



60V P-Channel MOSFETs

General Description

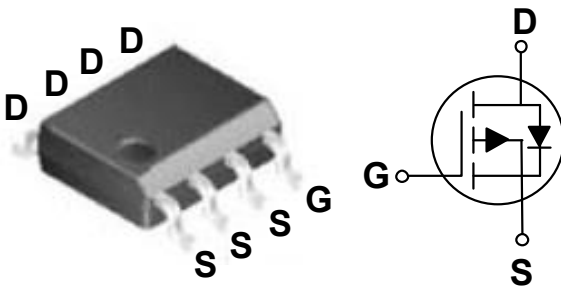
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

BV_{DSS}	R_{DS(ON)}	I_D
-60 V	30 mΩ	-8.5 A

Features

- -60V, -8.5A, $R_{DS(ON)} \leq 30m\Omega @ V_{GS} = -10V$
- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications

SOP-8 Pin Configuration



Applications

- POL Applications
- LED Application
- Load Switch

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous ($T_C=25^\circ\text{C}$)	-8.5	A
	Drain Current - Continuous ($T_C=100^\circ\text{C}$)	-5.4	A
I_{DM}	Drain Current - Pulsed (NOTE 1)	-34	A
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	4.1	W
	Power Dissipation - Derate above 25°C	0.033	W/ $^\circ\text{C}$
T_J	Operating Junction Temperature Range	-50 to 150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
Marking Code		PG030 , DS6903	

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	---	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	30	$^\circ\text{C/W}$

**Electrical Characteristics (T_J=25°C, unless otherwise noted)****Off Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V , I _D = -250uA	-60	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} = -60V , V _{GS} = 0V , T _J =25°C	---	---	-1	uA
		V _{DS} = -48V , V _{GS} = 0V , T _J =125°C	---	---	-10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ±20V , V _{DS} = 0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = -10V , I _D = -8A	---	23	30	mΩ
		V _{GS} = -4.5V , I _D = -6A	---	28	40	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D = -250uA	-1.0	-1.6	-2.5	V
g _{fs}	Forward Transconductance	V _{DS} = -10V , I _D = -3A	---	18	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q _g	Total Gate Charge (NOTE 2、3)	V _{DS} = -30V , V _{GS} = -10V , I _D = -5A	---	43.8	88	nC
Q _{gs}	Gate-Source Charge (NOTE 2、3)		---	4.6	9	
Q _{gd}	Gate-Drain Charge (NOTE 2、3)		---	8.3	17	
T _{d(on)}	Turn-On Delay Time (NOTE 2、3)	V _{DD} = -30V , V _{GS} = -10V , R _G =6Ω , I _D = -1A	---	25	50	nS
T _r	Rise Time (NOTE 2、3)		---	13.8	28	
T _{d(off)}	Turn-Off Delay Time (NOTE 2、3)		---	148	290	
T _f	Fall Time (NOTE 2、3)		---	51	100	
C _{iss}	Input Capacitance	V _{DS} = -25V , V _{GS} = 0V , F= 1MHz	---	2595	3900	pF
C _{oss}	Output Capacitance		---	162	240	
C _{rss}	Reverse Transfer Capacitance		---	115	170	

Drain-Source Diode Characteristics and Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G = V _D = 0V , Force Current	---	---	-8.5	A
I _{SM}	Pulsed Source Current		---	---	-17	A
V _{SD}	Diode Forward Voltage	V _{GS} = 0V , I _S = -1A , T _J = 25°C	---	---	-1	V

NOTES :

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



Characteristics Curves

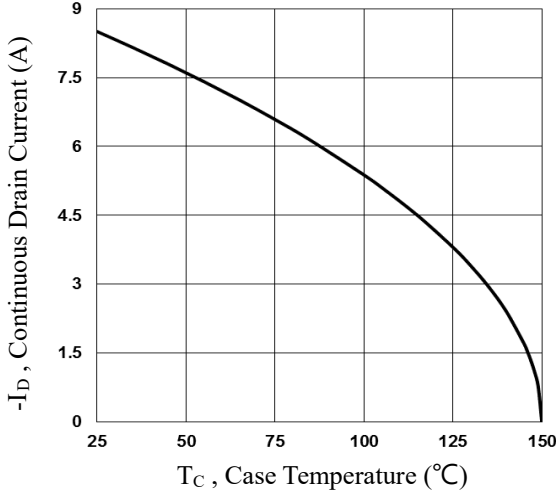


Fig.1 Continuous Drain Current vs. T_C

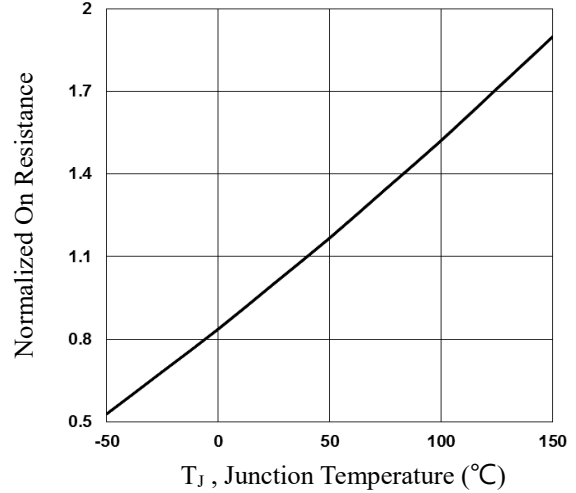


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

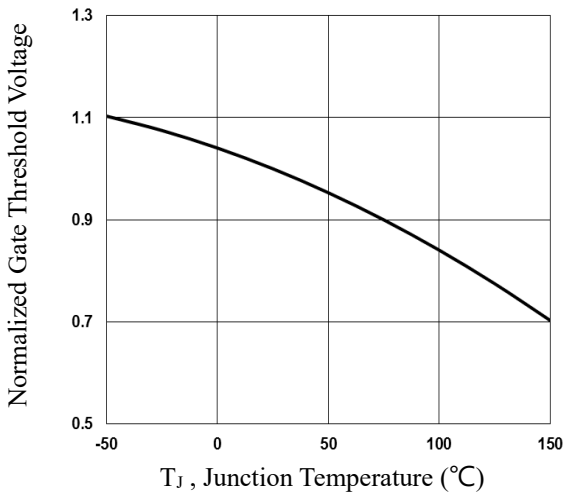


Fig.3 Normalized V_{th} vs. T_J

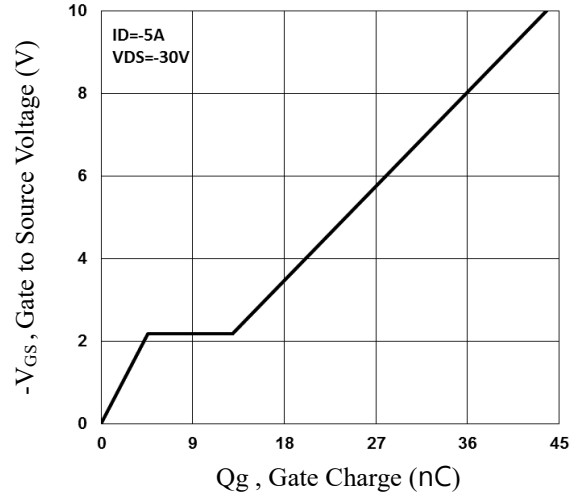


Fig.4 Gate Charge Waveform

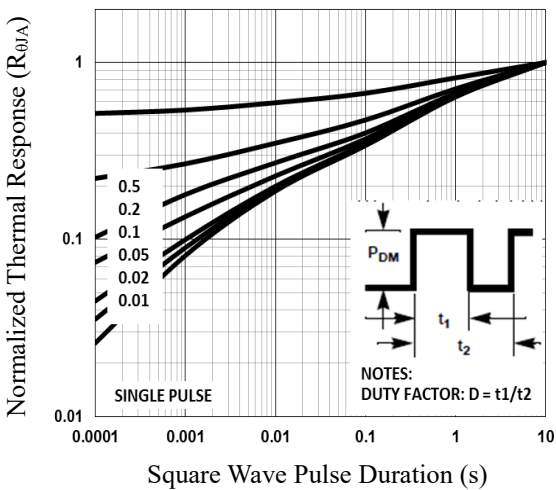


Fig.5 Normalized Transient Impedance

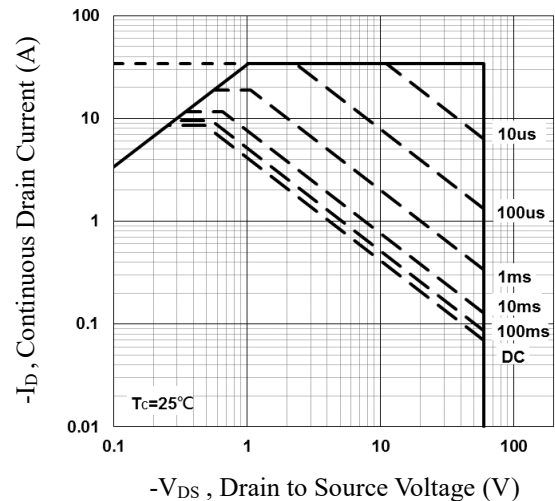


Fig.6 Maximum Safe Operation Area



Characteristics Curves

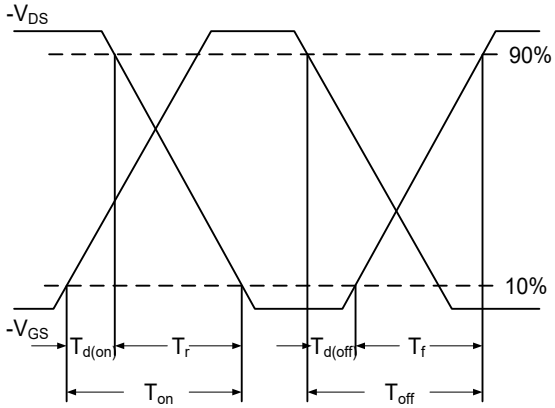


Fig.7 Switching Time Waveform

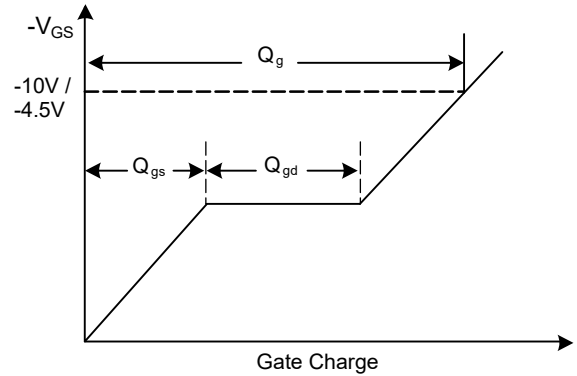
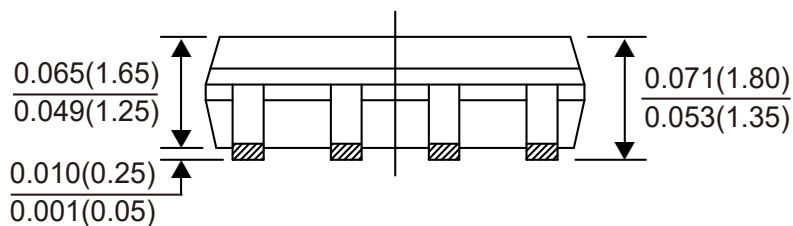
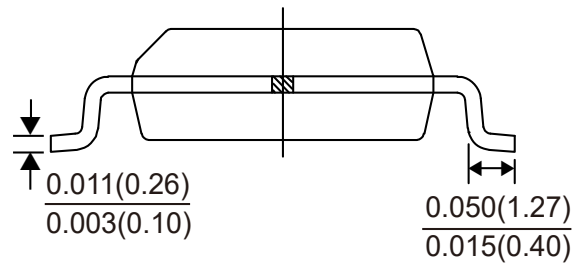
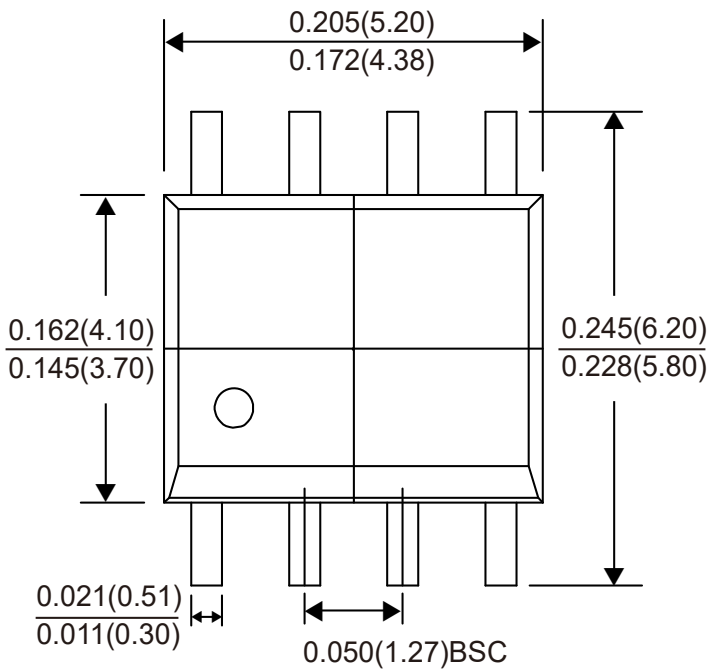


Fig.8 Gate Charge Waveform

Package Outline Dimensions



SOP-8

Dimensions in inches and (millimeters)



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