Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	18mΩ@10V	7A
	24mΩ@4.5V	
-40V	33mΩ@-10V	-6A
	44mΩ@-4.5V	

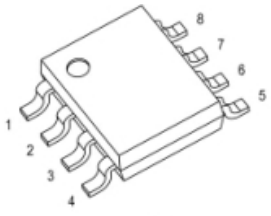
Feature

- N-Channel
  V_{DS} =40V,I_D =7A
  $R_{DS(ON)}$ < 25mΩ @ V_{GS}=10V
  $R_{DS(ON)}$ < 35mΩ @ V_{GS}=4.5V
- P-Channel
  V_{DS} =-40V,I_D = -6A
  $R_{DS(ON)}$ <45mΩ @ V_{GS}=-10V
  $R_{DS(ON)}$ < 60mΩ @ V_{GS}=-4.5V
- High power and current handing capability
- Surface mount package

Application

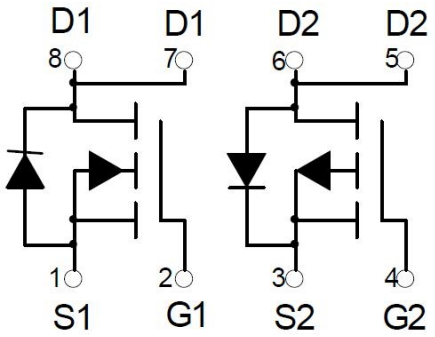
- Load Switch
- Battery Switch
- Power Management
- Motor Control

Package

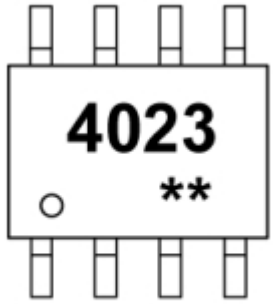


SOP-8

Circuit diagram



Marking



4023 : Product code
** : Week code.

Absolute maximum ratings

(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Value		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	40	-40	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current	I_D	7	-6	A
Pulsed Drain Current (1)	I_{DM}	28	-24	A
Maximum Power Dissipation	P_D	1.8	1.8	W
Thermal Resistance from Junction to Ambient(t≤10s)	$R_{\theta JA}$	69.5		℃/W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~ +150		℃

N-Channel Electrical characteristics

(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =32V, V_{GS} = 0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =5A		18	25	mΩ
		V_{GS} =4.5V, I_D =3A		24	35	
Dynamic Characteristics						
Input capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f=1MHz		1060		pF
Output capacitance	C_{oss}			84		
Reverse transfer capacitance	C_{rss}			58		
Switching Characteristics						
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=20V, V_{GS} =10V, R_G=3Ω, I_D=5A		5.3		nS
Turn-on Rise Time	T_r			7.1		
Turn-Off Delay Time	$T_{d(off)}$			15.8		
Turn-Off Fall Time	t_f			4.8		
Total gate charge	Q_g	V_{DS} =20V, V_{GS} =4.5V, I_D =7A		8.8		nC
Gate-source charge	Q_{gs}			19.1		
Gate-drain charge	Q_{gd}			3.1		
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V, T_J=25℃			1.2	V

P-Channel Electrical characteristics

(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off characteristics						
Drain-source breakdown voltage	$BV_{(BR)DSS}$	V_{GS} = 0V, I_D =-250μA	-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-40V, V_{GS} = 0V			-1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.5	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-5A		33	45	mΩ
		V_{GS} =-4.5V, I_D =-3A		44	60	
Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS} =-15V,V_{GS} =0V, f =1MHz		1034		pF
Output Capacitance	C_{oss}			107		
Reverse Transfer Capacitance	C_{rss}			79		
Switching Characteristics						
Turn-on Delay Time	$T_{d(on)}$	V_{DD}=-20V, V_{GS}=-10V, R_{GEN} =2.5Ω, I_D =-5A		8		nS
Turn-on Rise Time	T_r			15		
Turn-Off Delay Time	$T_{d(off)}$			23		
Turn-Off Fall Time	t_f			9		
Total Gate Charge	Q_g	V_{DS}=-20V, V_{GS}=-10V, I_D=-5A		20		nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			4.2		
Source-Drain Diode Characteristics						
Body Diode Voltage (2)	V_{SD}	I_S=-1A, V_{GS} = 0V, T_J=25℃			-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3. Guaranteed by design, not subject to production

N-Channel Typical Characteristics

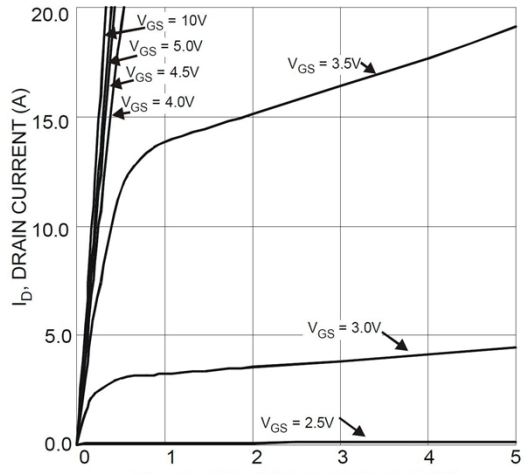


Figure 1 Typical Output Characteristic

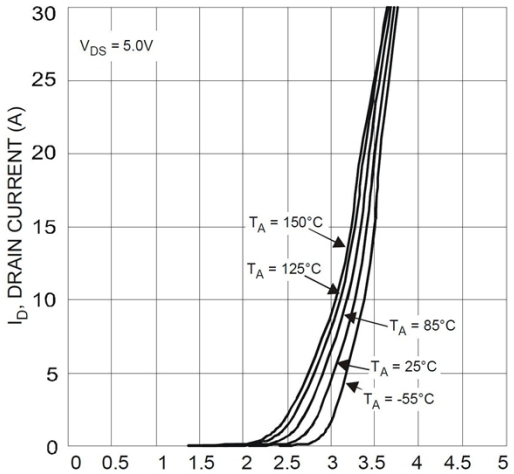


Figure 2 Typical Transfer Characteristics

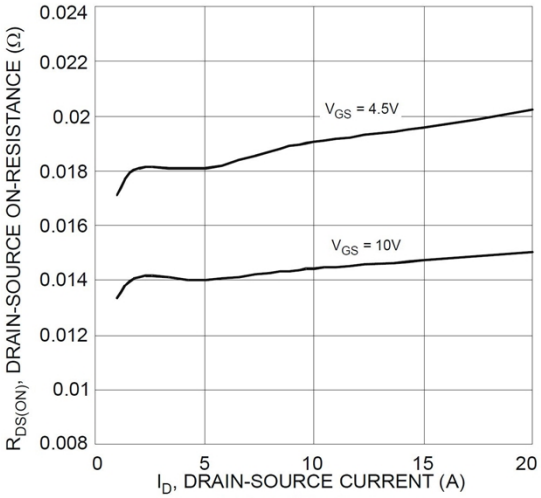


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

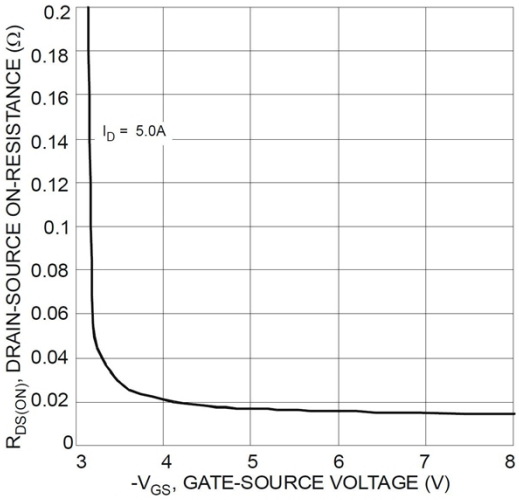


Figure 4 Typical Transfer Characteristic

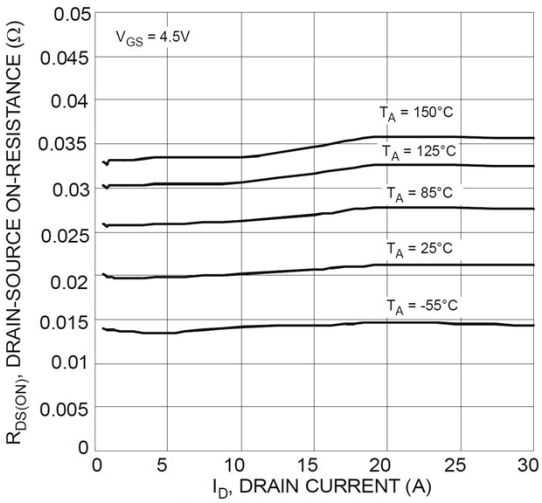


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

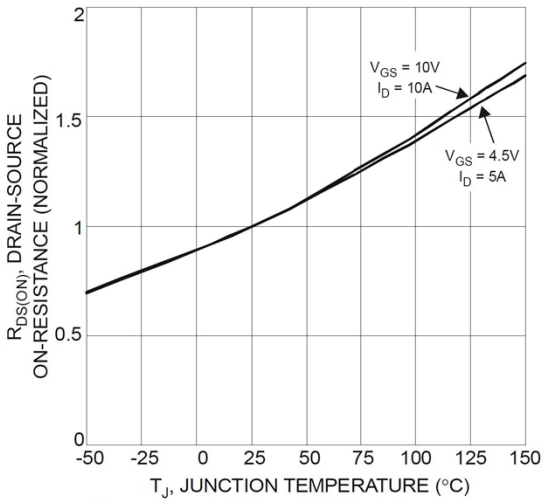


Figure 6 On-Resistance Variation with Temperature

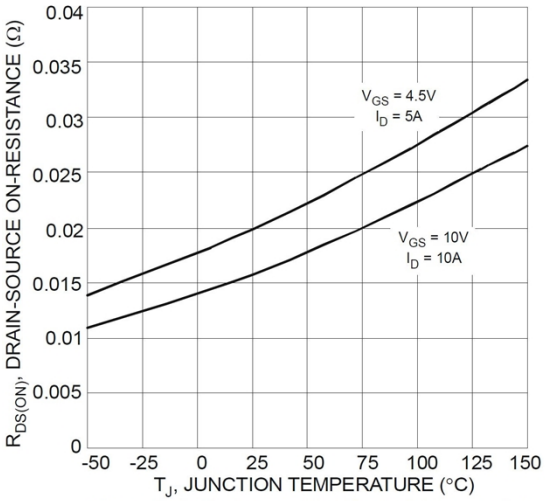


Figure 7 On-Resistance Variation with Temperature

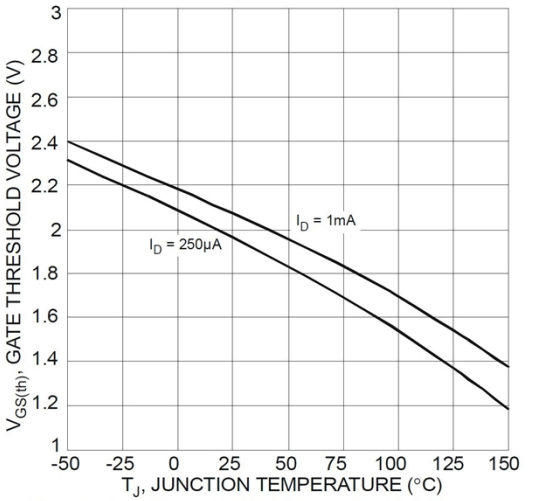


Figure 8 Gate Threshold Variation vs. Ambient Temperature

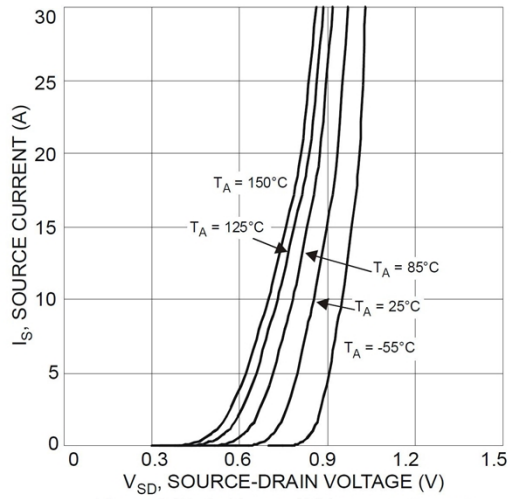


Figure 9 Diode Forward Voltage vs. Current

P-Channel Typical Characteristics

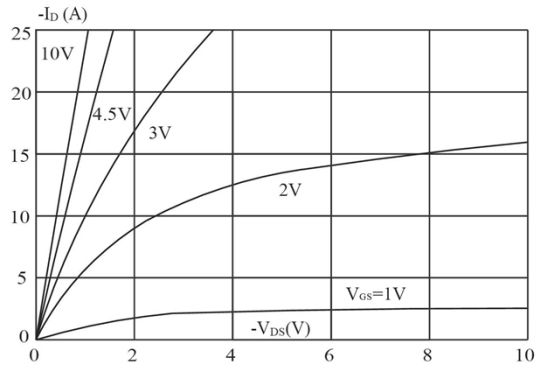


Figure1: Output Characteristics

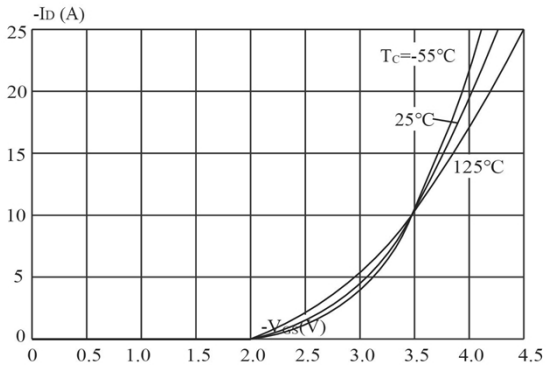


Figure 2: Typical Transfer Characteristics

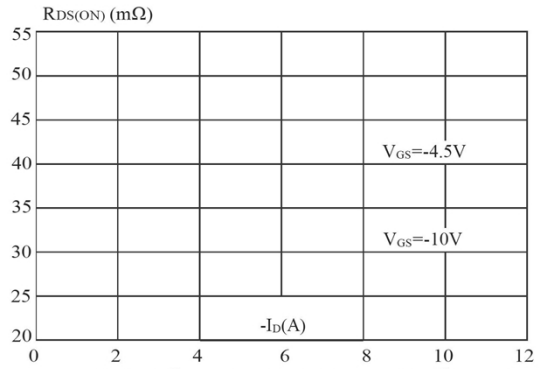


Figure 3:On-resistance vs. Drain Current

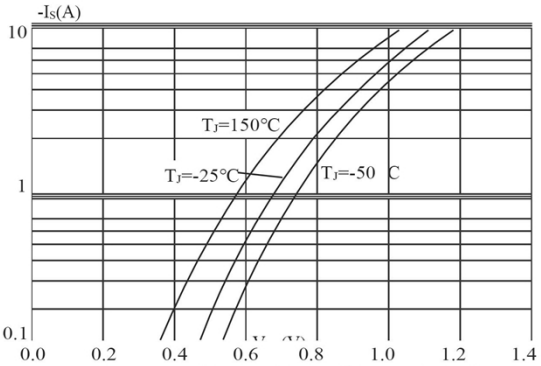


Figure 4: Body Diode Characteristics

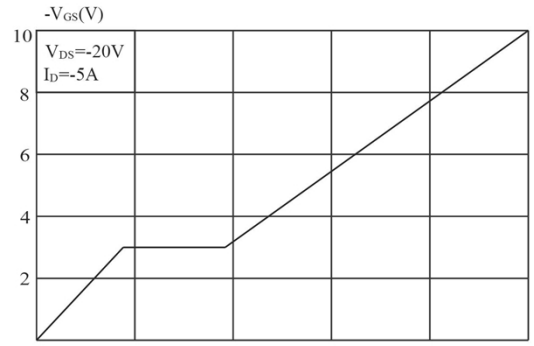


Figure 5: Gate Charge Characteristics

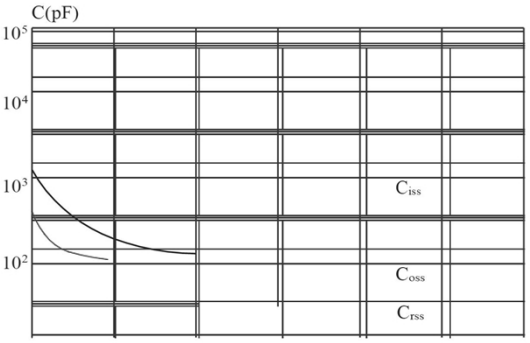


Figure 6: Capacitance Characteristics

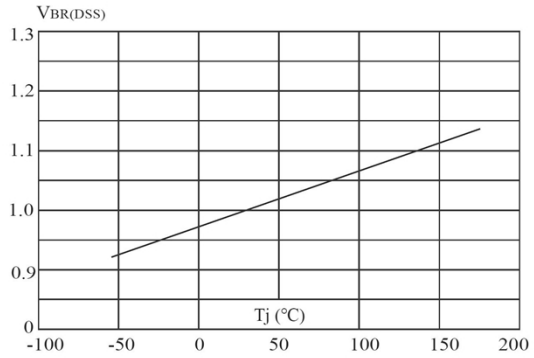


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

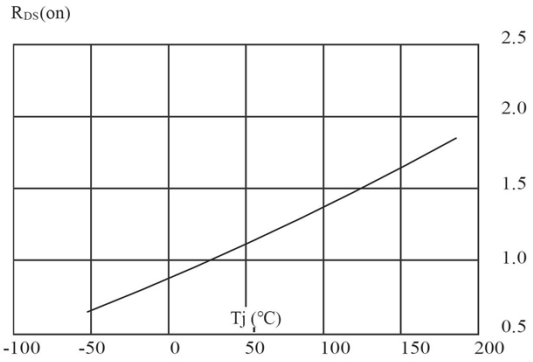


Figure 8: Normalized on Resistance vs. Junction Temperature

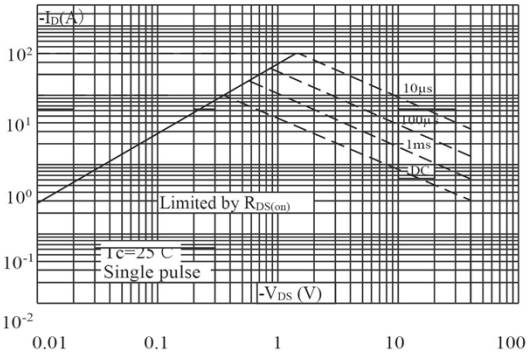


Figure 9: Maximum Safe Operating Area

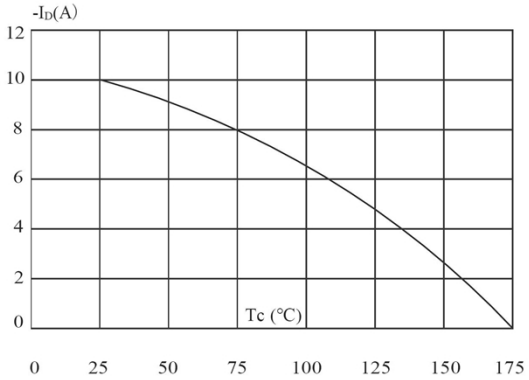


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

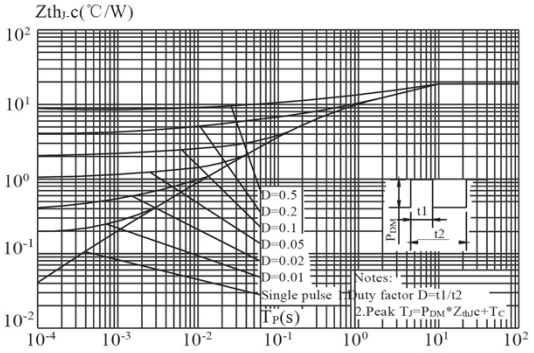
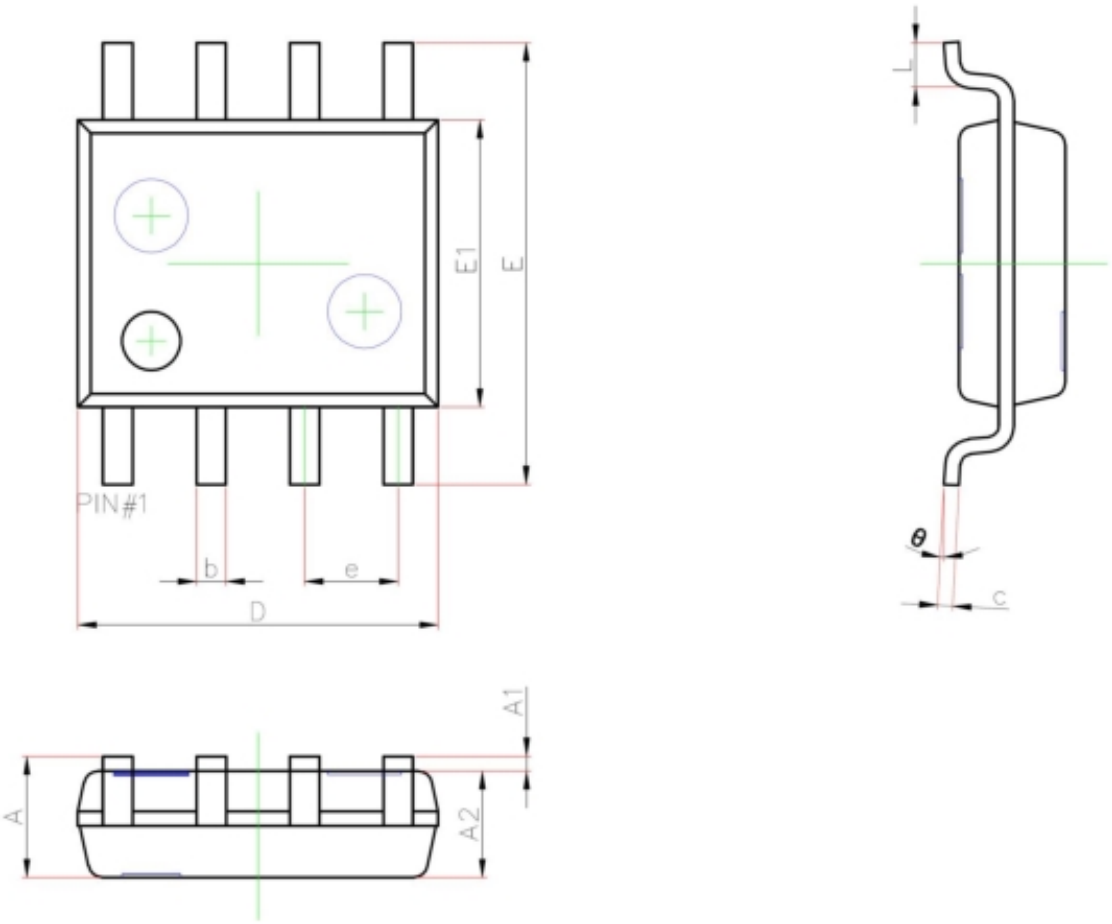


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

SOP-8 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
θ	0°	8°