General Description

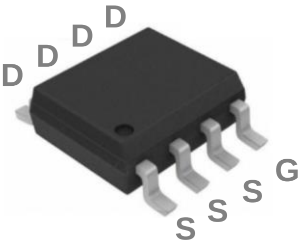
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These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

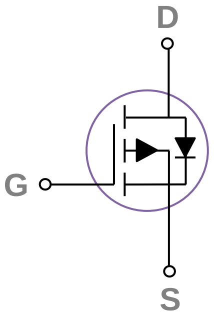
BVDSS	RDSON	ID
-30V	10.8mΩ	-10A

Features

- *-30V,-10A, RDS(ON) =10.8mΩ@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 T_C=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_A=25℃)	-10	A
	Drain Current – Continuous (T_A=70℃)	-8	A
I_{DM}	Drain Current – Pulsed[1]	-40	A
EAS	Single Pulse Avalanche Energy[2]	125	mJ
IAS	Single Pulse Avalanche Current[2]	-50	A
P_D	Power Dissipation (T_A=25℃)	2	W
	Power Dissipation – Derate above 25℃	0.016	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	---	62.5	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250μA	-30	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V , V_{GS}=0V , T_J=25℃	---	---	-1	μA
		V_{DS}=-24V , V_{GS}=0V , T_J=125℃	---	---	-10	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-15A	---	9	10.8	mΩ
		V_{GS}=-4.5V , I_D=-10A	---	14	18	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250μA	-1.2	-1.6	-2.5	V
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-3A	---	11	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[3,4]	V_{DS}=-15V , V_{GS}=-10V , I_D=-5A	---	34	50	nC
Q_{gs}	Gate-Source Charge[3,4]		---	5.2	7.8	
Q_{gd}	Gate-Drain Charge[3,4]		---	7.9	12	
$T_{d(on)}$	Turn-On Delay Time[3,4]	V_{DD}=-15V , V_{GS}=-10V , R_G=6Ω I_D=-5A	---	20	30	ns
T_r	Rise Time[3,4]		---	15	22	
$T_{d(off)}$	Turn-Off Delay Time[3,4]		---	40	60	
T_f	Fall Time[3,4]		---	30	45	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , F=1MHz	---	2020	3000	pF
C_{oss}	Output Capacitance		---	305	460	
C_{rss}	Reverse Transfer Capacitance		---	245	370	

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	---	---	-10	A
I_{SM}	Pulsed Source Current		---	---	-20	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1	V
t_{rr}	Reverse Recovery Time	V_R=-30V, I_R=-10A	---	80	---	ns
Q_{rr}	Reverse Recovery Charge	di/dt=100A/μs , T_J=25℃	---	170	---	nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{DD}=-25V,V_{GS}=-10V,L=0.1mH,I_{AS}=-50A.,R_G=25Ω,Starting T_J=25℃.
3. The data tested by pulsed , pulse width ≦ 300μs , duty cycle ≦ 2%.
4. Essentially independent of operating temperature.

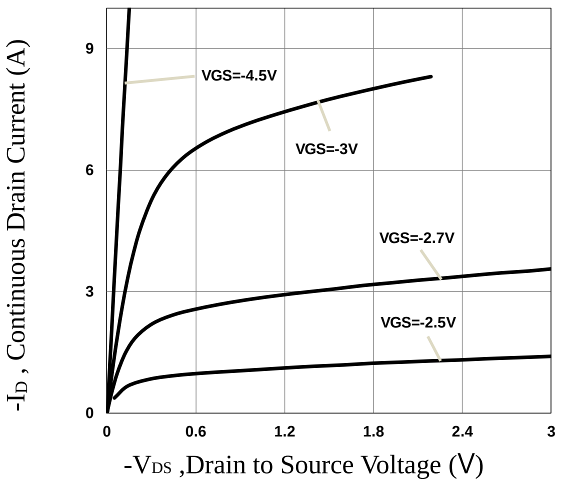


Fig.1 Typical Output Characteristics

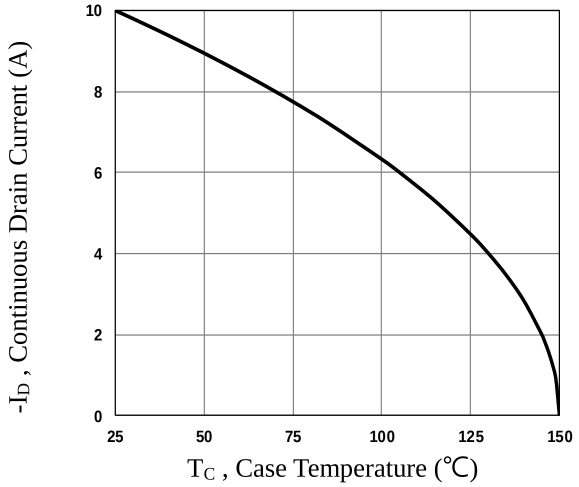


Fig.2 Continuous Drain Current vs. T_C

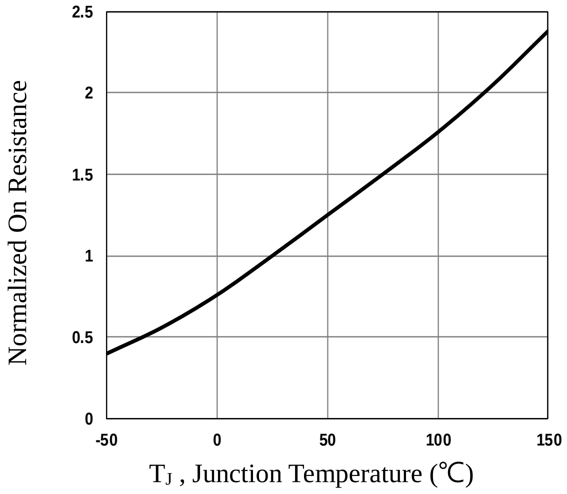


Fig.3 Normalized RDSON vs. T_J

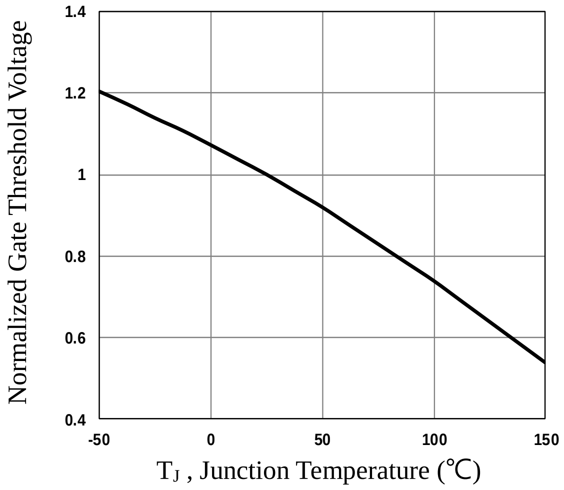


Fig.4 Normalized V_{th} vs. T_J

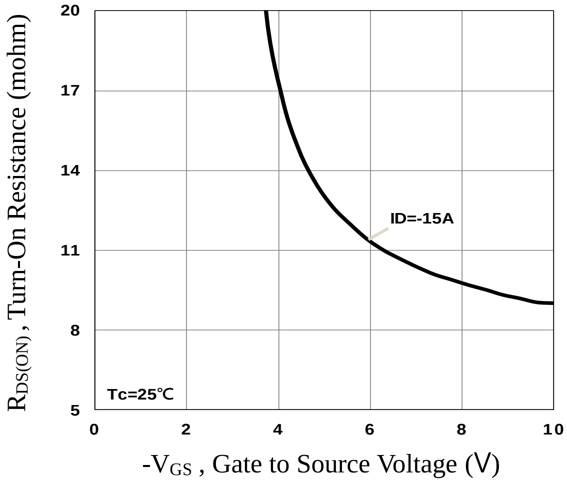


Fig.5 Turn-On Resistance vs. V_{GS}

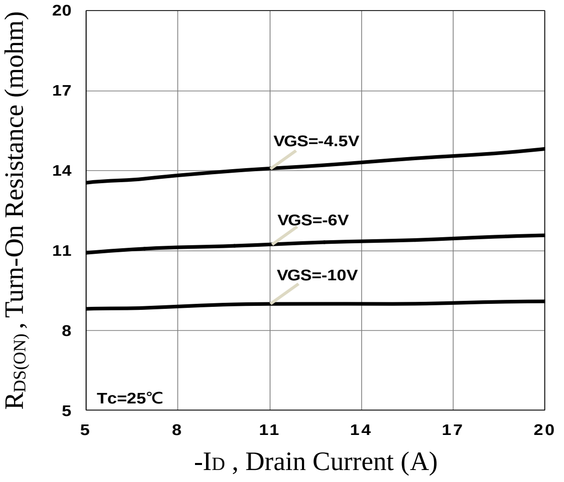


Fig.6 Turn-On Resistance vs. I_D

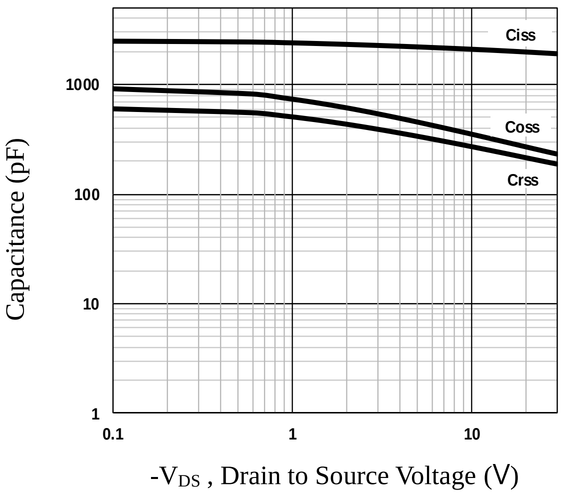


Fig.7 Capacitance Characteristics

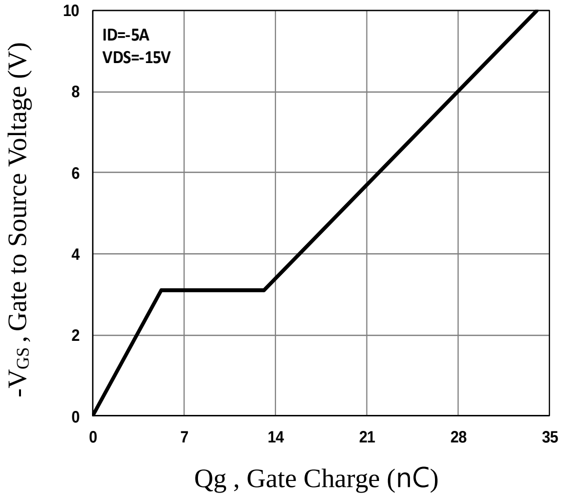


Fig.8 Gate Charge Characteristics

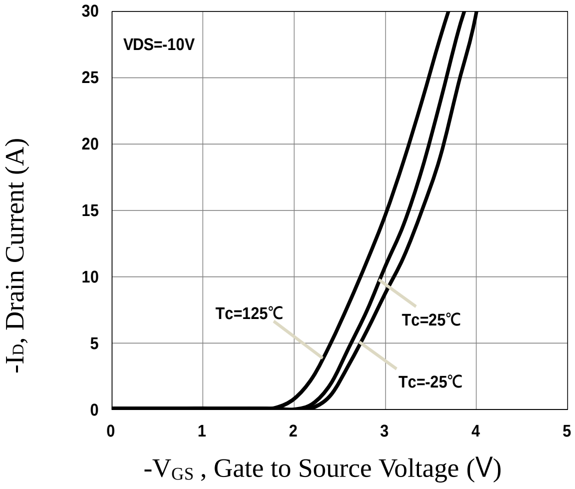


Fig.9 Transfer Characteristics

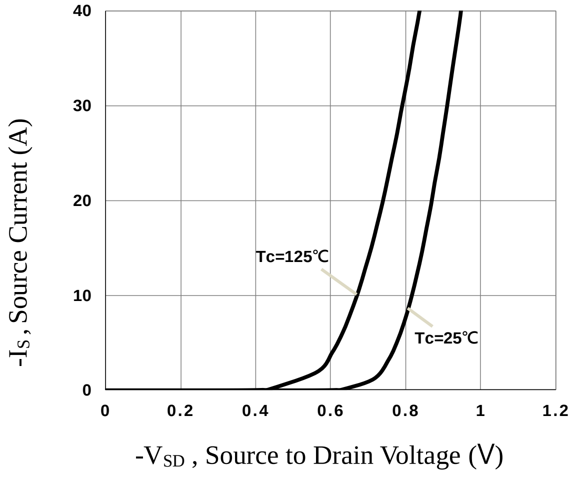


Fig.10 Source Current vs. V_{SD}

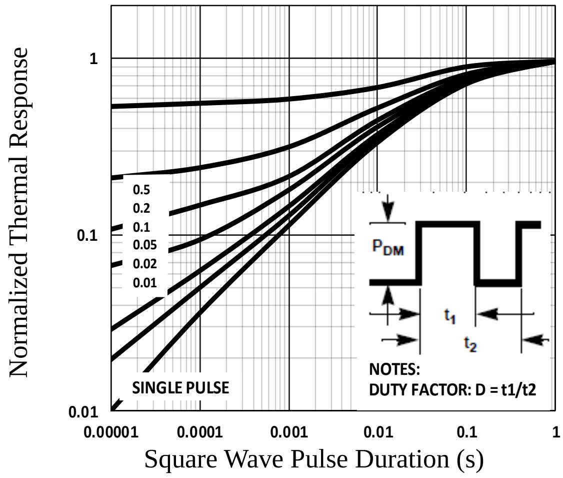


Fig.11 Normalized Transient Impedance

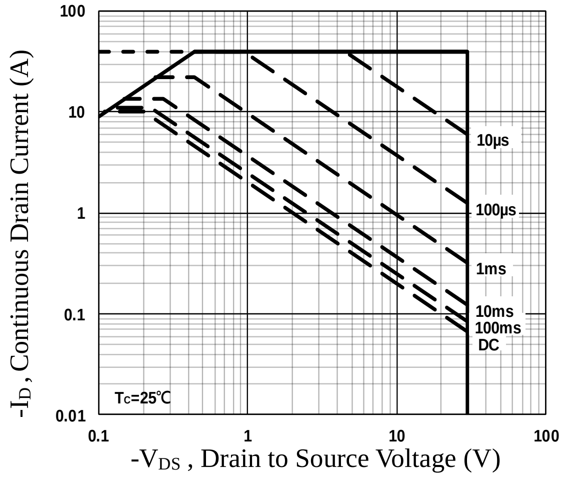


Fig.12 Maximum Safe Operation Area

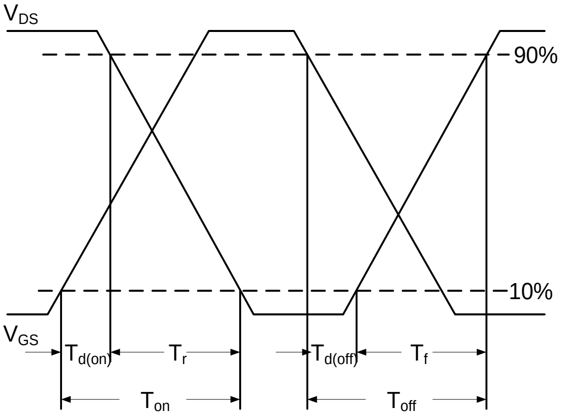


Fig.13 Switching Time Waveform

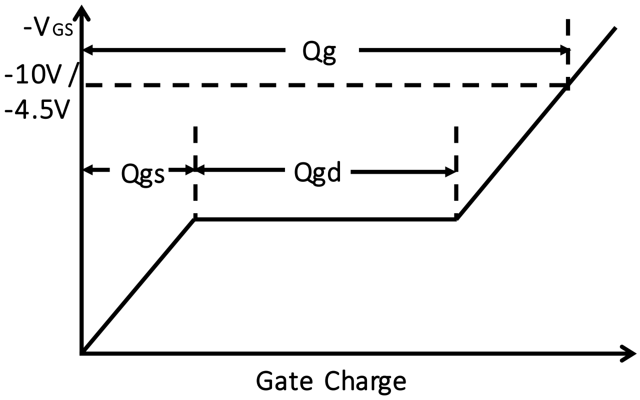
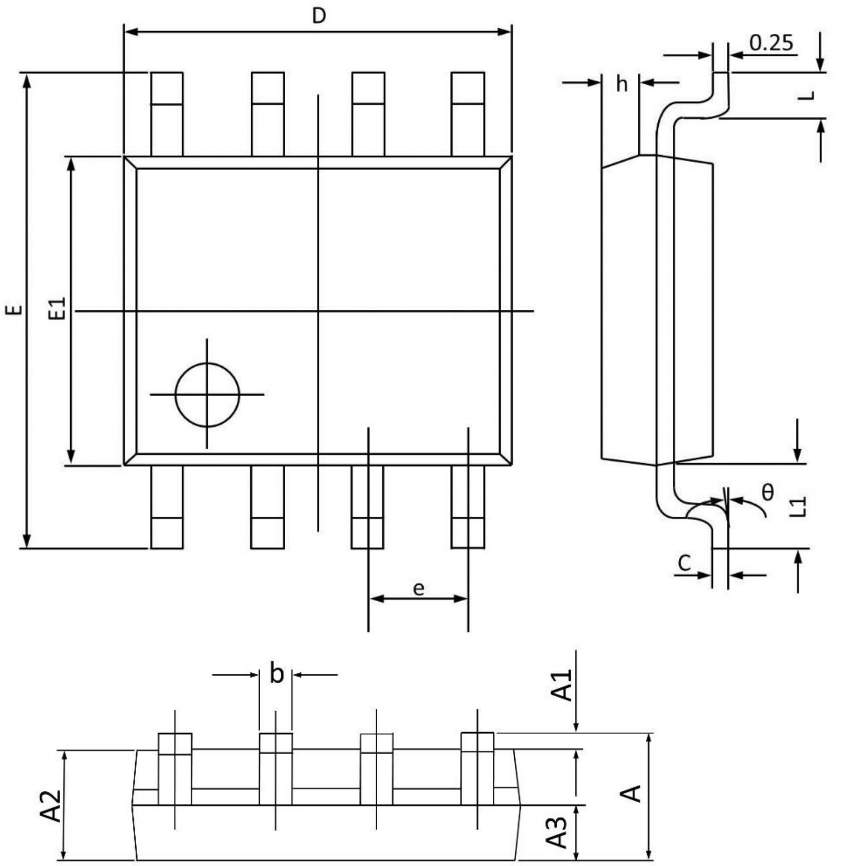


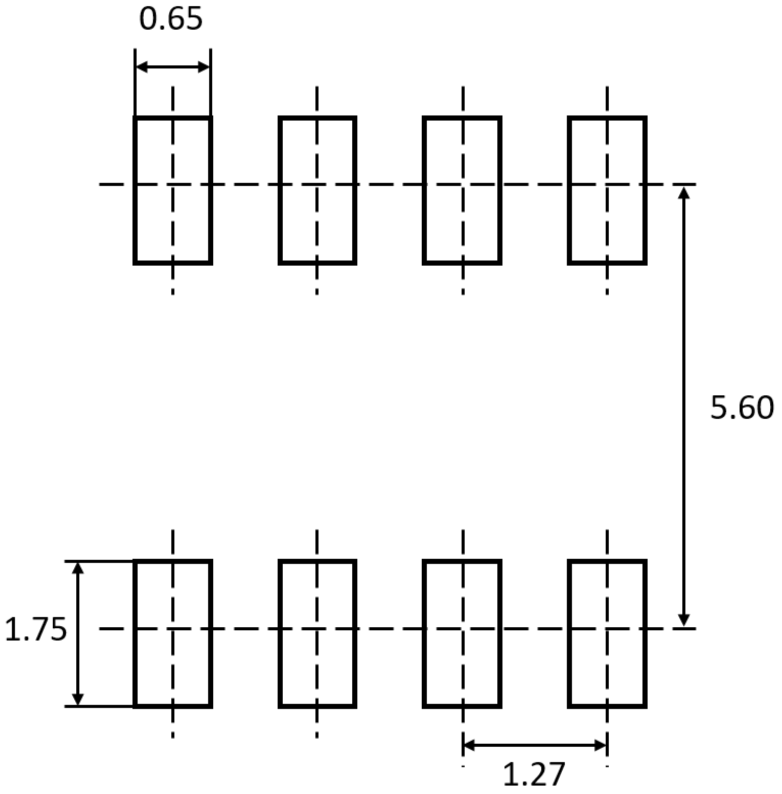
Fig.14 Gate Charge Waveform

SOP8 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.800	0.053	0.069
A1	0.050	0.250	0.002	0.010
A2	1.250	1.650	0.049	0.065
A3	0.500	0.700	0.020	0.028
b	0.300	0.510	0.012	0.020
c	0.150	0.260	0.006	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	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	0.020
L	0.400	1.000	0.016	0.039
L1	1.050(BSC)		0.041(BSC)	
θ	0°	8°	0°	8°

SOP8 RECOMMENDED LAND PATTERN



unit : mm