20V 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}	$R_{DS(ON)}$Max.	I_D
-20V	38mΩ	-6A

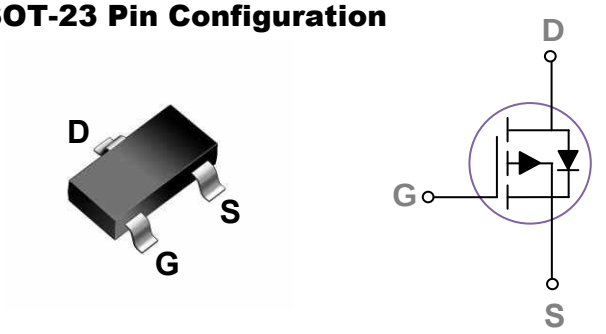
Features

- *-20V,-6A, $R_{DS(ON)}$ =38mΩ@V_{GS} =-4.5V*
- *Fast switching*
- *Green Device Available*
- *Suit for -4.5V Gate Drive Applications*

Applications

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

SOT-23 Pin Configuration



Absolute Maximum Ratings **Tc=25℃ unless otherwise noted**

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current – Continuous (T_C=25℃)	-6	A
	Drain Current – Continuous (T_C=100℃)	-4	A
I_{DM}	Drain Current – Pulsed[1]	-24	A
P_D	Power Dissipation (T_C=25℃)	1.2	W
T_{STG}	Storage Temperature Range	-50 to 150	℃
T_J	Operating Junction Temperature Range	-50 to 150	℃

Note 1: Exceed these limits to damage to the device.
Note 2: Exposure to absolute maximum rating conditions may affect device reliability.

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=-250uA	-20			V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=-1mA		-0.03		V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-20V , V_{GS}=0V , T_J=25℃			-1	uA
		V_{DS}=-20V , V_{GS}=0V , T_J=125℃			-10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V			±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V , I_D=-4.2A		28	38	mΩ
		V_{GS}=-2.5V , I_D=-3A		36	48	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-0.6	-0.75	-1.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-4		mV/℃
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-4A		10.5		S

Dynamic and switching Characteristics

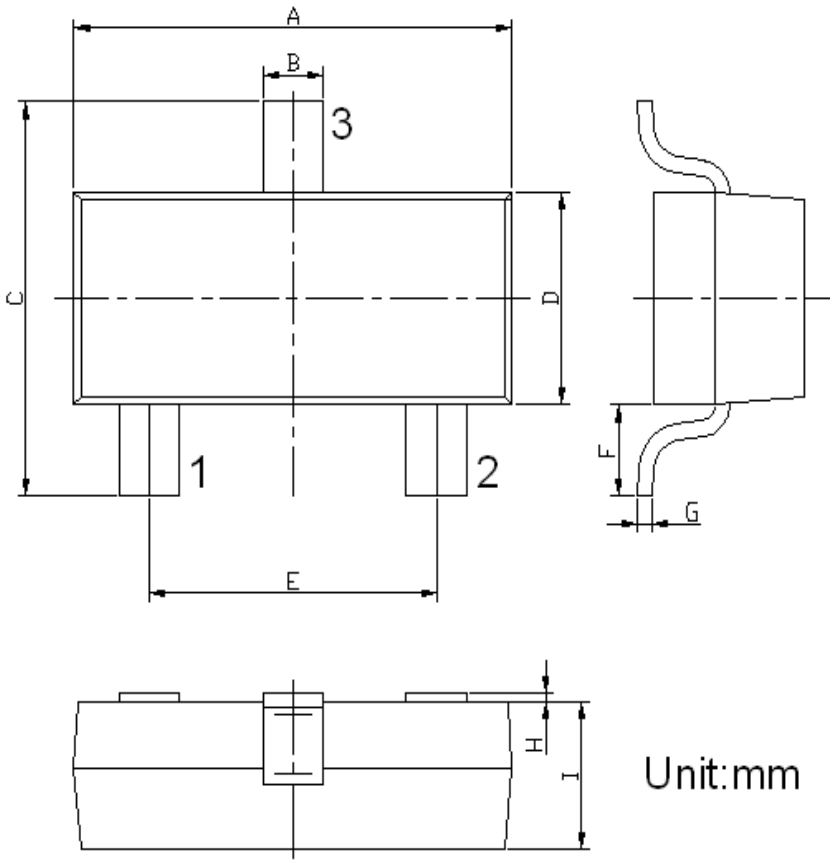
Q_g	Total Gate Charge[2,3]	V_{DS}=-10V , V_{GS}=-4.5V , I_D=-4A		7.2		nC
Q_{gs}	Gate-Source Charge[2,3]			1.2		
Q_{gd}	Gate-Drain Charge[2,3]			1.6		
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=-10V , V_{GS}=-4.5V , R_G=3Ω I_D=-1A		15		ns
T_r	Rise Time[2,3]			63		
$T_{d(off)}$	Turn-Off Delay Time[2,3]			21		
T_f	Fall Time[2,3]			12		
C_{iss}	Input Capacitance	V_{DS}=-10V , V_{GS}=0V , F=1MHz		830		pF
C_{oss}	Output Capacitance			132		
C_{rss}	Reverse Transfer Capacitance			85		

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		-2		A
I_{SM}	Pulsed Source Current			-10		A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-1A , T_J=25℃		-1		V

Note :
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.

SOT-23 PACKAGE INFORMATION



Unit:mm

Symbol	Dimensions In Millimeters	
	Min	Max
A	2.800	3.000
B	0.300	0.500
C	2.250	2.550
D	1.200	1.400
E	1.800	2.000
F	0.550REF	
G	0.080	0.150
H	0.000	0.100
I	0.900	1.050

V 1.0