

HC6911

60V P-Channel MOSFET

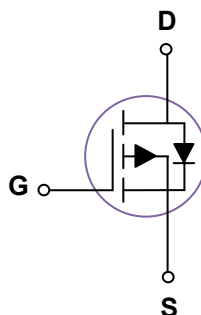
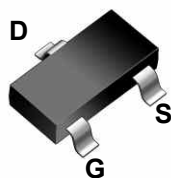
General Description

These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features

V_{DS}	-60V
I_D (at $V_{GS}=-10V$)	-2A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	160mΩ(Typ)

SOT23



Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	TC=25°C	I_D	-2
	TC=100°C	I_D	-1.25
Drain Current – Pulsed ¹	I_{DM}	-8	A
Maximum Power Dissipation	P_D	1.56	W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta Jc}$		1.1	°C /W
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		80	°C /W

Electrical Characteristics (TJ=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-60V,V _{GS} =0V			1	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	-1.0	-1.6	-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-2A		160	190	mΩ
		V _{GS} =-4.5V, I _D =-1.5A		200	240	mΩ
DYNAMIC PARAMETERS						
C _{ISS}	Input Capacitance	V _{DS} =-30V,V _{GS} =0V , F=1.0MHz		210		pF
C _{OSS}	Output Capacitance			28		pF
C _{RSS}	Reverse Transfer Capacitance			20		pF
SWITCHING PARAMETERS						
t _{d(on)}	Turn-on Delay Time	V _{DS} =-30V,I _D =-1A , V _{GS} =-10V, R _G =6Ω		10.5		nS
t _r	Turn-on Rise Time			11.5		nS
t _{d(off)}	Turn-Off Delay Time			15.5		nS
t _f	Turn-Off Fall Time			7.5		nS
Q _g	Total Gate Charge	V _{DS} =-30V,I _D =-3A , V _{GS} =-10V		5.2		nC
Q _{gs}	Gate-Source Charge			19		nC
Q _{gd}	Gate-Drain Charge			35		nC
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _{SD} =-1A		0.72	1.4	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

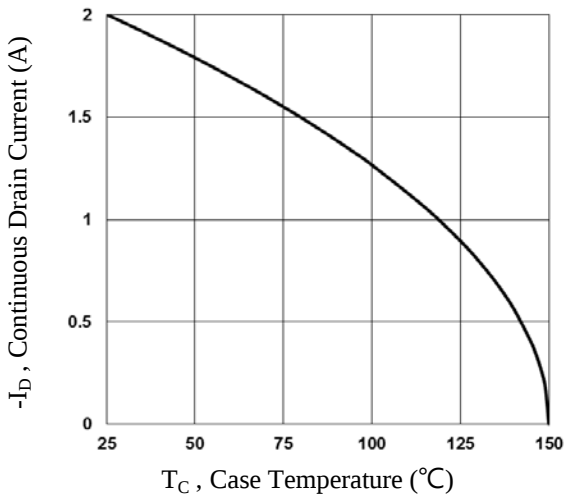


Fig.1 Continuous Drain Current vs. T_C

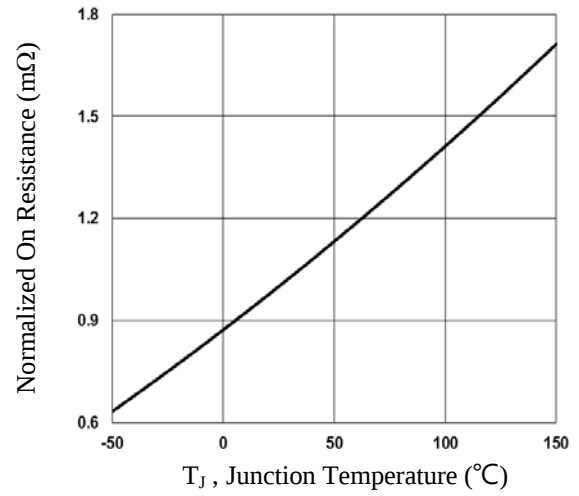


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

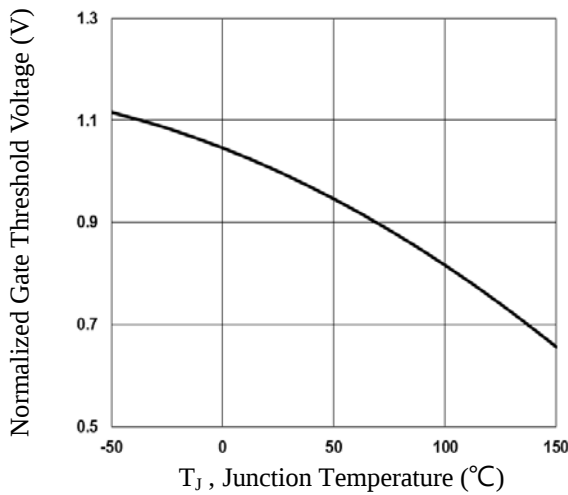


Fig.3 Normalized V_{th} vs. T_J

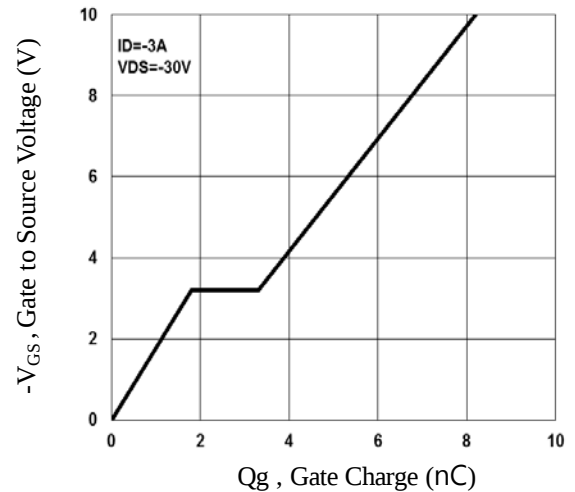


Fig.4 Gate Charge Waveform

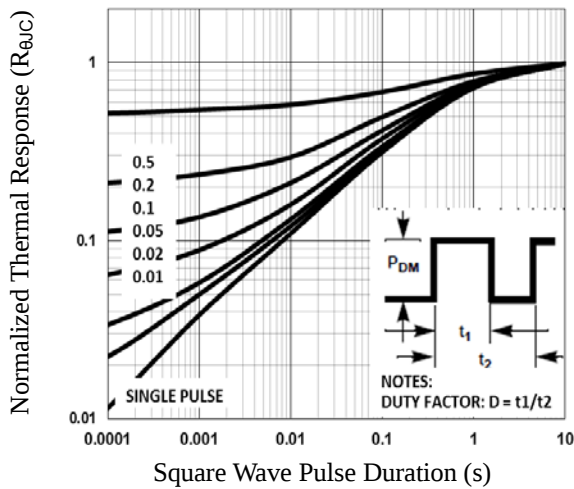


Fig.5 Normalized Transient Impedance

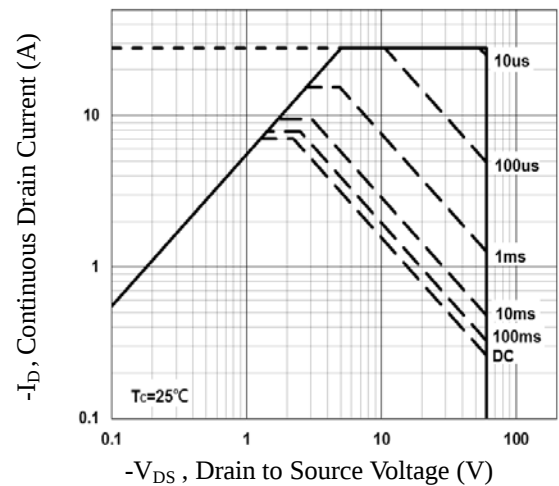


Fig.6 Maximum Safe Operation Area

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

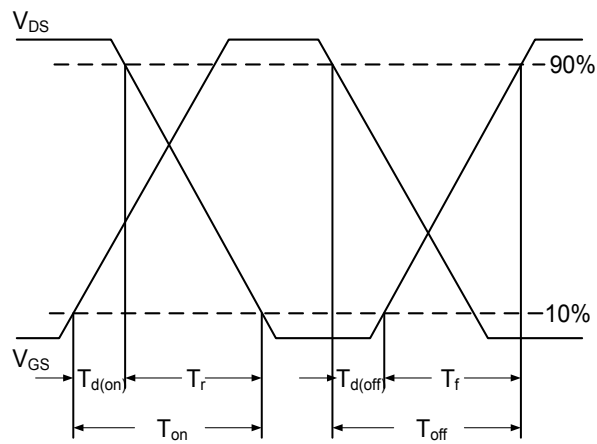


Fig.7 Switching Time Waveform

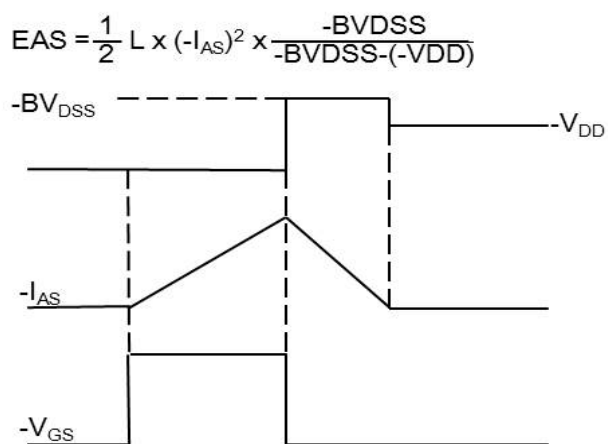
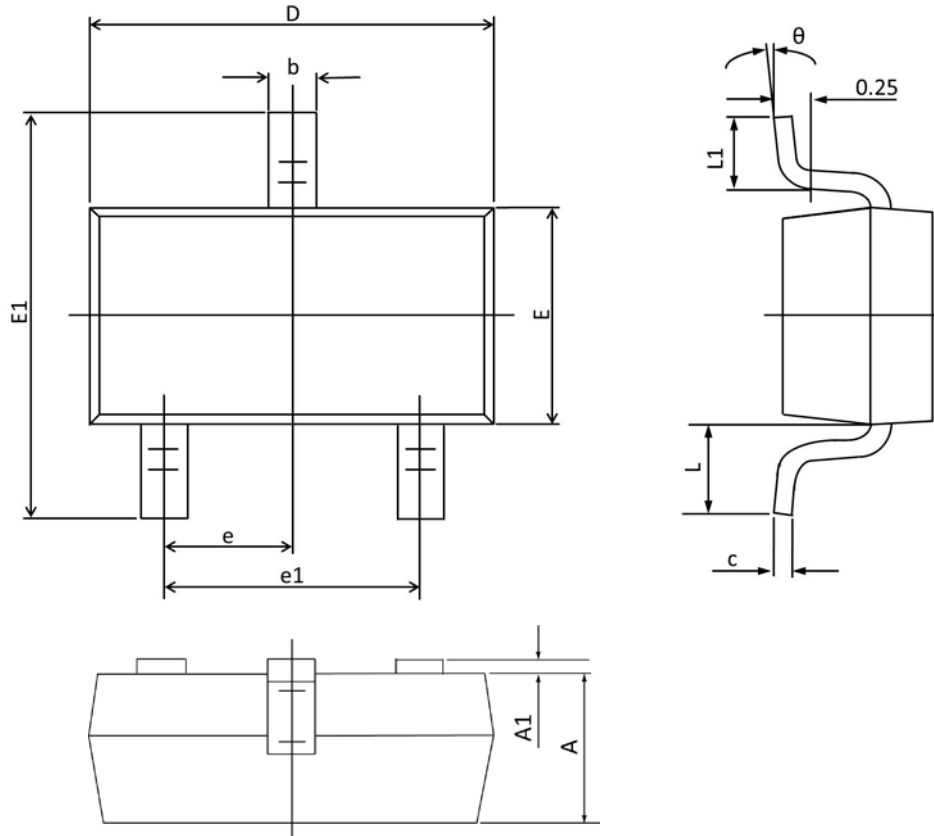


Fig.8 EAS Waveform

SOT23 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°