30V P-Channel MOSFETs

PDS3807
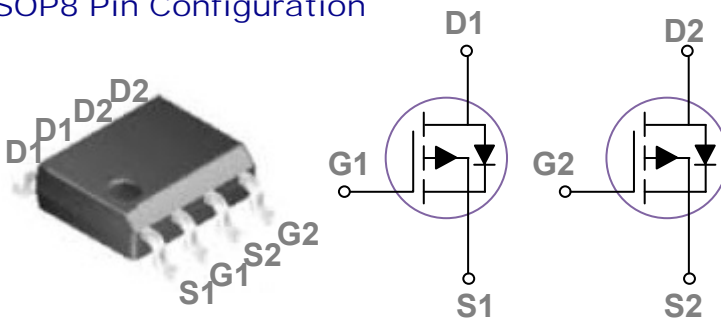
General Description

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.

BVDSS	RDSON	ID
-30V	23mΩ	-7A

Features

- *-30V,-7A, RDS(ON) =23mΩ@VGS = -10V*
- *Fast switching*
- *Green Device Available*
- *Suit for -4.5V Gate Drive Applications*

SOP8 Pin Configuration

Applications

- *MB / VGA / Vcore*
- *POL Applications*
- *Load Switch*
- *LED Application*

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage (base on I_{GSS1} condition)	±20	V
V_{GS}	Gate-Source Voltage (base on I_{GSS2} condition)	±25	V
I_D	Drain Current – Continuous (T_C=25℃)	-7	A
	Drain Current – Continuous (T_C=100℃)	-4.43	A
I_{DM}	Drain Current – Pulsed[1]	-28	A
P_D	Power Dissipation (T_C=25℃)	2.1	W
	Power Dissipation – Derate above 25℃	0.017	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	60	℃/W

Electrical Characteristics (T$_J$=25 $^\circ$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	-30	---	---	V
$\triangle$BV$_{DSS}$/$\triangle$T$_J$	BV$_{DSS}$ Temperature Coefficient	Reference to 25°C , I$_D$=-1mA	---	-0.03	---	V/$^\circ$C
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=-30V , V$_{GS}$=0V , T$_J$=25°C	---	---	-1	uA
		V$_{DS}$=-24V , V$_{GS}$=0V , T$_J$=125°C	---	---	-10	uA
I$_{GSS1}$	Gate-Source Leakage Current	V$_{GS}$=$\pm$20V , V$_{DS}$=0V	---	---	$\pm$100	nA
I$_{GSS2}$	Gate-Source Leakage Current	V$_{GS}$=$\pm$25V , V$_{DS}$=0V	---	---	$\pm$1	mA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R$_{DS(ON)}$	Static Drain-Source On-Resistance	V$_{GS}$=-10V , I$_D$=-5A	---	20	23	mΩ
		V$_{GS}$=-4.5V , I$_D$=-3A	---	30	36	mΩ
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$ =-250uA	-1.2	-1.6	-2.5	V
$\triangle$V$_{GS(th)}$	V$_{GS(th)}$ Temperature Coefficient		---	4	---	mV/$^\circ$C
gfs	Forward Transconductance	V$_{DS}$=-10V , I$_D$=-3A	---	6.8	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q$_g$	Total Gate Charge[2,3]	V$_{DS}$=-15V , V$_{GS}$=-4.5V , I$_D$=-5A	---	11	17	nC
Q$_{gs}$	Gate-Source Charge[2,3]		---	3.4	6	
Q$_{gd}$	Gate-Drain Charge[2,3]		---	4.2	8	
T$_{d(on)}$	Turn-On Delay Time[2,3]	V$_{DD}$=-15V , V$_{GS}$=-10V , R$_G$=6Ω I$_D$=-1A	---	5.8	11	ns
T$_r$	Rise Time[2,3]		---	18.8	36	
T$_{d(off)}$	Turn-Off Delay Time[2,3]		---	46.9	89	
T$_f$	Fall Time[2,3]		---	12.3	23	
C$_{iss}$	Input Capacitance	V$_{DS}$=-15V , V$_{GS}$=0V , F=1MHz	---	1250	1820	pF
C$_{oss}$	Output Capacitance		---	160	235	
C$_{rss}$	Reverse Transfer Capacitance		---	90	130	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I$_S$	Continuous Source Current	V$_G$=V$_D$=0V , Force Current	---	---	-7	A
I$_{SM}$	Pulsed Source Current		---	---	-14	A
V$_{SD}$	Diode Forward Voltage	V$_{GS}$=0V , I$_S$=-1A , T$_J$=25°C	---	---	-1	V

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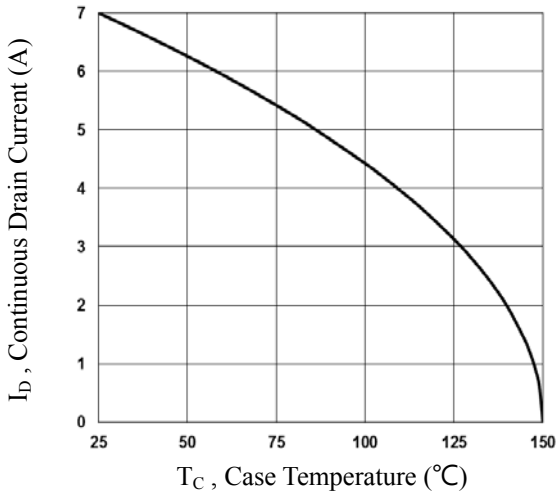3. Essentially independent of operating temperature.

PDS3807

Fig.1   Continuous Drain Current vs. T_C

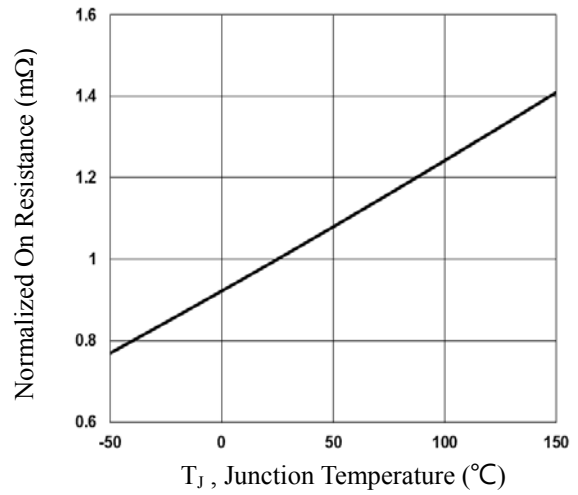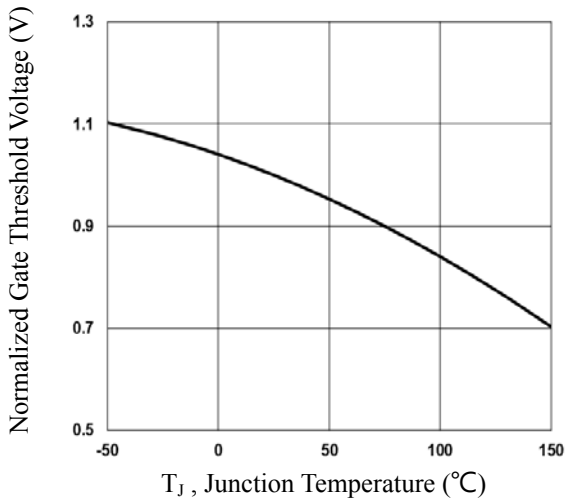

Fig.2   Normalized RDSON vs. T_J

Fig.3   Normalized V_{th} vs. T_J
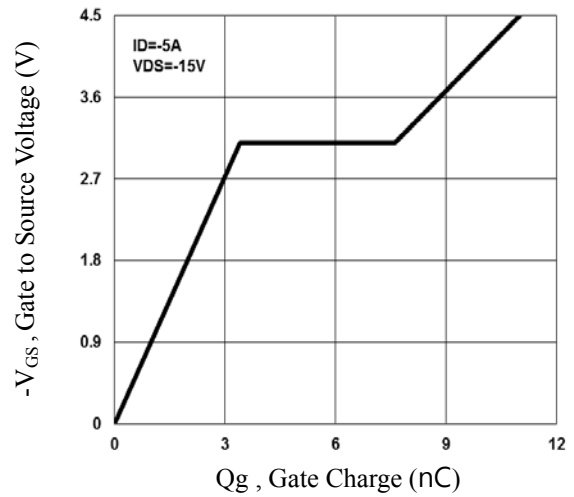

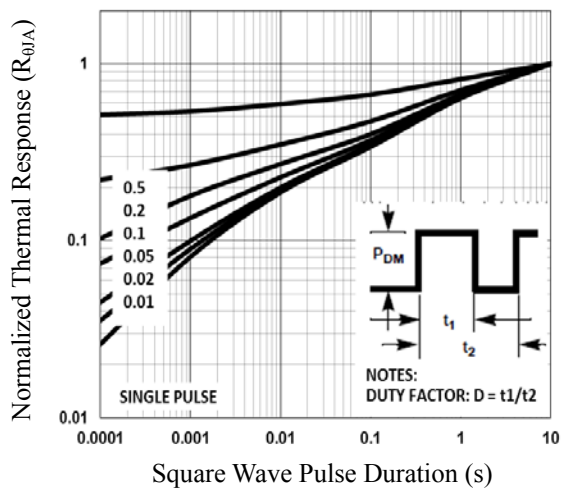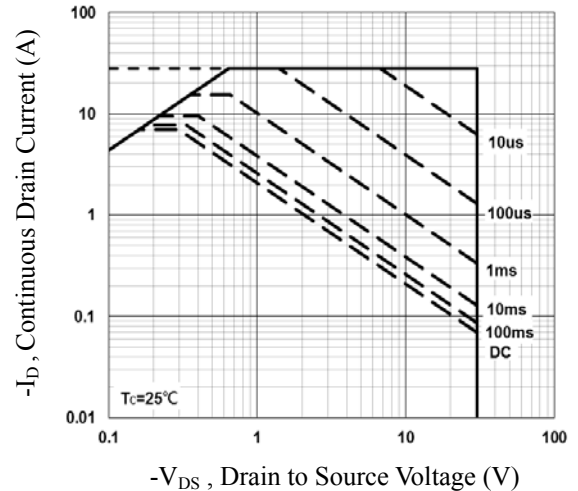Fig.4   Gate Charge Waveform

Fig.5   Normalized Transient Impedance
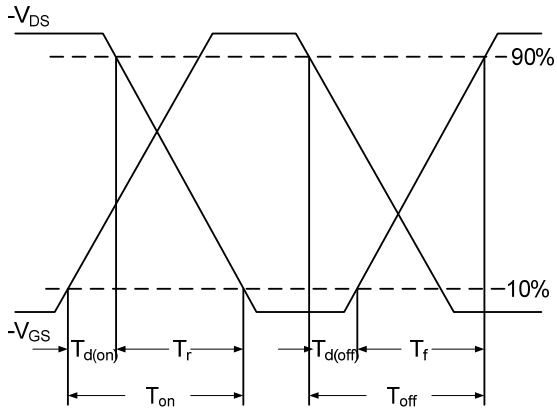

Fig.6   Maximum Safe Operation Area

Fig.7   Switching Time Waveform

Fig.8   Gate Charge Waveform

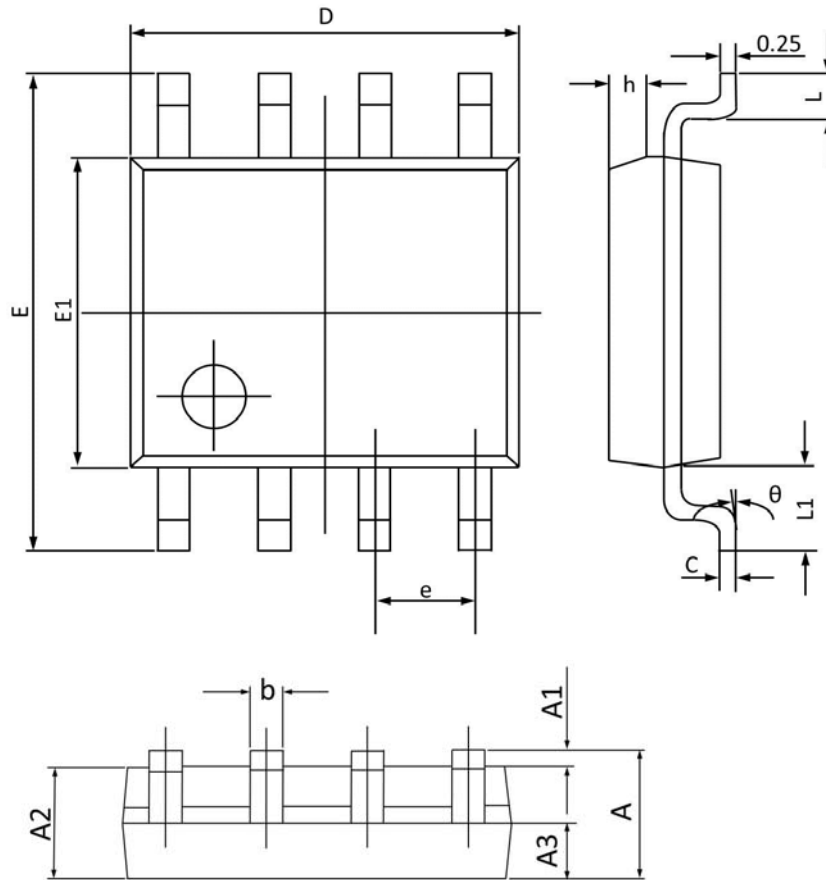# SOP8 PACKAGE INFORMATION

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270(BSC)		0.050(BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET *category:*

Click to view products by Potens *manufacturer:*

Other Similar products are found below :

614233C 648584F MCH3443-TL-E MCH6422-TL-E FDPF9N50NZ FW216A-TL-2W FW231A-TL-E APT5010JVR NTNS3A92PZT5G IRF100S201 JANTX2N5237 2SK2464-TL-E 2SK3818-DL-E FCA20N60_F109 FDZ595PZ STD6600NT4G FSS804-TL-E 2SJ277-DL-E 2SK1691-DL-E 2SK2545(Q,T) D2294UK 405094E 423220D MCH6646-TL-E TPCC8103,L1Q(CM 367-8430-0972-503 VN1206L 424134F 026935X 051075F SBVS138LT1G 614234A 715780A NTNS3166NZT5G 751625C 873612G IRF7380TRHR IPS70R2K0CEAKMA1 RJK60S3DPP-E0#T2 RJK60S5DPK-M0#T0 APT5010JVFR APT12031JFLL APT12040JVR DMN3404LQ-7 NTE6400 JANTX2N6796U JANTX2N6784U JANTXV2N5416U4 SQM110N05-06L-GE3 SIHF35N60E-GE3