

General Description

The G1007 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for power switching application and LED backlighting.

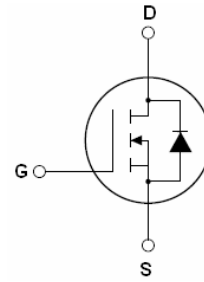
Features

V_{DS}	$R_{DS(ON)}$ @10V (Typ)	$R_{DS(ON)}$ @4.5V (Typ)	I_D
100V	90 m Ω	95 m Ω	7A

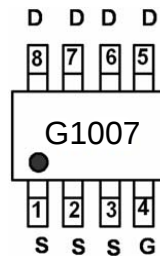
- Ultra Low On-Resistance
- High UIS and UIS 100% Test
- RoHS Compliant

Application

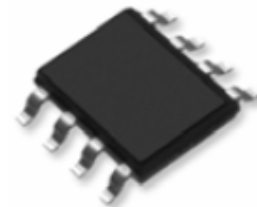
- Power switching application
- LED backlighting



Schematic Diagram



Marking and pin Assignment



SOP-8

Ordering Information

Part Number	Marking	Case	Packaging
G1007	G1007	SOP-8	4000pcs/Reel

Table 1. Absolute Maximum Ratings (TA=25°C)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	100	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	±20	V
I_D (DC)	Drain Current (DC) at $T_c=25^\circ C$	7	A
I_D (DC)	Drain Current (DC) at $T_c=100^\circ C$	8.5	A
I_{DM} (pulse)	Drain Current-Continuous@ Current-Pulsed (Note 1)	56	A
P_D	Maximum Power Dissipation($T_c=25^\circ C$)	28	W
E_{AS}	Single Pulse Avalanche Energy (Note 2)	16	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 175	°C

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

2.EAS condition: $T_J=25^\circ C, V_{DD}=50V, V_G=10V, R_G=25\Omega$

Table 2. Thermal Characteristic

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	3.3	$^{\circ}\text{C/W}$

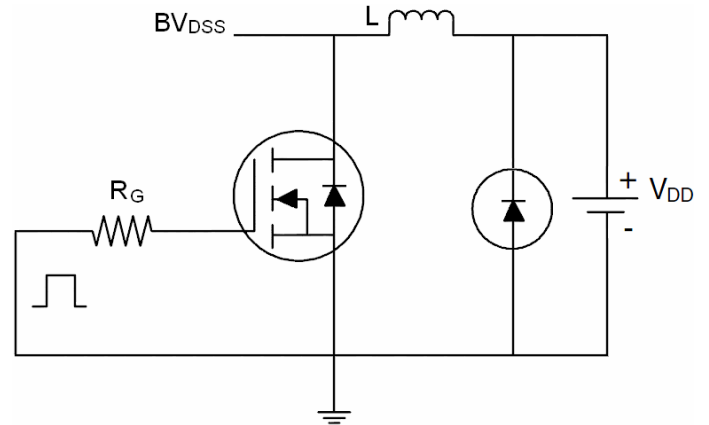
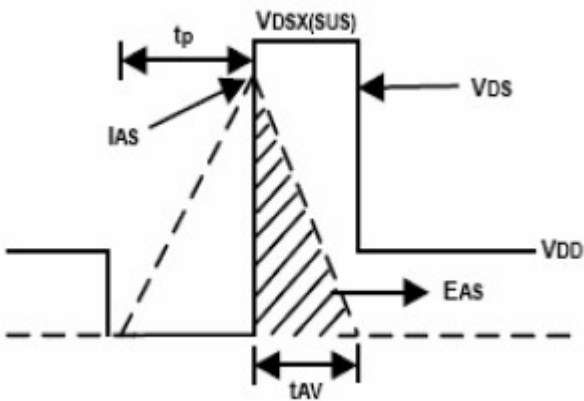
Table 3. Electrical Characteristics (TA=25 $^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V _{DS} =100V, V _{GS} =0V			1	μA
I _{DSS}	Zero Gate Voltage Drain Current(Tc=100℃)	V _{DS} =100V, V _{GS} =0V			5	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1	2	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =1A		90	110	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =1A		95	120	mΩ
Dynamic Characteristics						
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =4.5A	5			S
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V f=1.0MHz		612		PF
C _{oss}	Output Capacitance			120		PF
C _{rss}	Reverse Transfer Capacitance			91		PF
Q _g	Total Gate Charge	V _{DS} =50V, I _D =4.5A V _{GS} =10V		11		nC
Q _{gs}	Gate-Source Charge			1.9		nC
Q _{gd}	Gate-Drain Charge			2.8		nC
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{DS} =50V, R _L =8.6Ω V _{GS} =10V, R _G =3Ω		8		nS
t _r	Turn-on Rise Time			3		nS
t _{d(off)}	Turn-Off Delay Time			17		nS
t _f	Turn-Off Fall Time			4.5		nS
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)			7		A
I _{SDM}	Pulsed Source-Drain Current(Body Diode)			28		A
V _{SD}	Forward On Voltage ^(Note 1)	T _J =25℃, I _{SD} =3A, V _{GS} =0V		0.82	1	V
t _{rr}	Reverse Recovery Time ^(Note 1)	T _J =25℃, I _F =4.5A di/dt=500A/μs		21		nS
Q _{rr}	Reverse Recovery Charge ^(Note 1)			97		nC
t _{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L _S +L _D)				

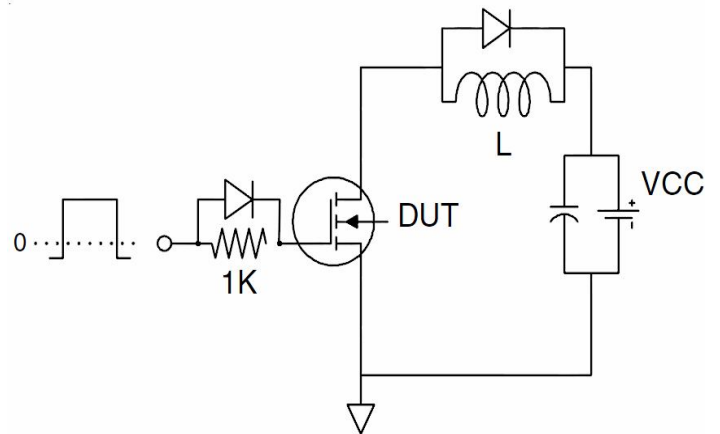
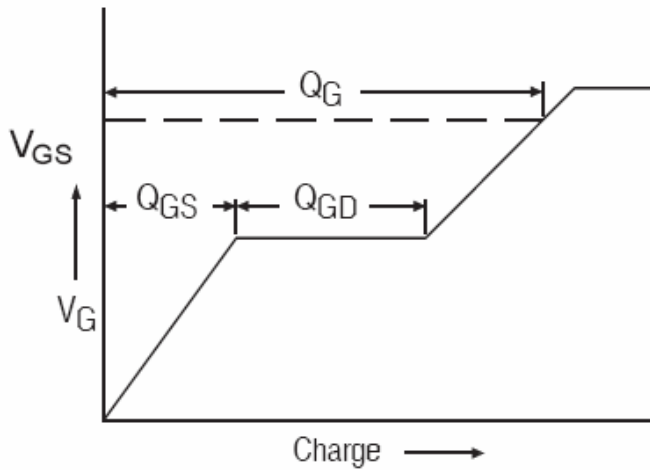
Notes 1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1.5\%$, Starting $T_J=25^{\circ}\text{C}$

Test Circuit

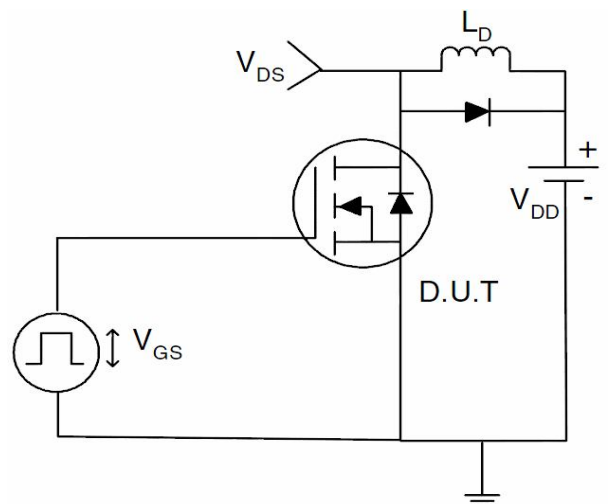
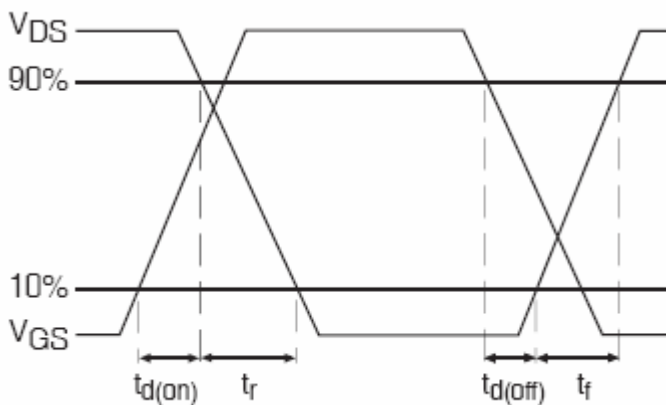
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit:



3) Switch Time Test Circuit:



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

Figure1. On-Region Characteristics

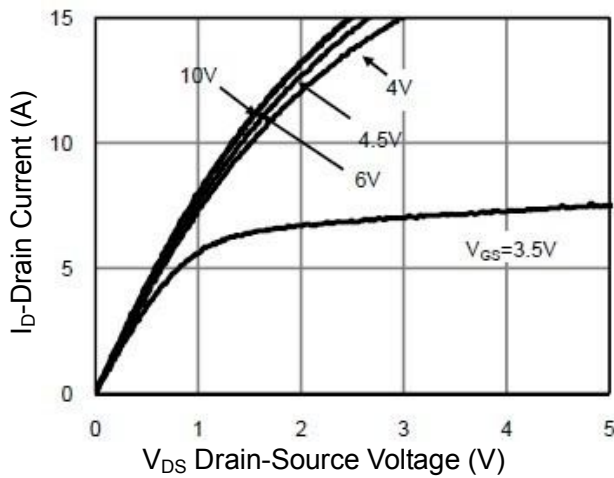


Figure 2: Transfer Characteristics

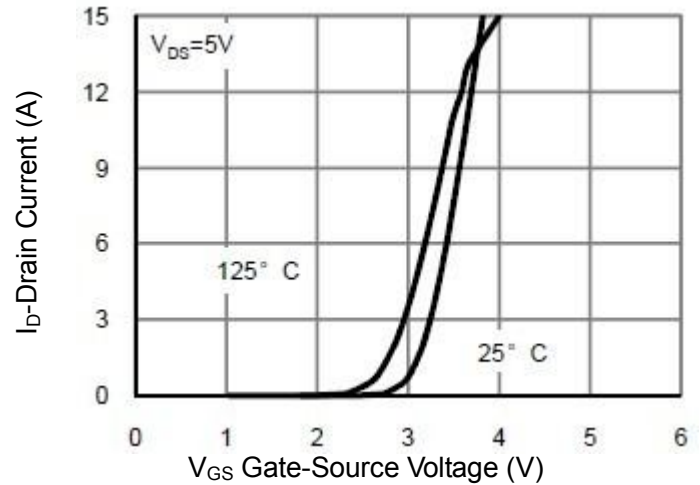


Figure3. On-Resistance vs. Drain Current and Gate Voltage

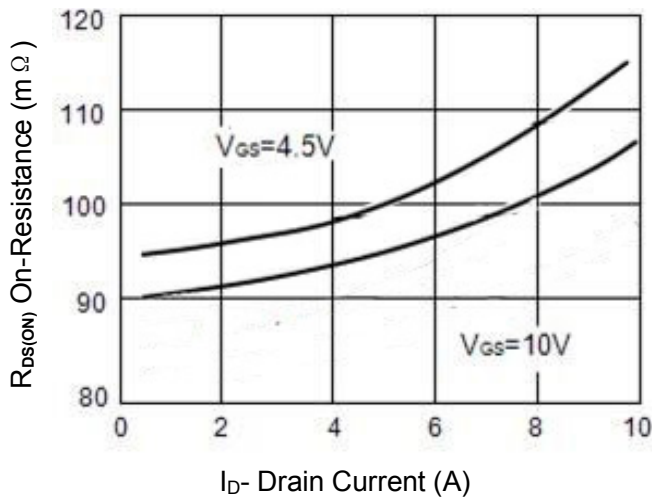


Figure4. On-Resistance vs. Junction Temperature

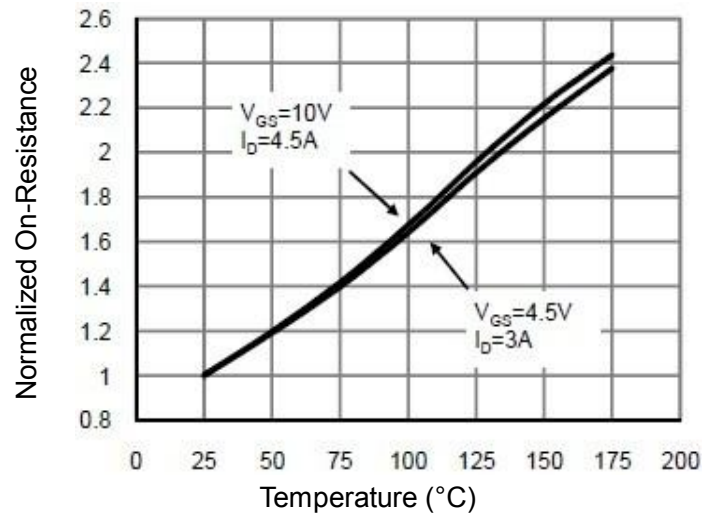


Figure5. On-Resistance vs. Gate-Source Voltage

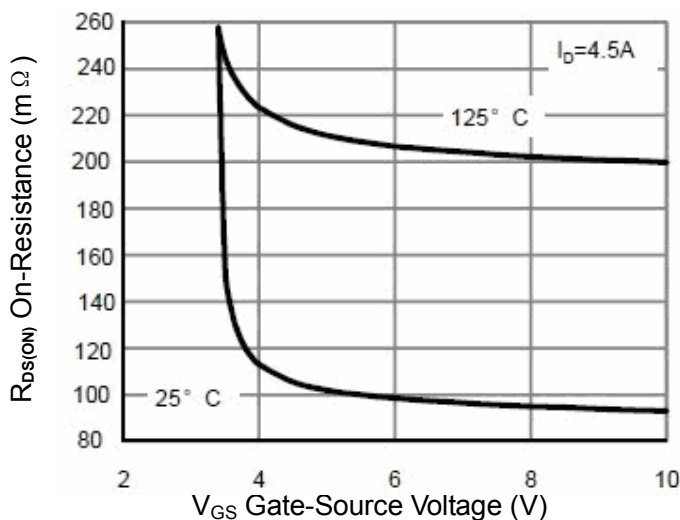


Figure6. Body-Diode Characteristics

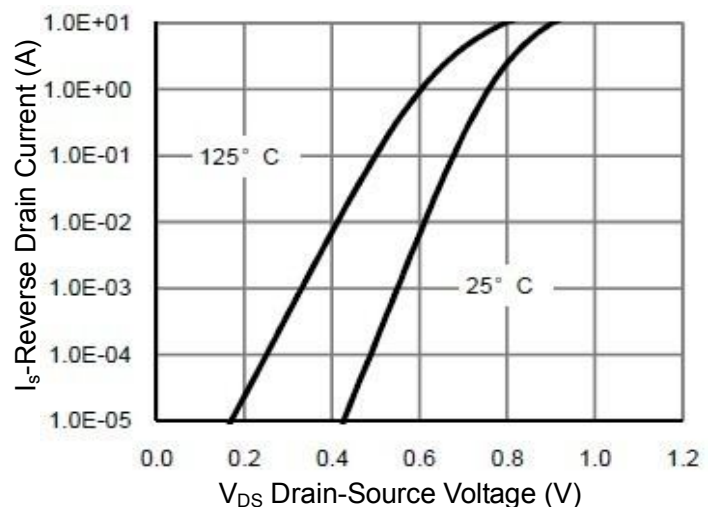


Figure7. Gate-Charge Characteristics

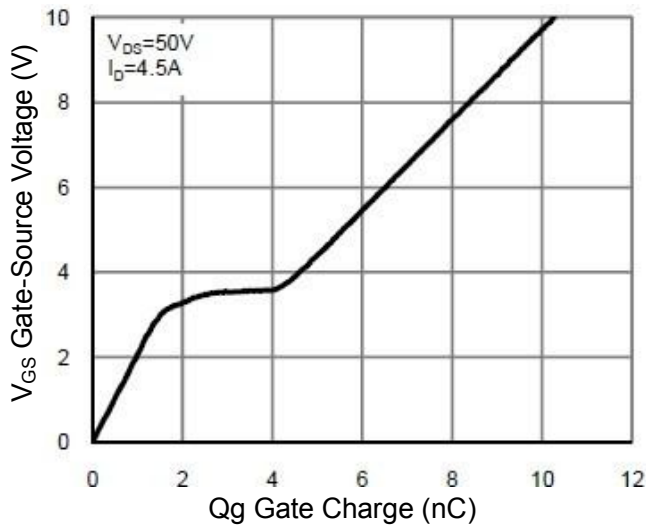


Figure 8. Capacitance Characteristics

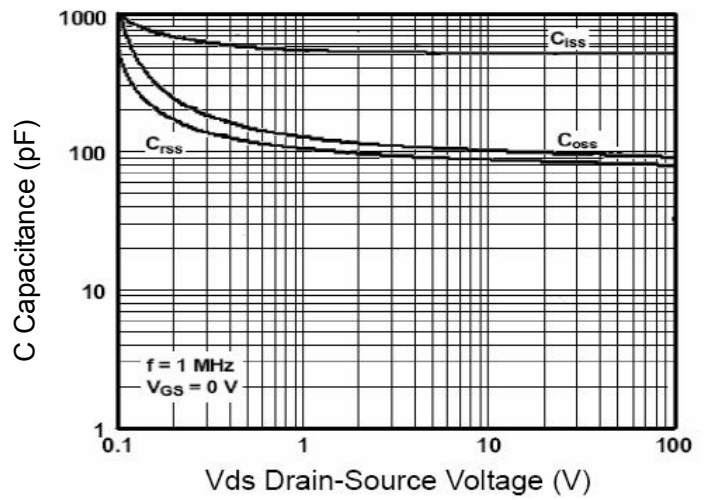


Figure 9. Maximum Forward Biased Safe Operating Area

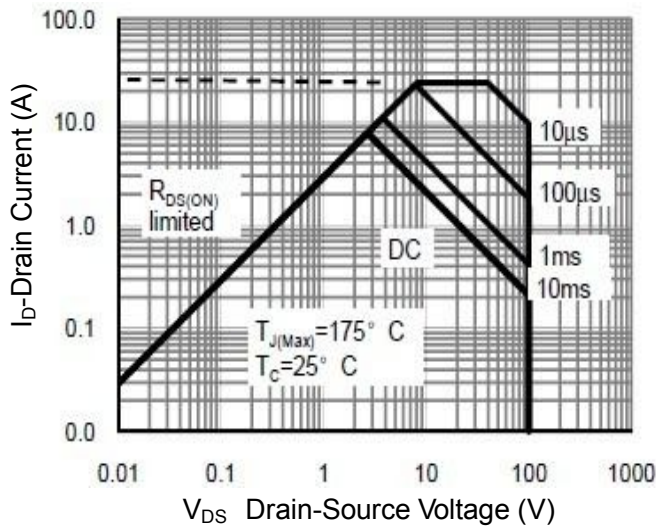


Figure10. Single Pulse Power Rating Junction-to-Case

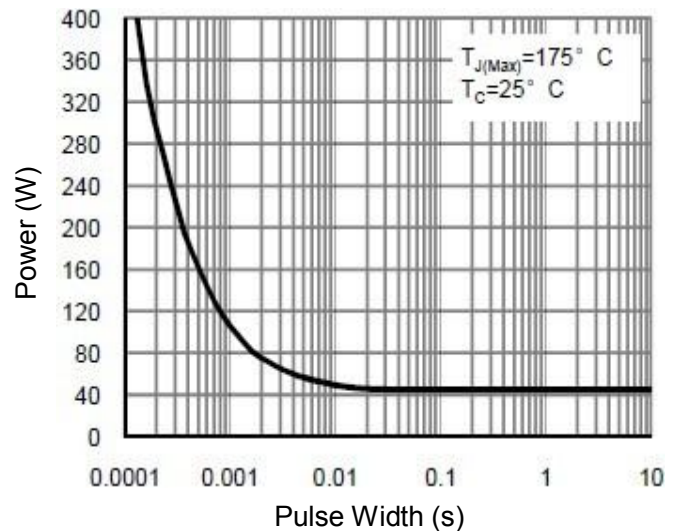
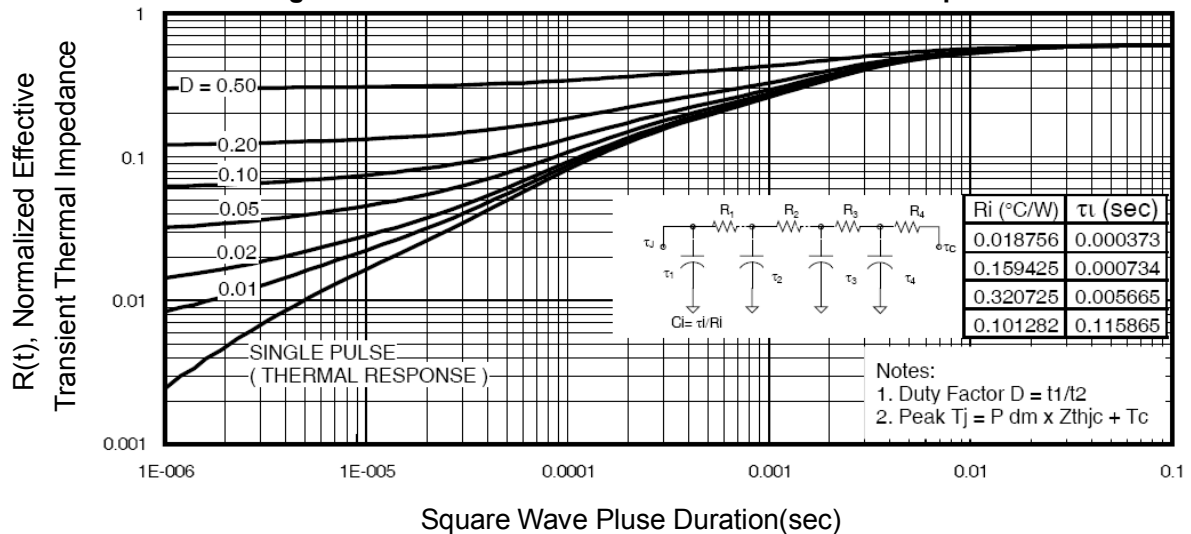
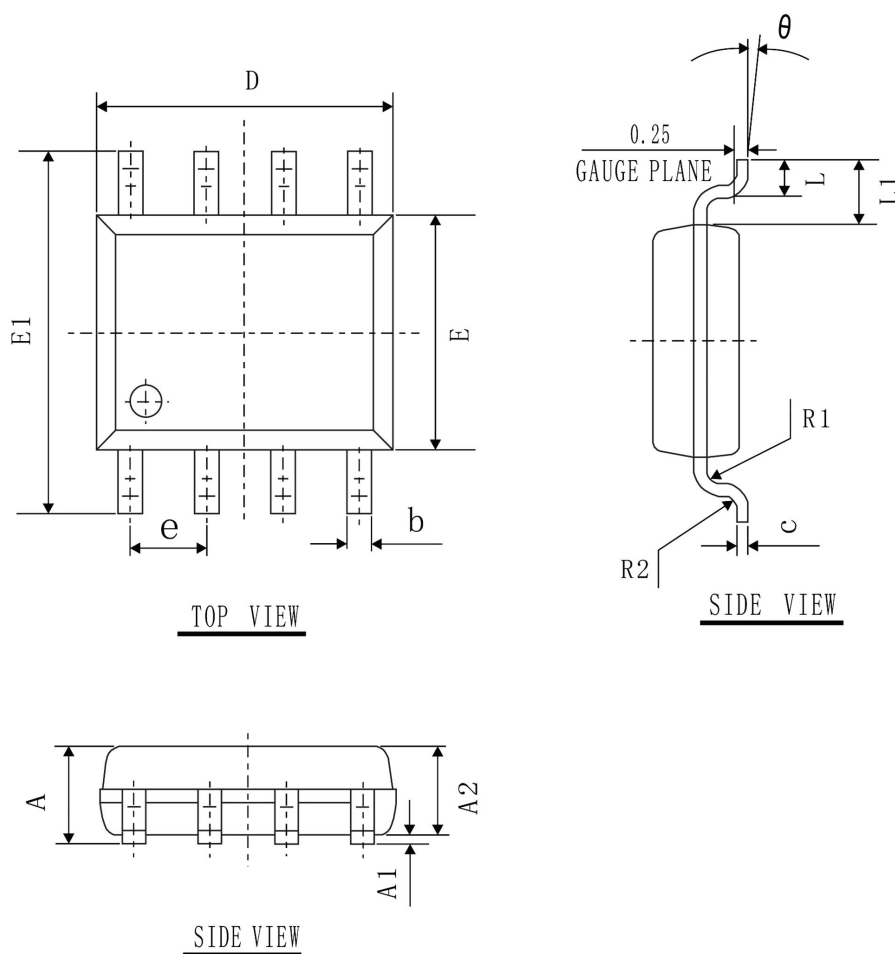


Figure11. Normalized Maximum Transient Thermal Impedance



SOP-8 Package information



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L 1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		