

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-60V	11.5mΩ@-10V	-12A
	15mΩ@-4.5V	



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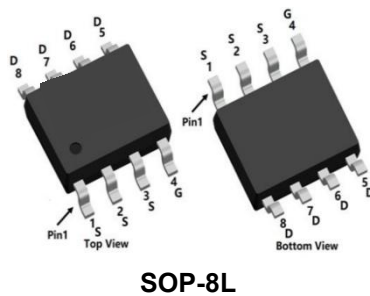
Feature

- Fast Switching
- Low Gate Charge and Rdson
- 100% Single Pulse avalanche energy Test

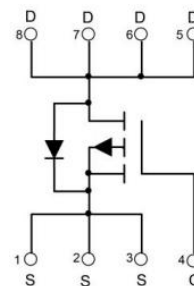
Applications

- Power Switching Application
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

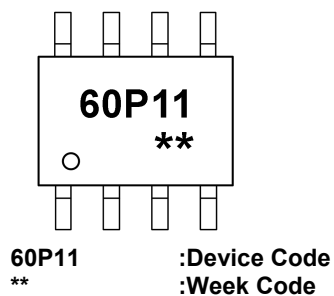
Package



Circuit Diagram



Marking



Order Information

Device	Package	Unit/Tape
SP60P11P8	SOP-8L	4000

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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-12	A
Pulsed Drain Current	I_{DM}	-48	A
Single Pulse Avalanche Energy ¹	E_{AS}	342	mJ
Power Dissipation	P_D	5.5	W
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	22.7	°C/W
Storage Temperature Range	T_{STG}	-55 to 150	°C
Operating Junction Temperature Range	T_J	-55 to 150	°C

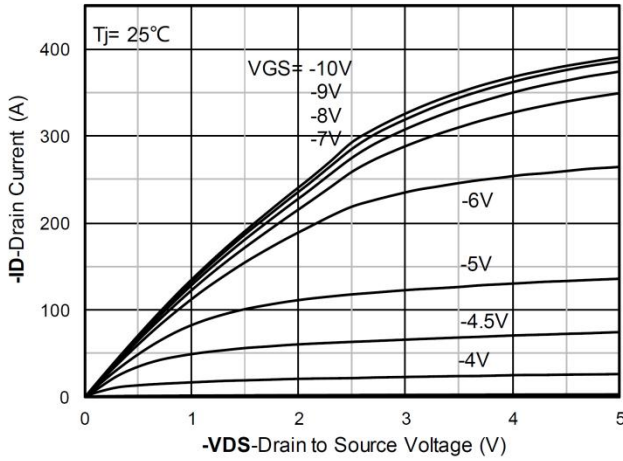
Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	VGS=0V , ID=-250uA	-60	-	-	V
Drain-Source Leakage Current	IDSS	VDS=-48V , VGS=0V	-	-	-1	uA
Gate-Source Leakage Current	IGSS	VGS=±20V , VDS=0V	-	-	±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID =-250uA	-1.0	-1.5	-2.5	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=-10V , ID=-6A	-	11.5	15	mΩ
		VGS=-4.5V , ID=-4A	-	15	19	
Dynamic characteristics						
Input Capacitance	Ciss	VDS=-30V , VGS=0V , f=1MHz	-	7700	-	pF
Output Capacitance	Coss		-	489	-	
Reverse Transfer Capacitance	Crss		-	364	-	
Total Gate Charge	Qg	VDS=-30V , VGS=-10V , ID=-10A	-	85.5	-	nC
Gate-Source Charge	Qgs		-	12.1	-	
Gate-Drain Charge	Qgd		-	23.2	-	
Switching Characteristics						
Turn-On Delay Time	Td(on)	VDD=-30V VGS=-10V , RG=3Ω, ID=-10A	-	9.8	-	nS
Rise Time	Tr		-	6.1	-	
Turn-Off Delay Time	Td(off)		-	44	-	
Fall Time	Tf		-	12.7	-	
Diode Characteristics						
Diode Forward Voltage	VSD	VGS=0V , IS=-1A	-	-	-1.2	V

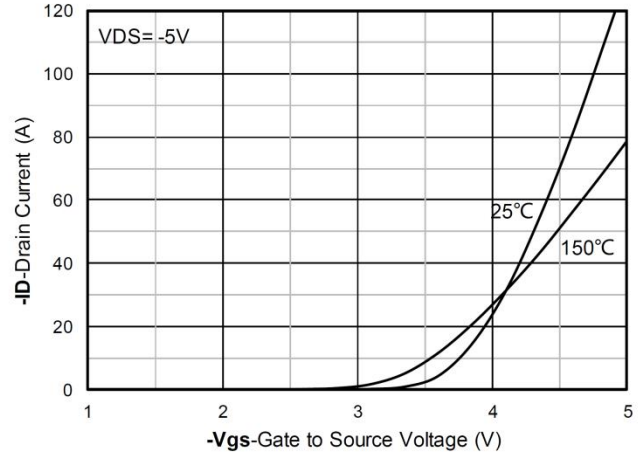
Note:

- The EAS test condition is $V_{DD}=-30V$, $V_G=-10V$, $L=0.5mH$, $R_g=25\Omega$

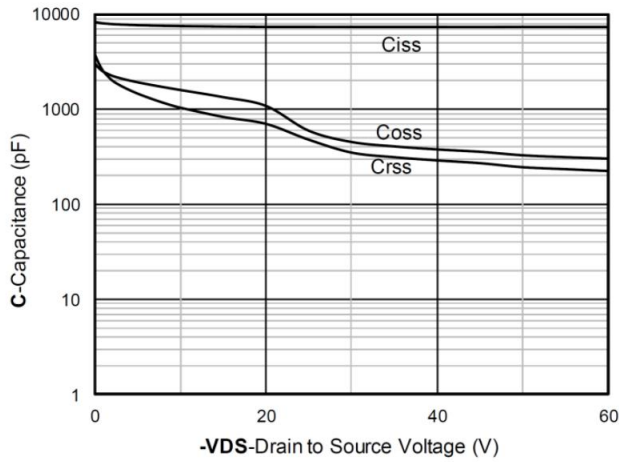
Typical Characteristics



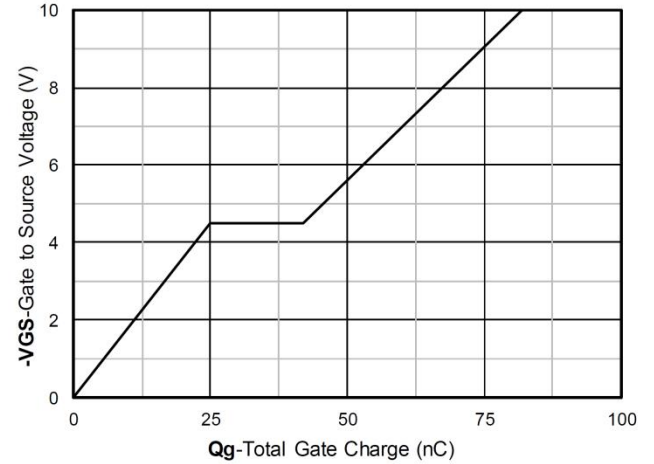
Output Characteristics



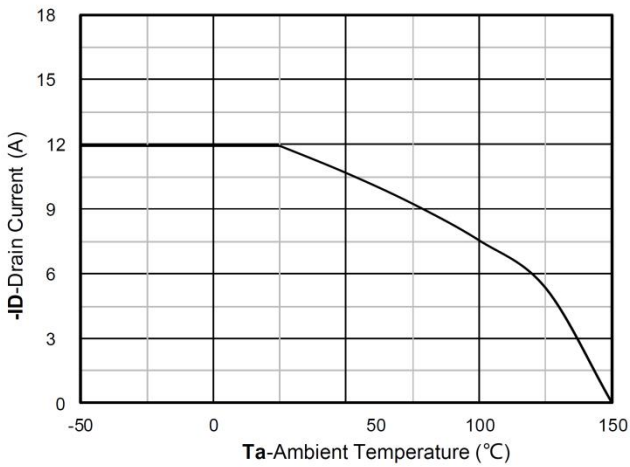
Transfer Characteristics



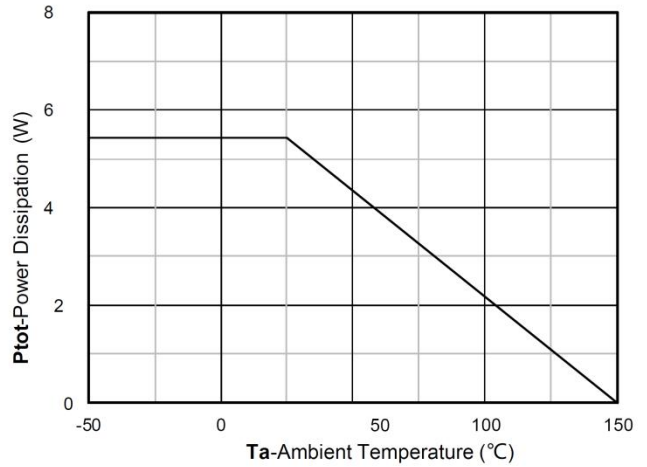
Capacitance Characteristics



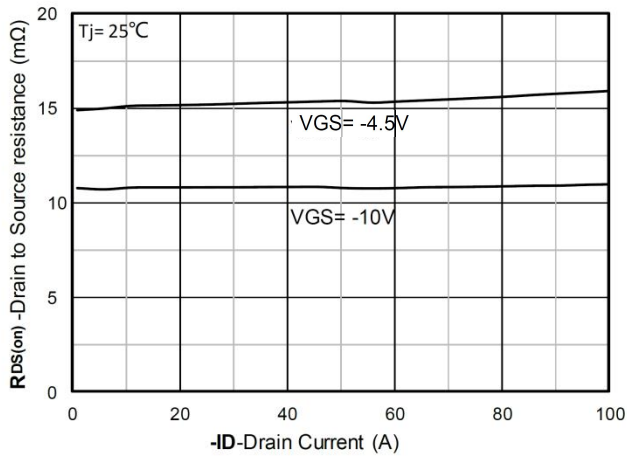
Gate Charge



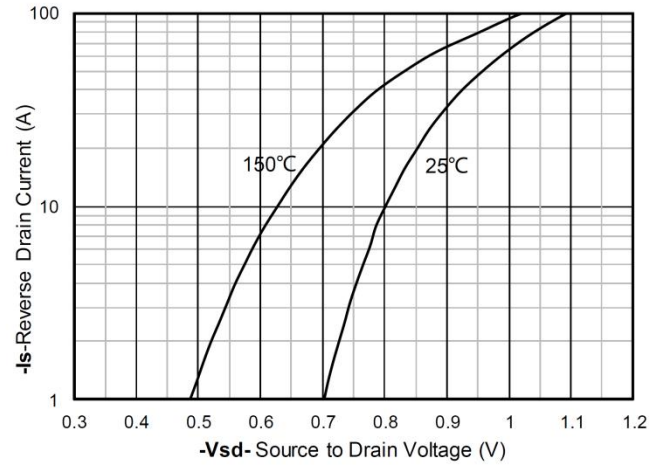
Current dissipation



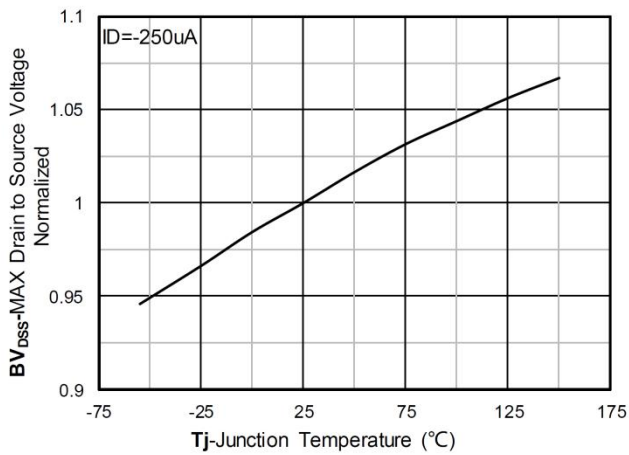
Power dissipation



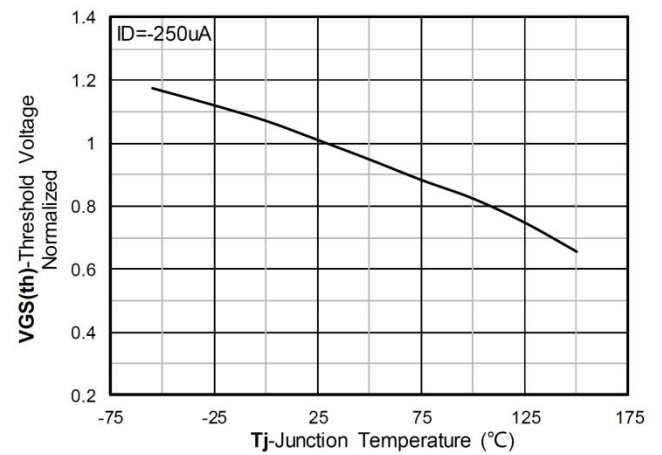
$R_{DS(on)}$ VS Drain Current



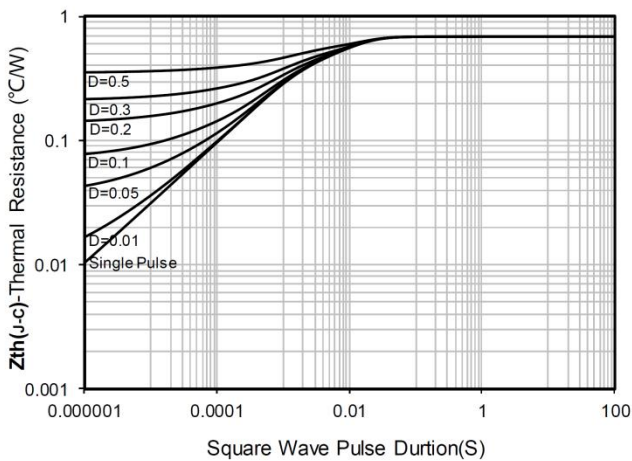
Forward characteristics of reverse diode



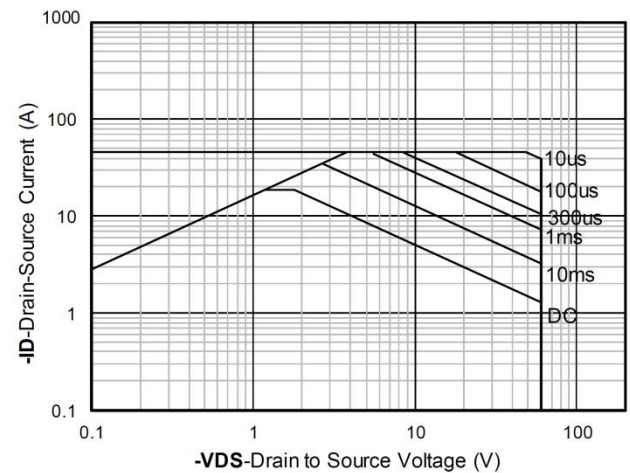
Normalized breakdown voltage



Normalized Threshold voltage

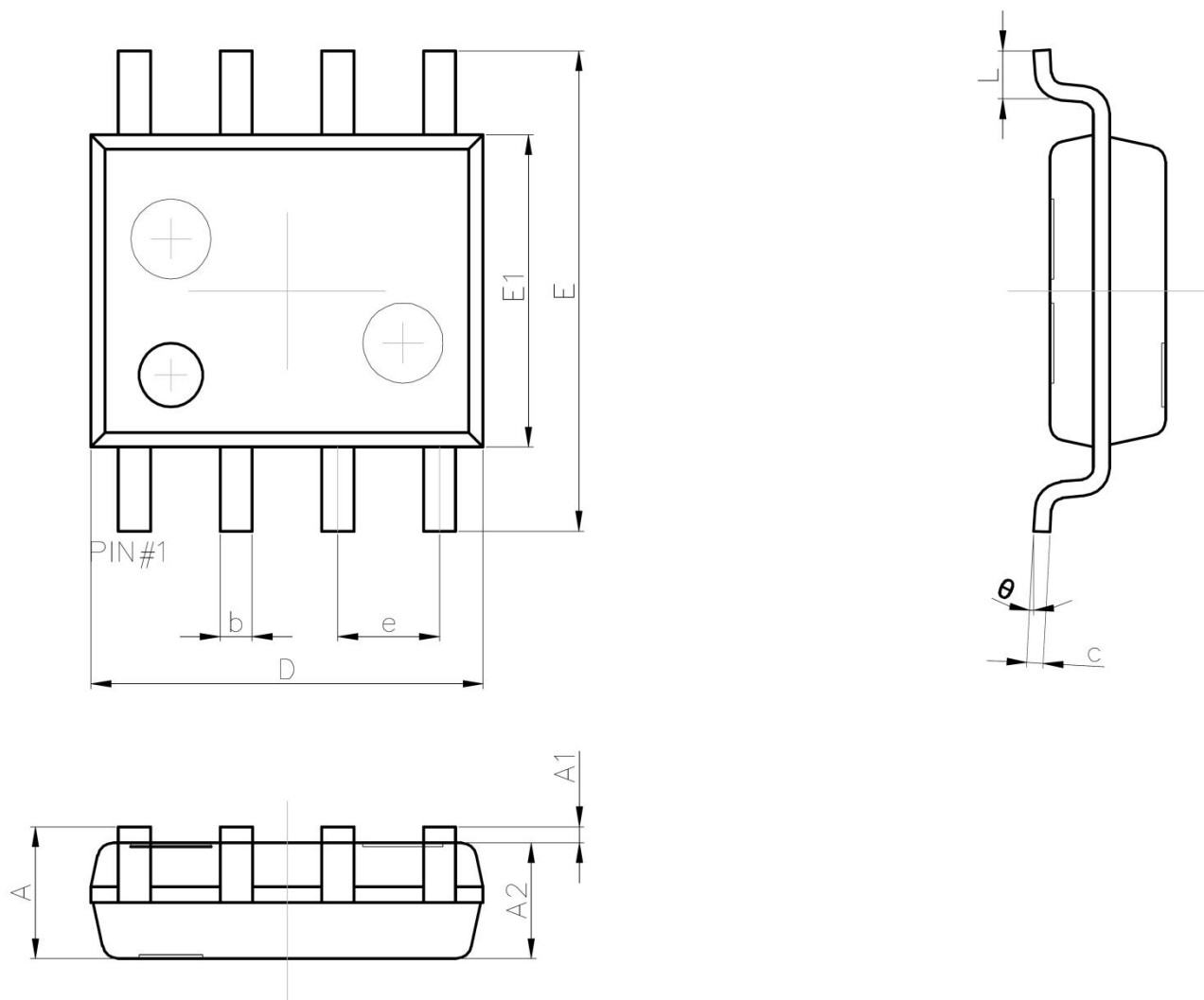


Maximum Transient Thermal Impedance



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°

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