

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}TYP$	I_D
100V	40m Ω @10V	6A
	45m Ω @4.5V	
-100V	90m Ω @-10V	-6A
	100m Ω @-4.5V	



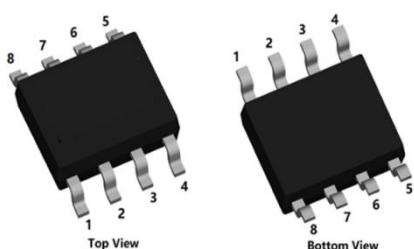
Feature

- High power and current handing capability
- Lead free product is acquired
- Surface mount package
- 100% Single Pulse avalanche energy Test

Applications

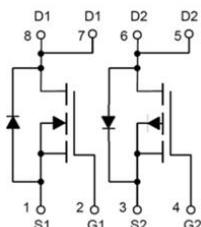
- Battery Protection
- Load Switch
- Power Management

Package

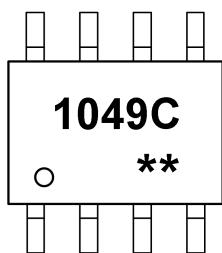


SOP-8L

Circuit diagram



Marking



1049C
**

:Device Code
:Week Code

Order Information

Device	Package	Unit/Tape
SP1049CP8	SOP-8L	4000

Absolute maximum ratings (Ta=25°C,unless otherwise noted)

Parameter	Symbol	Value		Units
		N-Channel	P-Channel	
Drain-Source Voltage	V _{DS}	100	-100	V
Gate-Source Voltage	V _{GS}	±20	±20	V
Continuous Drain Current	I _D	6	-6	A
Pulsed Drain Current	I _{DM}	24	-24	A
Single Pulse Avalanche Energy ¹	E _{AS}	10.5	24	mJ
Power Dissipation	P _D	2.5		W
Thermal Resistance Junction-to-Ambient	R _{θJA}	50		°C/W
Storage Temperature Range	T _{STG}	-55 to 150		°C
Operating Junction Temperature Range	T _J	-55 to 150		°C

N-Channel Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , ID=250uA	100	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =80V , V _{GS} =0V , T _J =25°C	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V , V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , ID =250uA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V , ID=5A	-	40	50	mΩ
		V _{GS} =4.5V , ID=3A	-	45	60	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =50V , V _{GS} =0V , f=1MHz	-	2605	-	pF
Output Capacitance	C _{oss}		-	109	-	
Reverse Transfer Capacitance	C _{rss}		-	67	-	
Total Gate Charge	Q _g	V _{DS} =50V , V _{GS} =10V , ID=5A	-	17	-	nC
Gate-Source Charge	Q _{gs}		-	5.5	-	
Gate-Drain Charge	Q _{gd}		-	3.4	-	
Switching Characteristics						
Turn-On Delay Time	T _{d(on)}	VDD=50V, VGS=10V , RG=3Ω, ID=10A	-	38.1	-	nS
Rise Time	T _r		-	12	-	
Turn-Off Delay Time	T _{d(off)}		-	54	-	
Fall Time	T _f		-	16.1	-	
Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =1A , T _J =25°C	-	-	1.2	V
Maximum Body-Diode Continuous Current	I _s		-	-	6	A
Reverse Recovery Time	T _{rr}	I _s =5A, di/dt=100A/us, T _J =25°C	-	40	-	nS
Reverse Recovery Charge	Q _{rr}		-	43	-	nC

Note :

1.The EAS test condition is VDD=50V,VGS=10V,L=0.5mH,RG=25Ω

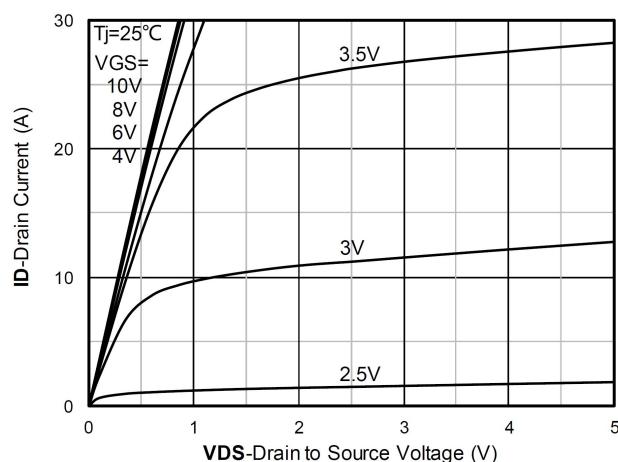
P-Channel Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=-250uA	-100	-	-	V
Drain-Source Leakage Current	I _{DSS}	VDS=-80V , VGS=0V , TJ=25°C	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	VGS=VDS , ID =-250uA	-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS=-10V , ID=-5A	-	90	115	mΩ
		VGS=-4.5V , ID=-3A	-	100	135	
Dynamic characteristics						
Input Capacitance	C _{iss}	VDS=-50V , VGS=0V , f=1MHz	-	2410	-	pF
Output Capacitance	C _{oss}		-	81	-	
Reverse Transfer Capacitance	C _{rss}		-	68	-	
Total Gate Charge	Q _g	VDS=-50V , VGS=-10V , ID=-5A	-	21	-	nC
Gate-Source Charge	Q _{gs}		-	3	-	
Gate-Drain Charge	Q _{gd}		-	3.5	-	
Switching Characteristics						
Turn-On Delay Time	T _{d(on)}	VDD=-50V VGS=-10V , RG=3Ω, ID=-5A	-	9	-	nS
Rise Time	T _r		-	28	-	
Turn-Off Delay Time	T _{d(off)}		-	79	-	
Fall Time	T _f		-	83	-	
Diode Characteristics						
Diode Forward Voltage	V _{SD}	VGS=0V , IS=-1A , TJ=25°C	-	-	-1.2	V
Maximum Body-Diode Continuous Current	I _s	IS=-3A, di/dt=-100A/us, Tj=25°C	-	-	-6	A
Reverse Recovery Time	T _{rr}		-	70	-	nS
Reverse Recovery Charge	Q _{rr}		-	135	-	nC

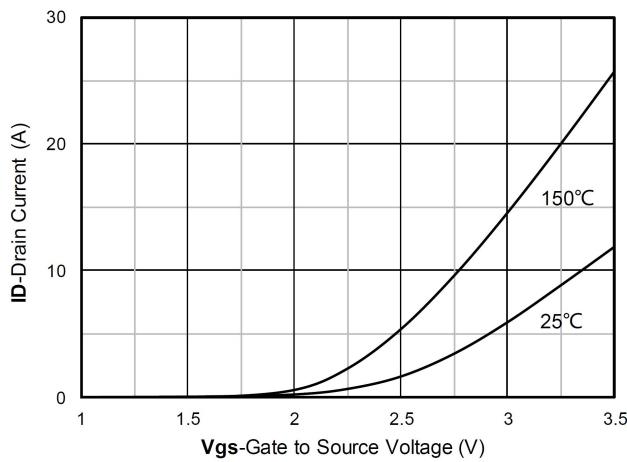
Note :

1.The EAS test condition is VDD=-50V,VGS=-10V,L=0.5mH,RG=25Ω

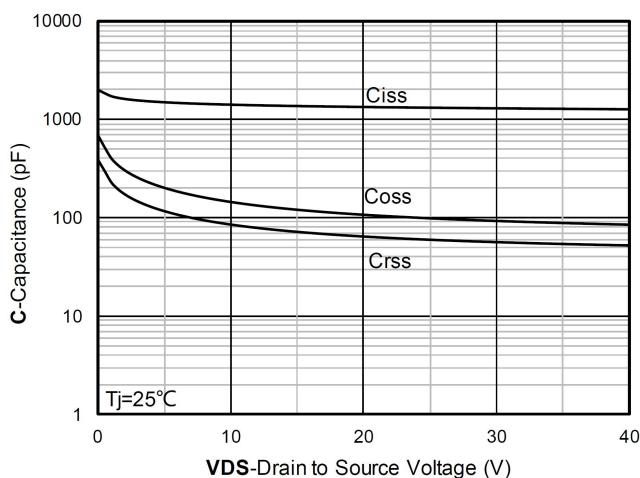
N-Channel Typical Characteristics



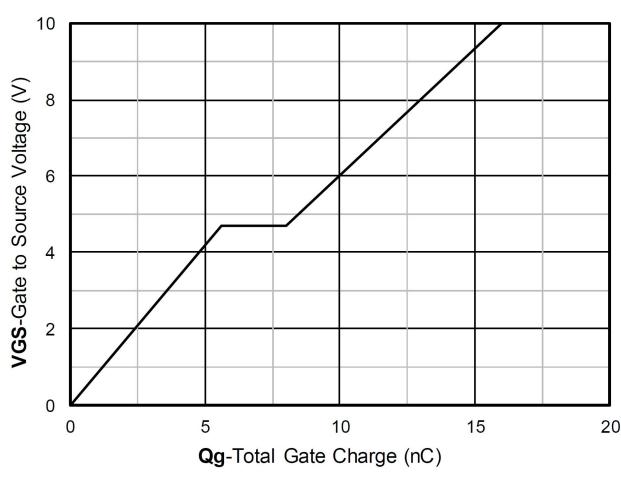
Output Characteristics



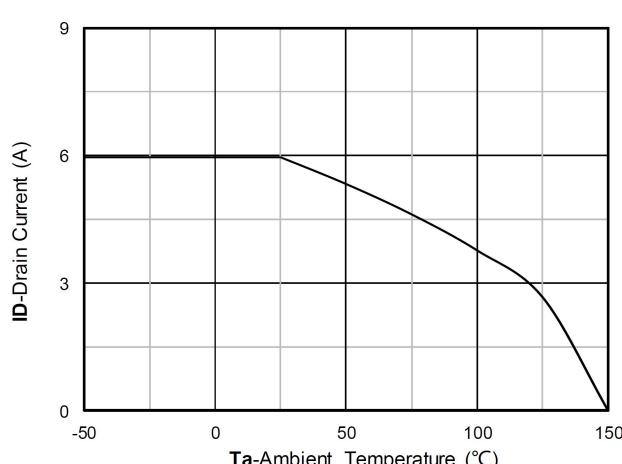
Transfer Characteristics



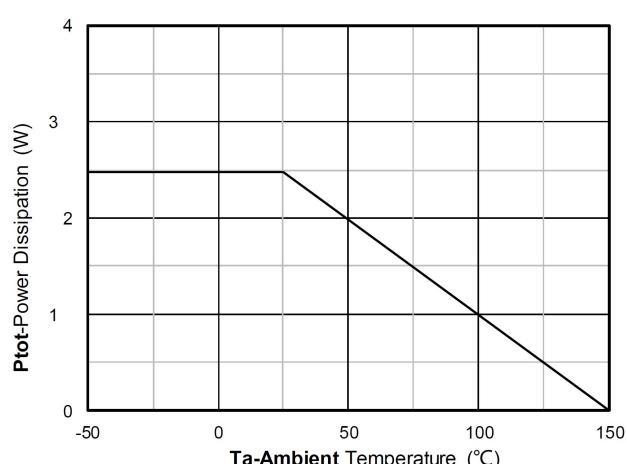
Capacitance Characteristics



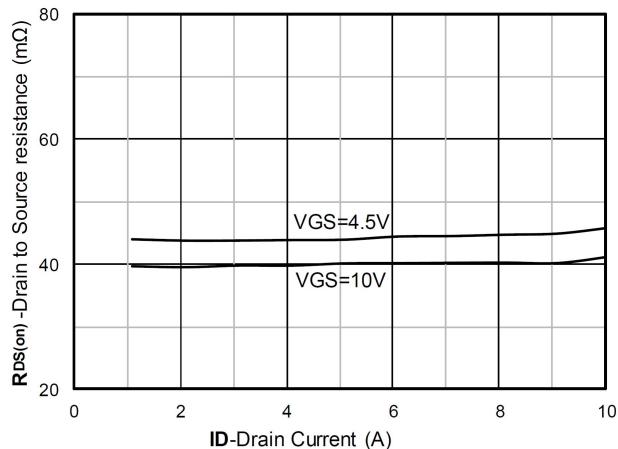
Gate Charge



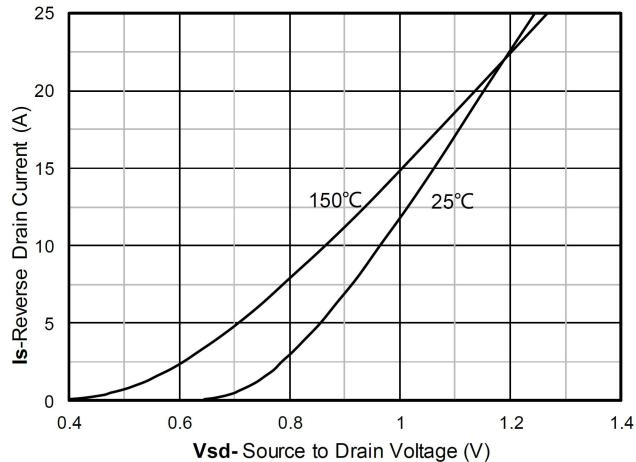
Current dissipation



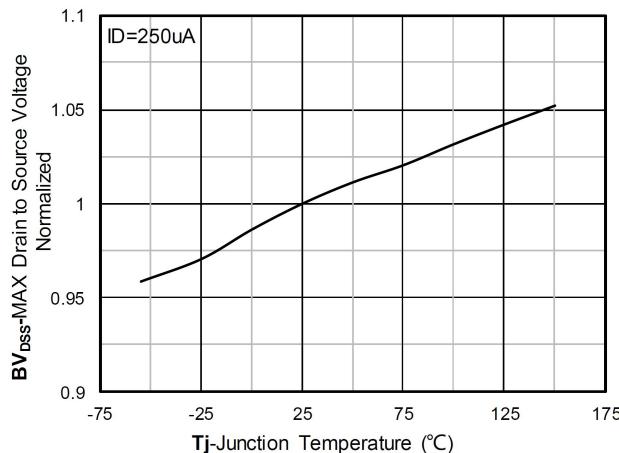
Power dissipation



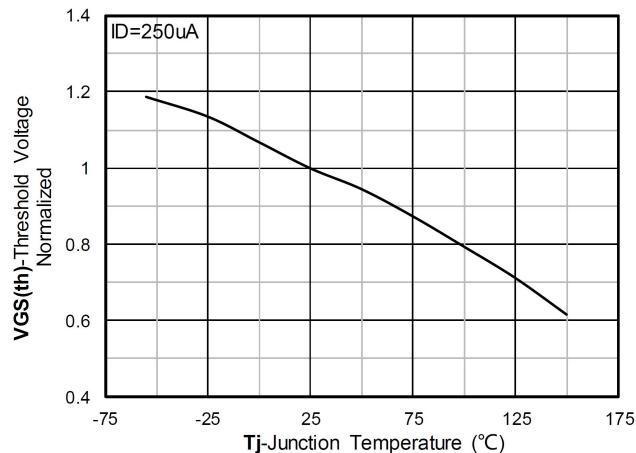
R_{DS(on)} VS Drain Current



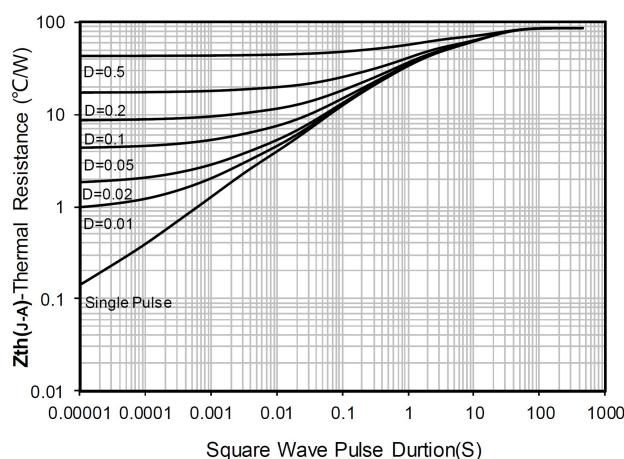
Forward characteristics of reverse diode



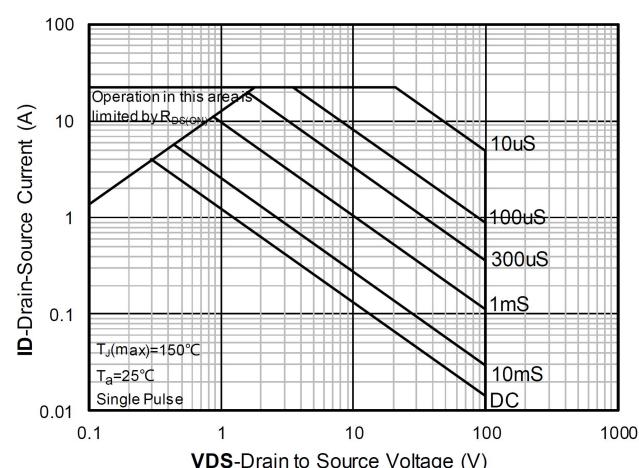
Normalized breakdown voltage



Normalized Threshold voltage

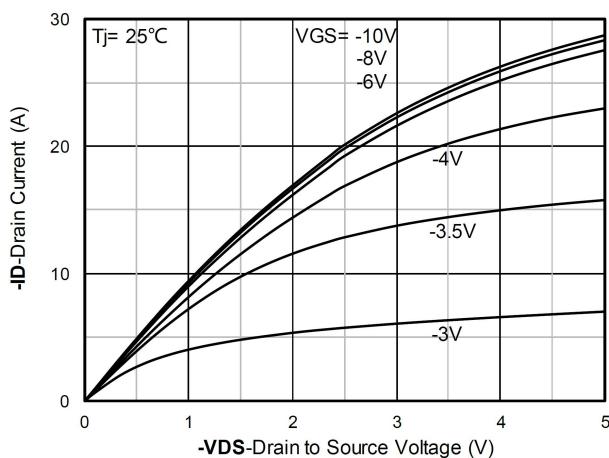


Maximum Transient Thermal Impedance

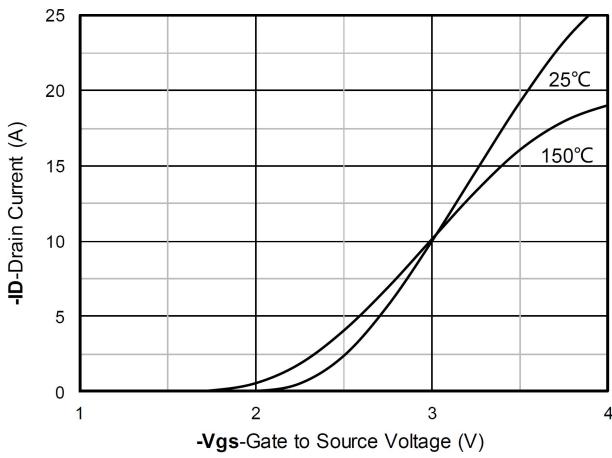


Safe Operation Area

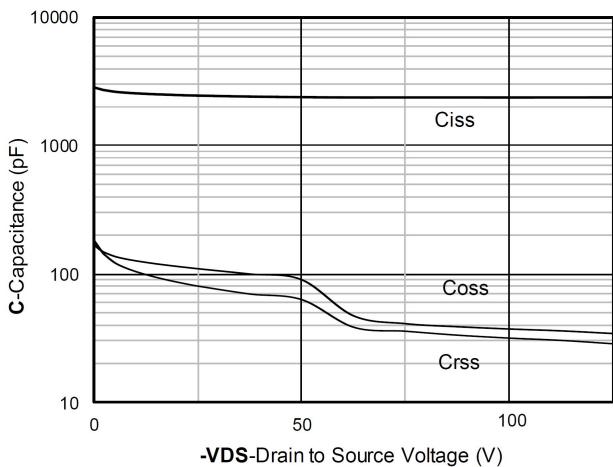
P-Channel Typical Characteristics



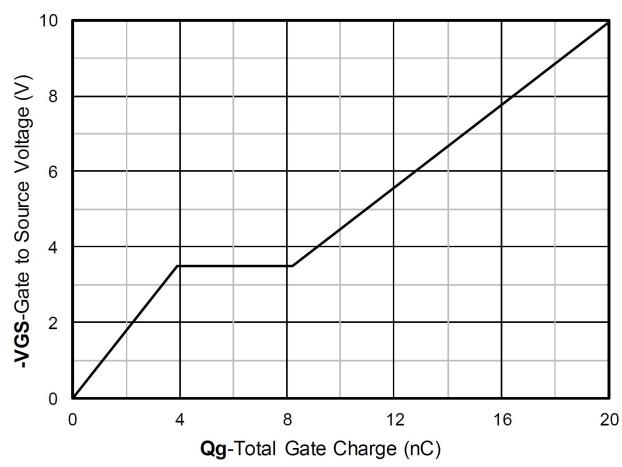
Output Characteristics



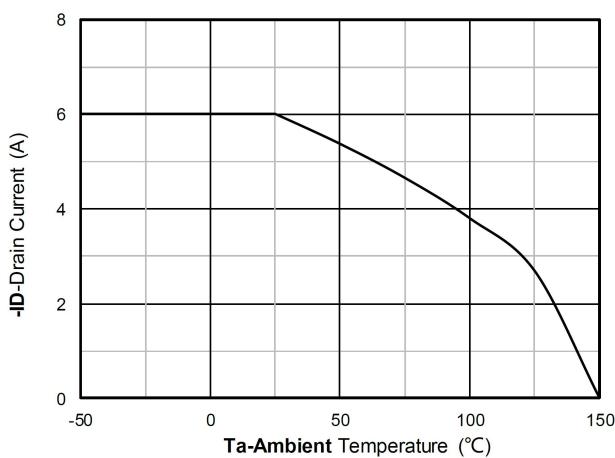
Transfer Characteristics



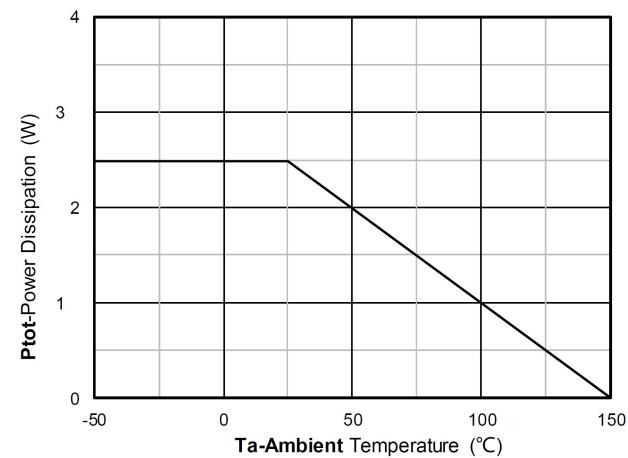
Capacitance Characteristics



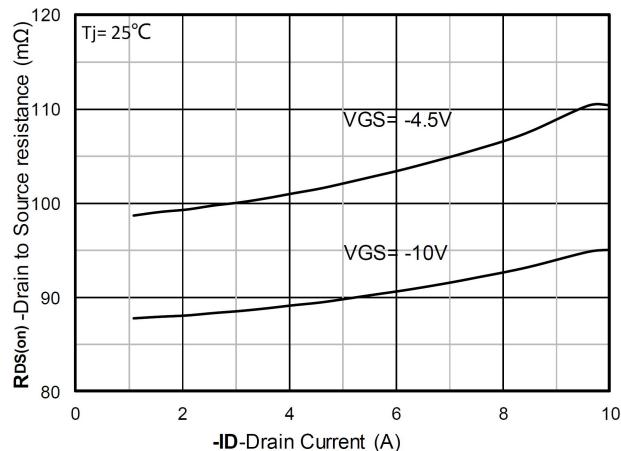
Gate Charge



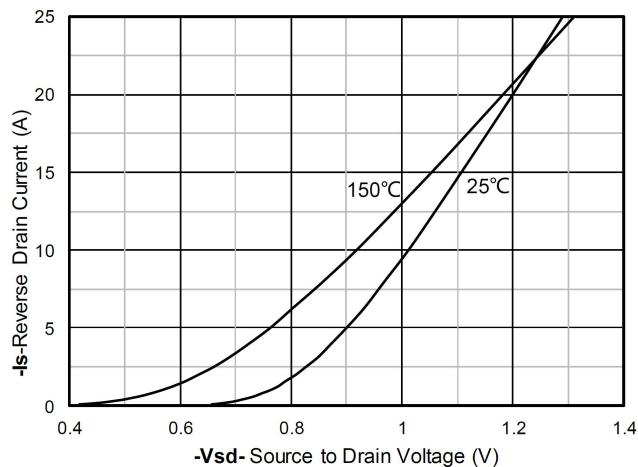
Current dissipation



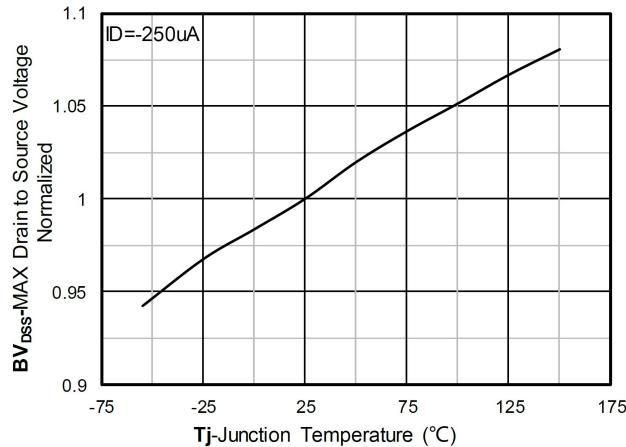
Power dissipation



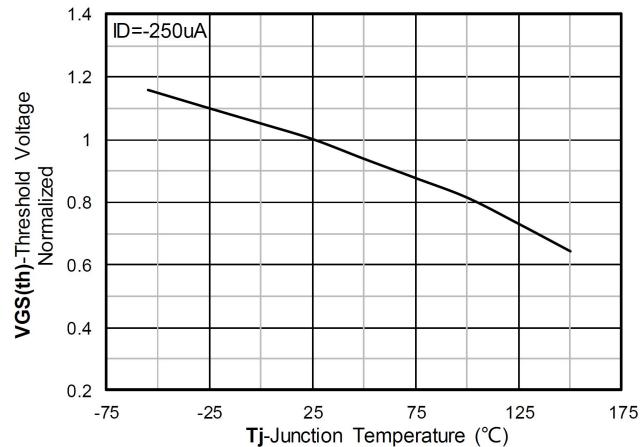
$R_{DS(on)}$ VS Drain Current



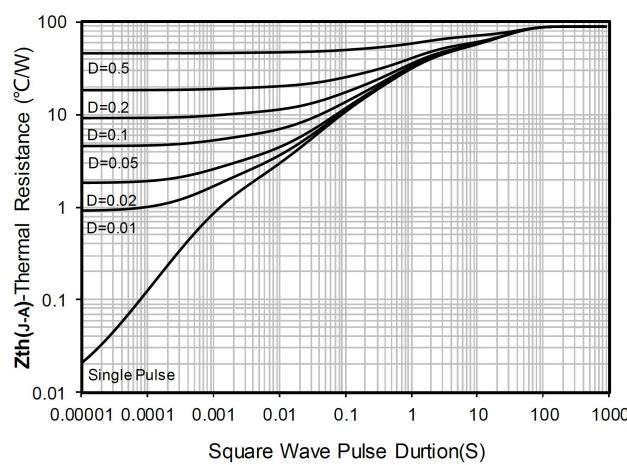
Forward characteristics of reverse diode



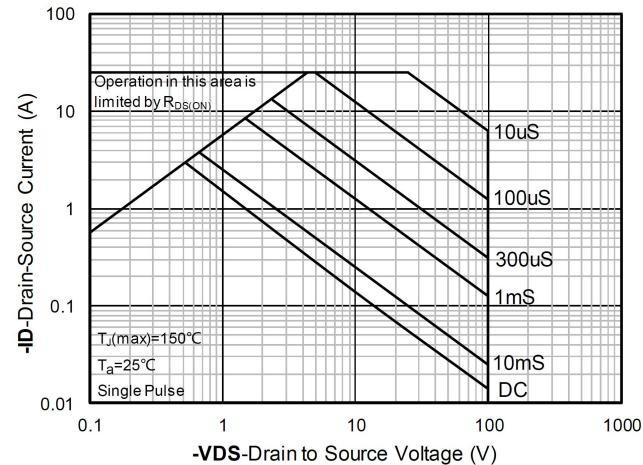
Normalized breakdown voltage



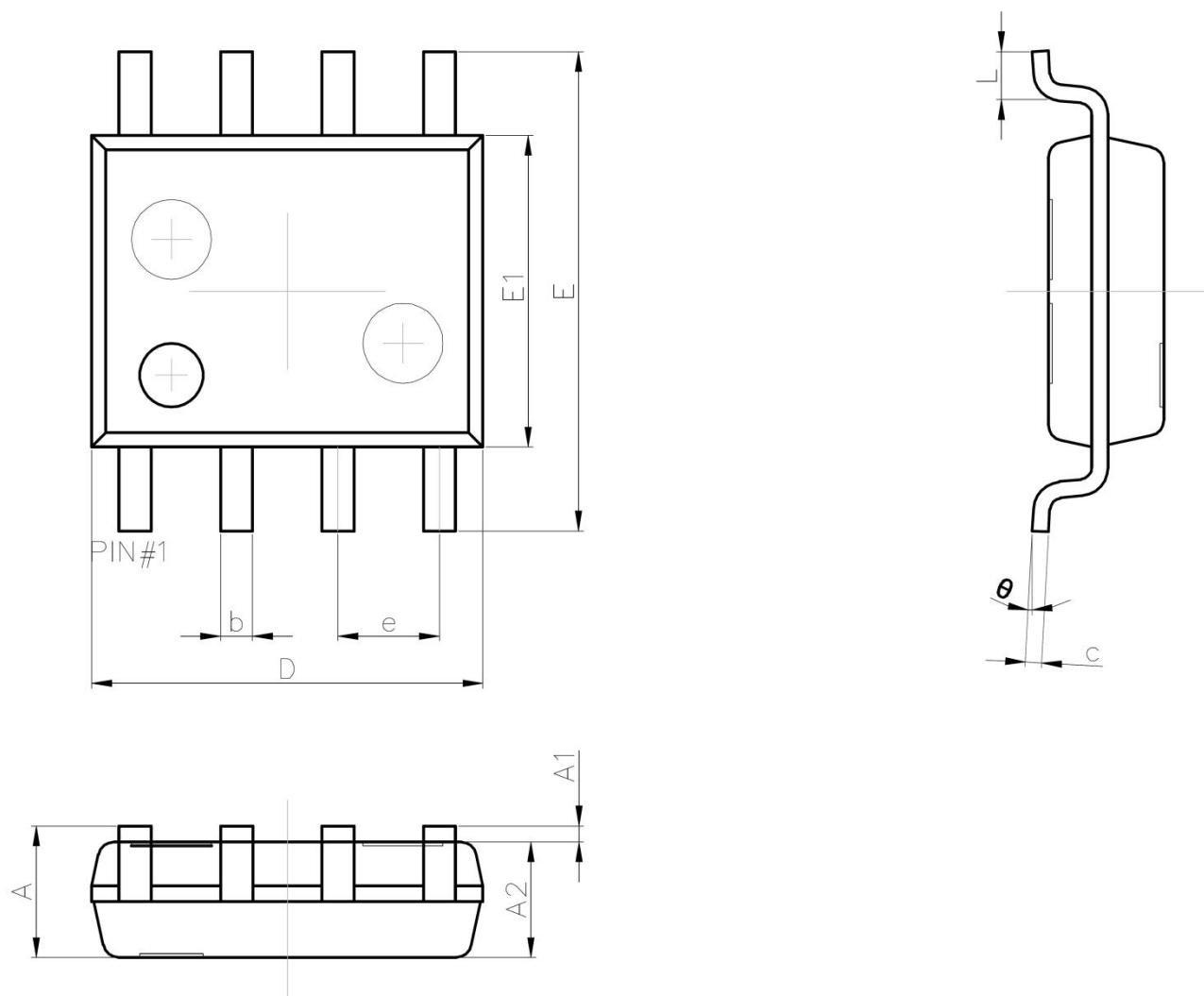
Normalized Threshold voltage



Maximum Transient Thermal Impedance



Safe Operation Area

SOP-8L 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°