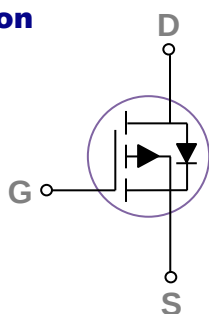


General Description

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.

SOT23-3S Pin Configuration



BVDSS	RDS(on)	ID
-150V	750mΩ	-1A

Features

- -150V, -1A, $R_{DS(ON)} = 750m\Omega @ V_{GS} = -10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-150	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	-1	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	-0.63	A
I_{DM}	Drain Current – Pulsed ¹	-4	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	1.56	W
	Power Dissipation – Derate above 25°C	0.012	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-50 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-50 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	80	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=-250\mu A$	-150	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-150V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-120V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	-10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V$, $I_D=-1A$	---	650	800	$m\Omega$
		$V_{GS}=-6V$, $I_D=-0.5A$	---	700	950	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=-250\mu A$	-2	-3	-4	V
g_{fs}	Forward Transconductance	$V_{DS}=-10V$, $I_D=-1A$	---	2	---	S

Dynamic and switching Characteristics

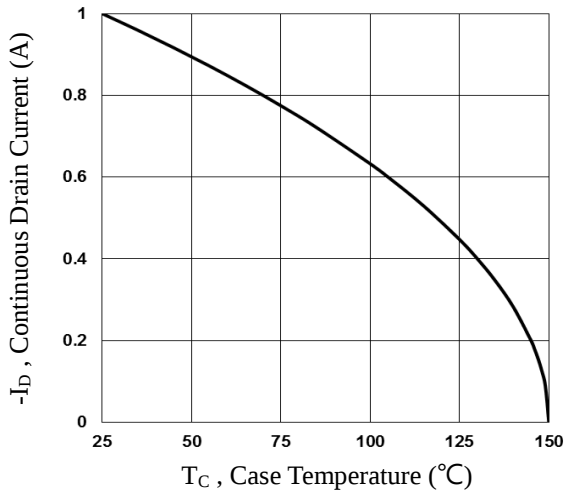
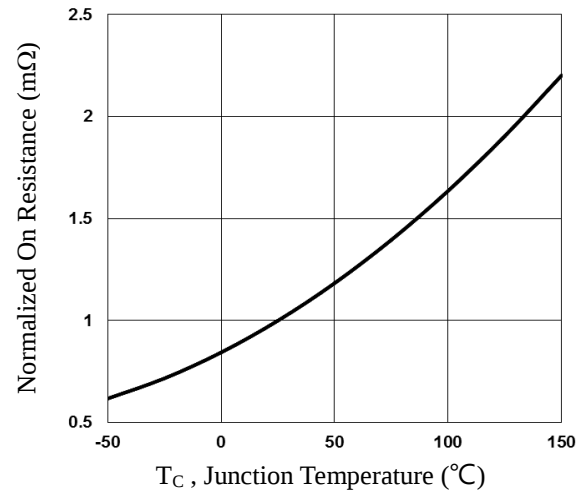
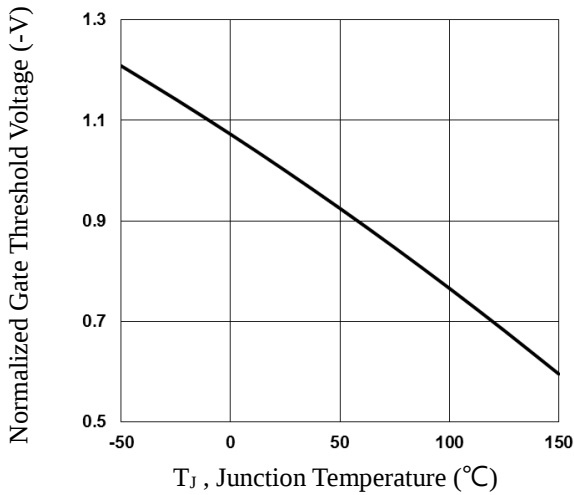
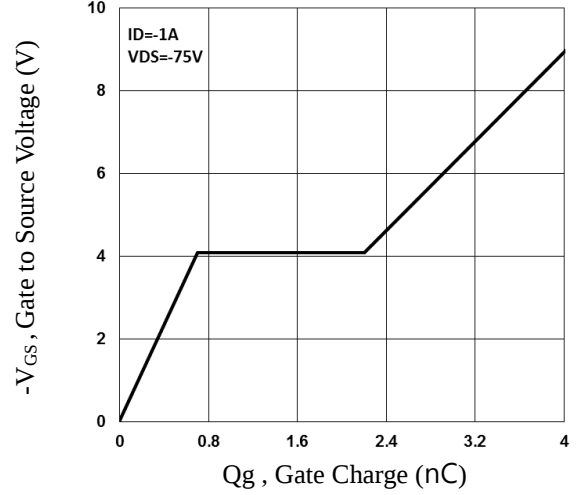
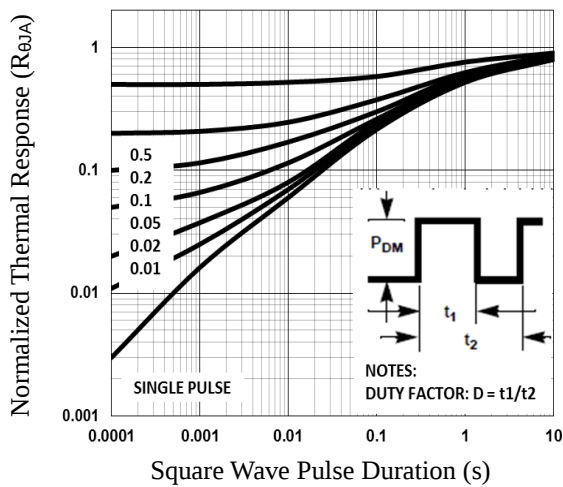
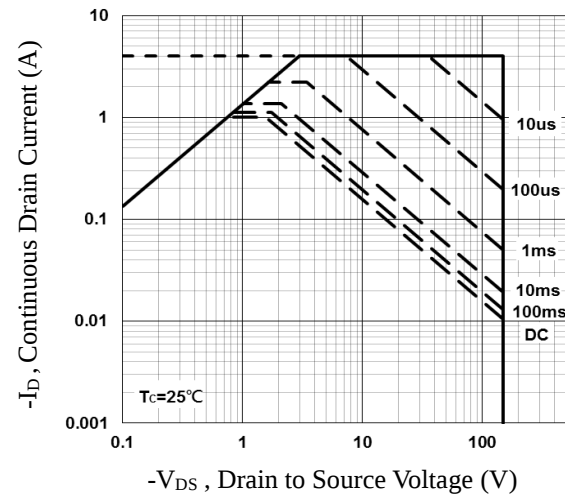
Q_g	Total Gate Charge ^{2, 3}	$V_{DS}=-75V$, $V_{GS}=10V$, $I_D=-1A$	---	4.4	8	nC
Q_{gs}	Gate-Source Charge ^{2, 3}		---	0.7	2	
Q_{gd}	Gate-Drain Charge ^{2, 3}		---	1.5	3	
$T_{d(on)}$	Turn-On Delay Time ^{2, 3}	$V_{DD}=-75V$, $V_{GS}=-10V$, $R_G=10\Omega$ $I_D=-1A$	---	12.5	20	ns
T_r	Rise Time ^{2, 3}		---	8.9	18	
$T_{d(off)}$	Turn-Off Delay Time ^{2, 3}		---	17.3	36	
T_f	Fall Time ^{2, 3}		---	11.5	24	
C_{iss}	Input Capacitance	$V_{DS}=-25V$, $V_{GS}=0V$, $F=1\text{MHz}$	---	430	700	pF
C_{oss}	Output Capacitance		---	38	60	
C_{rss}	Reverse Transfer Capacitance		---	28	56	
R_g	Gate resistance	$V_{GS}=0V$, $V_{DS}=0V$, $F=1\text{MHz}$	---	30	60	Ω

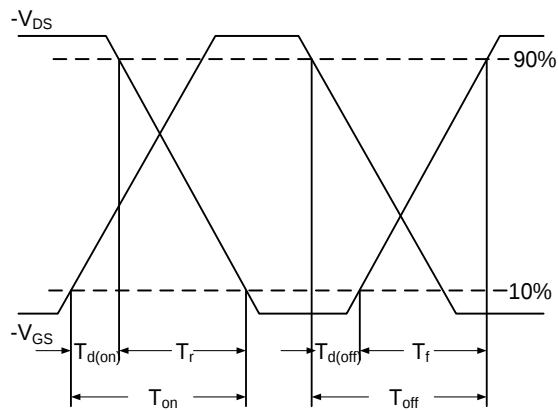
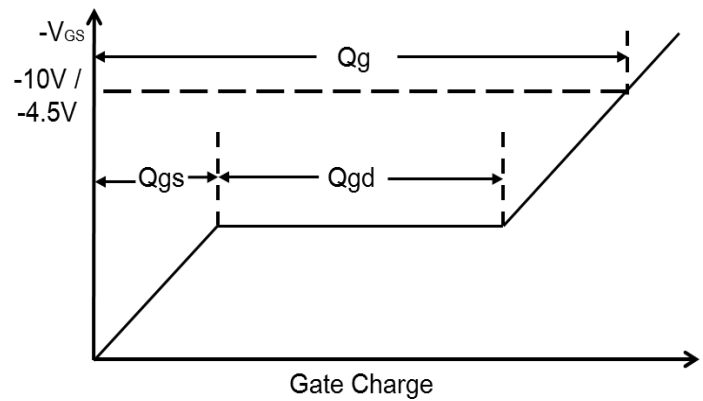
Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	-1	A
I_{SM}	Pulsed Source Current		---	---	-2	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=-1A$, $T_J=25^\circ\text{C}$	---	---	-1	V

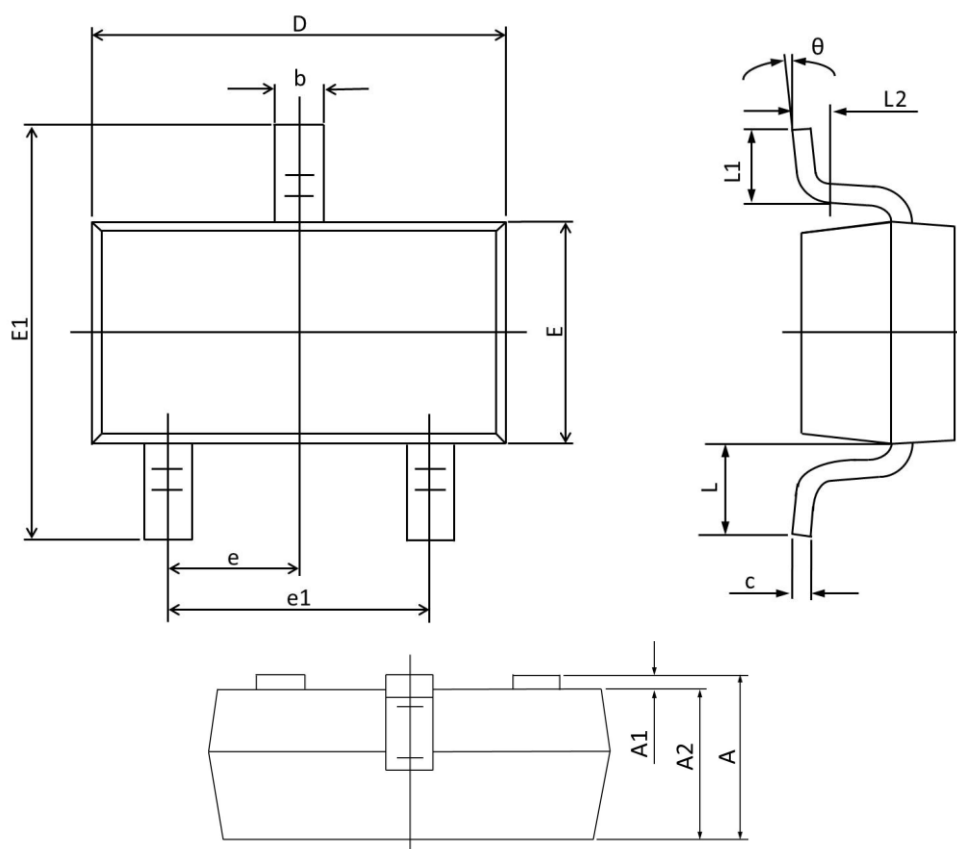
Note :

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.


Fig.1 Continuous Drain Current vs. T_C

Fig.2 Continuous Drain Current vs. T_C

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

SOT23-3S PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.150	0.900	0.045	0.035
A1	0.100	0.000	0.004	0.000
A2	1.050	0.900	0.041	0.035
b	0.500	0.300	0.020	0.012
c	0.150	0.080	0.006	0.003
D	3.000	2.800	0.118	0.110
E	1.400	1.200	0.055	0.047
E1	2.550	2.250	0.100	0.089
e	0.95 TYP.		0.037 TYP.	
e1	2.000	1.800	0.079	0.071
L	0.55 REF.		0.022 REF.	
L1	0.500	0.300	0.020	0.012
L2	0.25 TYP.		0.01 TYP.	
θ	8°	0°	8°	0°