SOT-23 Plastic-Encapsulate MOSFETS

P-Channel 30-V(D-S) MOSFET
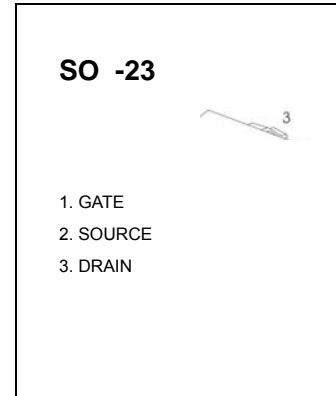
FEATURE

TrenchFET Power MOSFET

APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

SO -23

1. GATE
2. SOURCE
3. DRAIN

MARKING: 2303

Maximum ratings (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V$_{DS}$	-30	V
Gate-Source Voltage	V$_{GS}$	±20	
Continuous Drain Current	I$_D$	-1.9	A
Continuous Source-Drain Diode Current	I$_S$	-0.83	
Maximum Power Dissipation	P$_D$	0.35	W
Thermal Resistance from Junction to Ambient(t≤5s)	R$_{θJA}$	357	℃/W
Junction Temperature	T$_J$	150	℃
Storage Temperature	T$_{STG}$	-50 ~+150	

Electrical characteristics (T$_a$=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-Source Breakdown Voltage	V$_{(BR)DSS}$	V$_{GS}$ = 0V, I$_D$ =-250μA	-30			V
Gate-Source Threshold Voltage	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ =-250μA	-1		-3	
Gate-Source Leakage	I$_{GSS}$	V$_{DS}$ =0V, V$_{GS}$ =±20V			±100	nA
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$ =-30V, V$_{GS}$ =0V			-1	μA
Drain-Source On-State Resistance[a]	R$_{DS(on)}$	V$_{GS}$ =-10V, I$_D$ =-1.9A		0.158	0.190	Ω
		V$_{GS}$ =-4.5V, I$_D$ =-1.4A		0.275	0.330	
Forward Transconductance[a]	g$_{fs}$	V$_{DS}$ =-5V, I$_D$ =-1.9A	1			S
Dynamic[b]						
Input Capacitance	C$_{iss}$	V$_{DS}$ =-15V,V$_{GS}$ =0V,f =1MHz		155		pF
Output Capacitance	C$_{oss}$			35		
Reverse Transfer Capacitance	C$_{rss}$			25		
Total Gate Charge	Q$_g$	V$_{DS}$ =-15V,V$_{GS}$ =-10V,I$_D$ =-1.9A		4	8	nC
		V$_{DS}$ =-15V,V$_{GS}$ =-4.5V,I$_D$=-1.9A		2	4	
Gate-Source Charge	Q$_{gs}$			0.6		
Gate-Drain Charge	Q$_{gd}$			1		
Gate Resistance	R$_g$	f =1MHz	1.7	8.5	17	Ω
Turn-On Delay Time	t$_{d(on)}$	V$_{DD}$=-15V, R$_L$=10Ω, I$_D$ =-1.5A, V$_{GEN}$=-10V,Rg=1Ω		4	8	ns
Rise Time	t$_r$			11	18	
Turn-Off Delay Time	t$_{d(off)}$			11	18	
Fall Time	t$_f$			8	16	
Turn-On Delay Time	t$_{d(on)}$	V$_{DD}$=-15V, R$_L$=10Ω, I$_D$ =-1.5A, V$_{GEN}$=-4.5V,Rg=1Ω		36	44	
Rise Time	t$_r$			37	45	
Turn-Off Delay Time	t$_{d(off)}$			12	18	
Fall Time	t$_f$			9	14	
Drain-source Body diode characteristics						
Continuous Source-Drain Diode Current	I$_S$	T$_C$=25℃			-1.75	A
Pulse Diode Forward Current[a]	I$_{SM}$				-10	
Body Diode Voltage	V$_{SD}$	I$_S$=-1.5A		-0.8	-1.2	V

Notes :

a. Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%.

b. Guaranteed by design, not subject to production testing.

Typical Characteristics

BC2303

Output Characteristics

T_a=25℃
Pulsed

-10V -8.0V -6.0V -4.5V -4.0V -3.5V V_{GS}=-3.0V

DRAIN CURRENT I_D (A)

DRAIN TO SOURCE VOLTAGE V_{DS} (V)

Transfer Characteristics

T_a=25℃
Pulsed

DRAIN CURRENT I_D (A)

GATE TO SOURCE VOLTAGE V_{GS} (V)

$R_{DS(ON)}$ — I_D

T_a=25℃
Pulsed

V_{GS}=-4.5V

V_{GS}=-10V

ON-RESISTANCE $R_{DS(ON)}$ (mΩ)

DRAIN CURRENT I_D (A)

$R_{DS(ON)}$ — V_{GS}

T_a=25℃
Pulsed

I_D=-1.9A

ON-RESISTANCE $R_{DS(ON)}$ (mΩ)

GATE TO SOURCE VOLTAGE V_{GS} (V)

I_S — V_{SD}

T_a=25℃
Pulsed

SOURCE CURRENT I_S (A)

SOURCE TO DRAIN VOLTAGE V_{SD} (V)