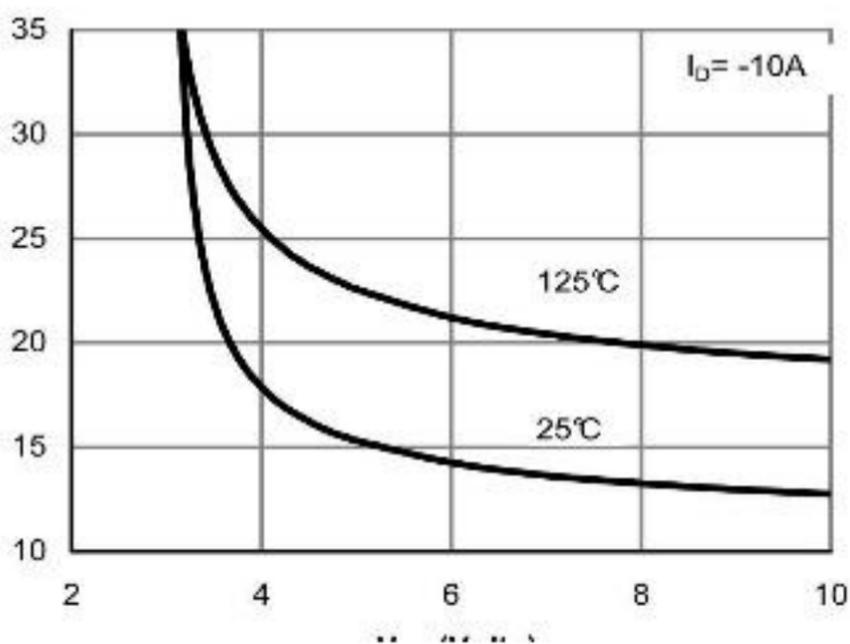


Figure 4: On-Resistance vs. Junction Temperature



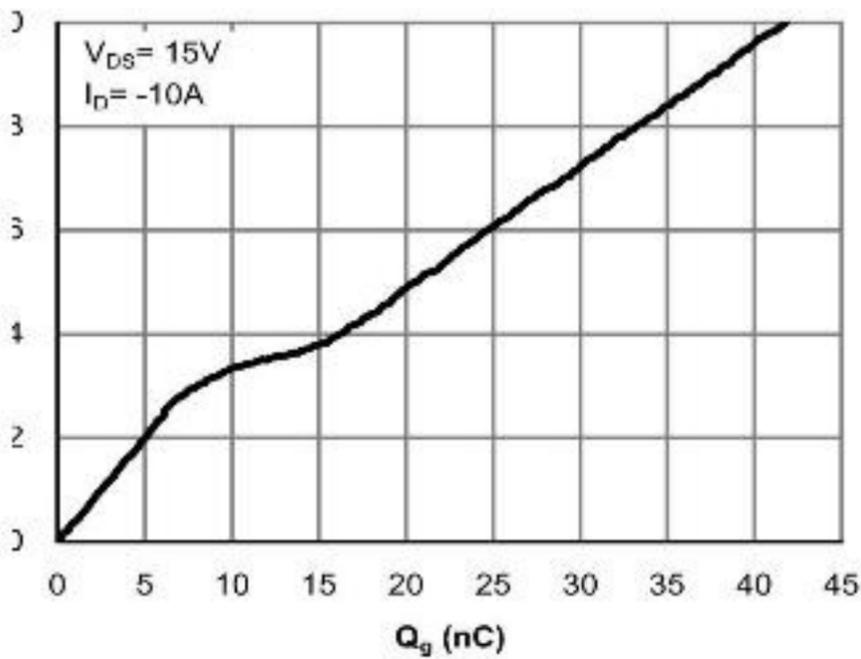


Figure 7: Gate-Charge Characteristics

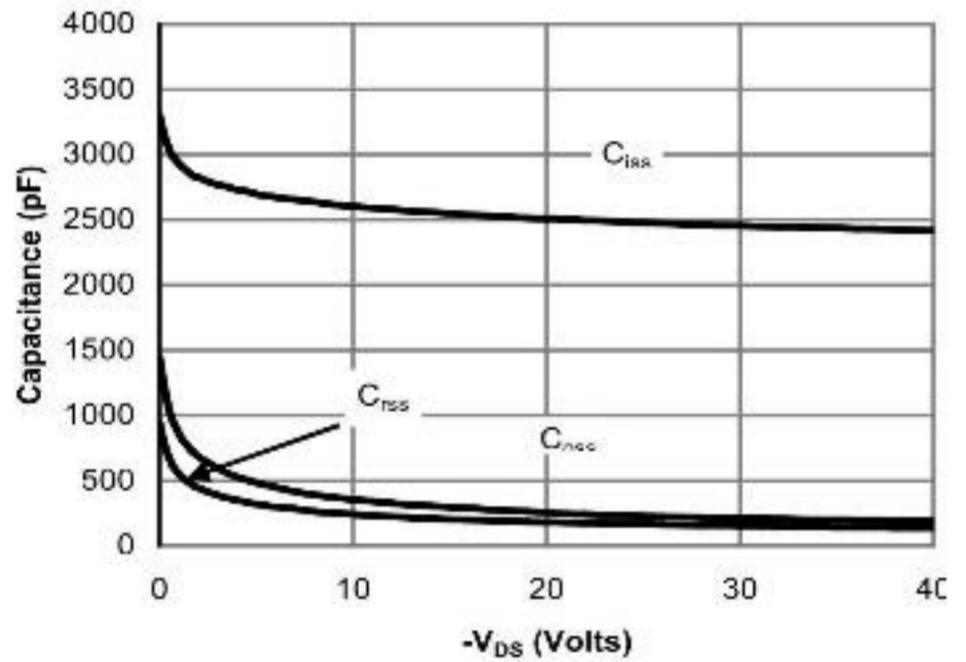


Figure 8: Capacitance Characteristics

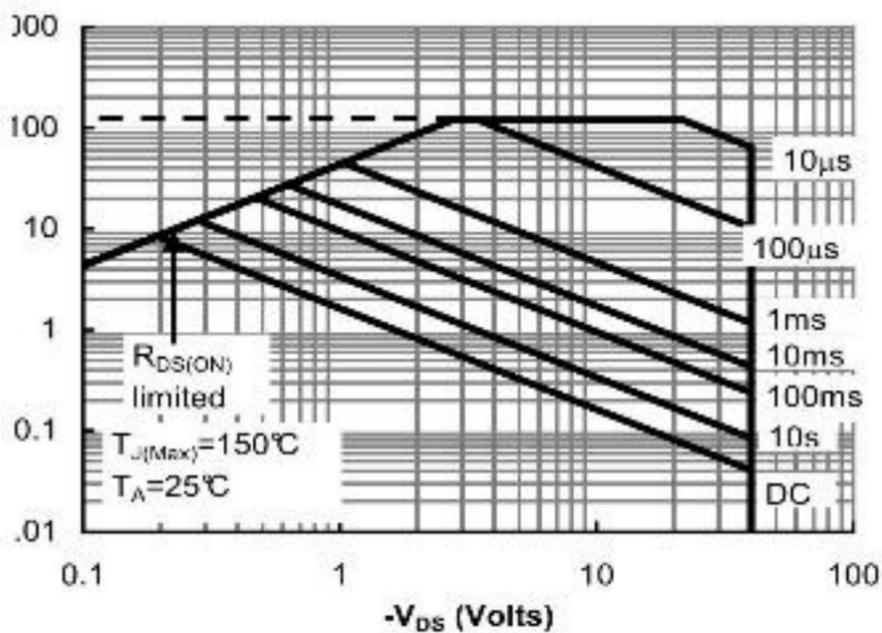


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

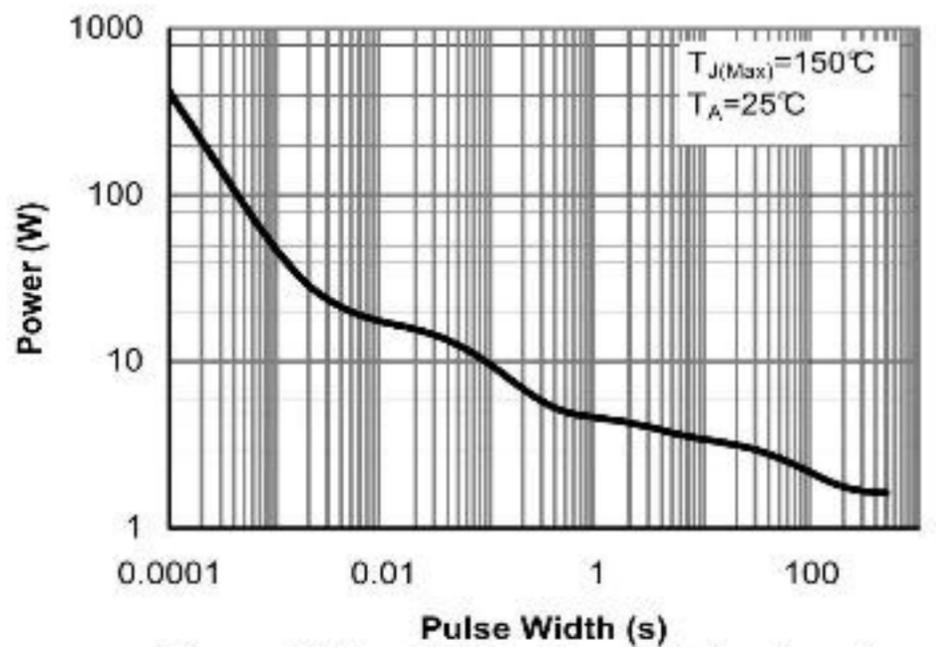
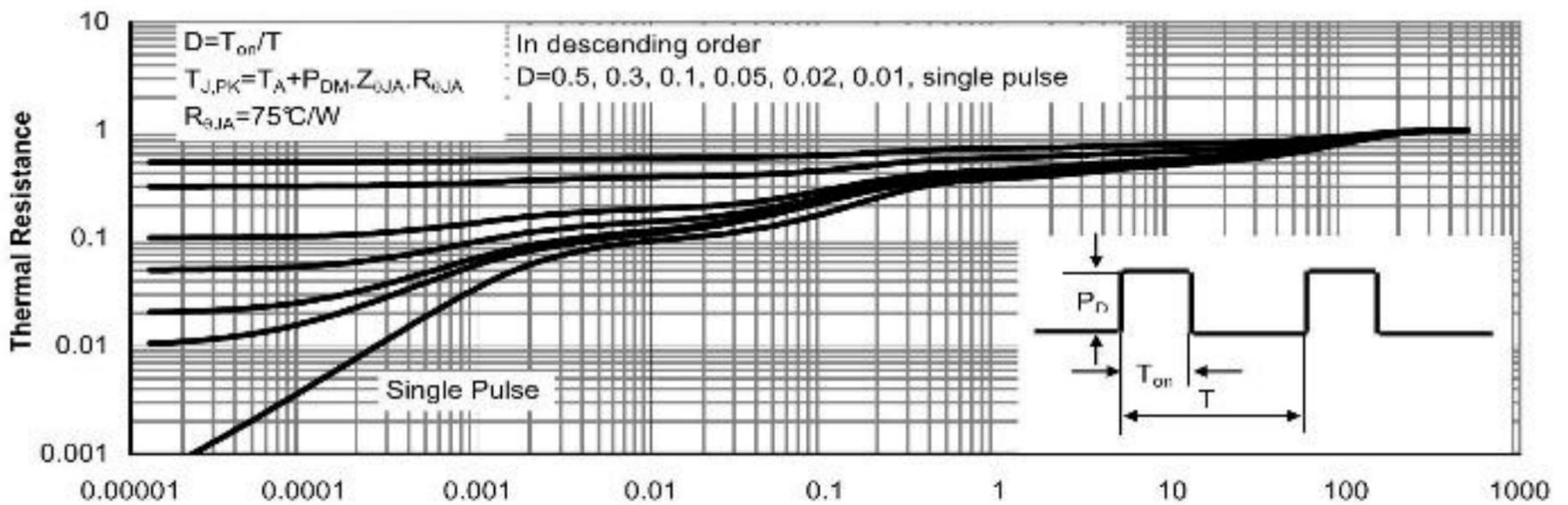
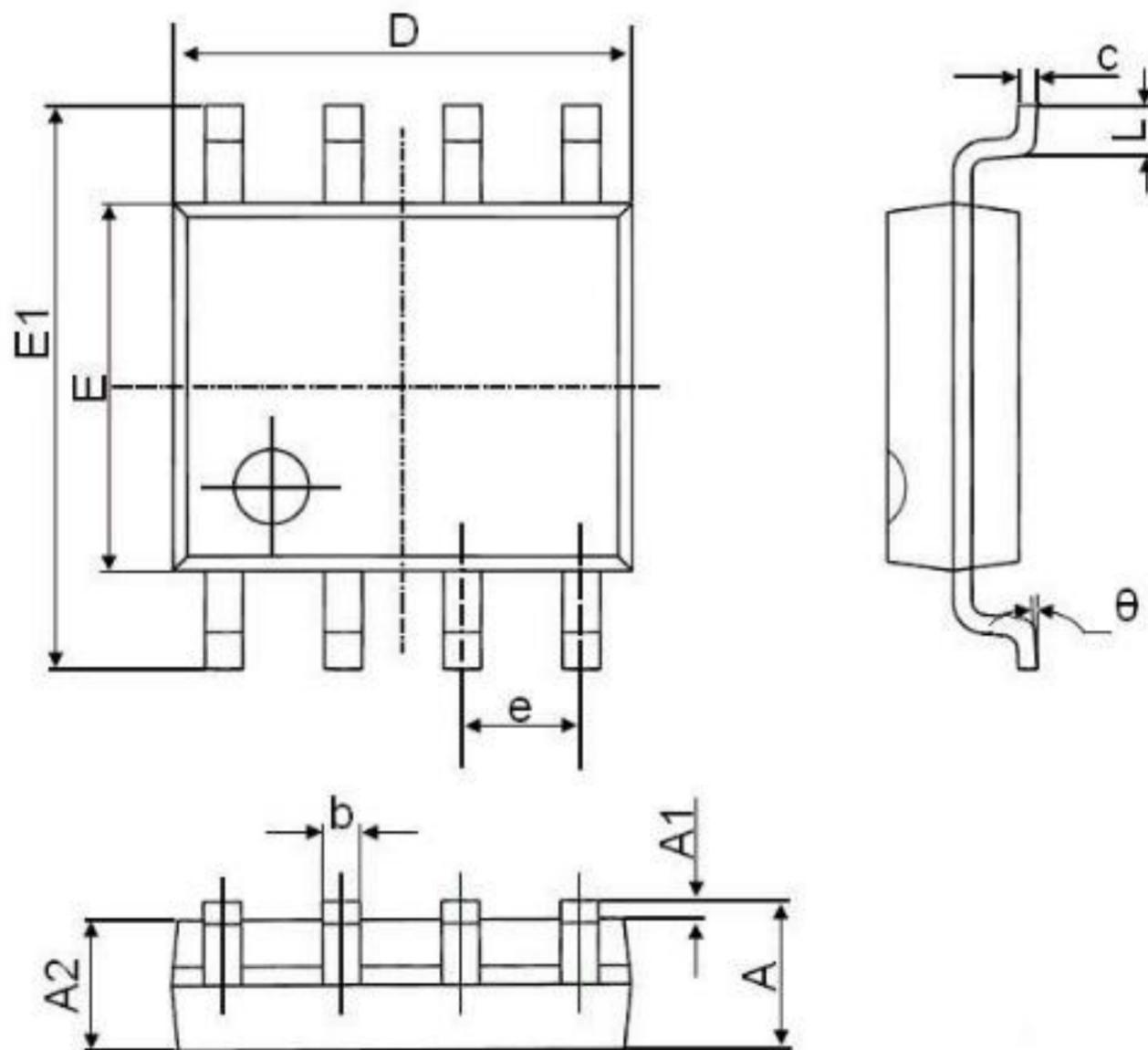


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)



SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°