

P-Channel Enhancement Mode Field Effect Transistor

Product Summary

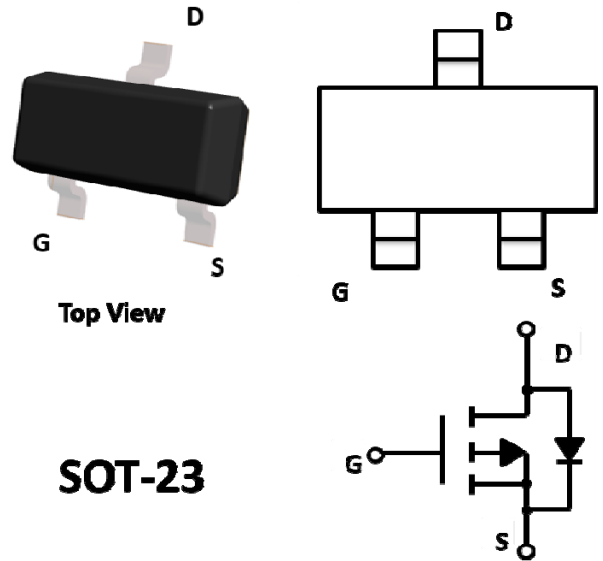
- V_{DS} -20V
- I_D -3.4A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <64 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-2.5V$) <80 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-1.8V$) <95 mohm

General Description

- Trench Power LV MOSFET technology
- High Power and Current handling capability
- Low Gate Charge
- Marking : Δ 1SHB

Applications

- PWM applications
- Power management
- Load switch



SOT-23

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

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	± 10	V
Drain Current	$T_A=25^\circ\text{C}$	I_D	-3.4	A
	$T_A=70^\circ\text{C}$		-2.7	
Pulsed Drain Current ^A		I_{DM}	-14	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$		P_D	1	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	125	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V,V _{GS} =0V,T _C =25℃			-1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±10V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = -4.5V, I _D =-3.4A		49	64	mΩ
		V _{GS} = -2.5V, I _D =-3A		59	80	
		V _{GS} = -1.8V, I _D =-2.5A		79	95	
Diode Forward Voltage	V _{SD}	I _S =-3.4A,V _{GS} =0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I _S				-3.4	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V,f=1MHz		550		pF
Output Capacitance	C _{oss}			89		
Reverse Transfer Capacitance	C _{rss}			65		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-4.5V,V _{DS} =-10V,I _D =-3.4A		4.3		nC
Gate Source Charge	Q _{gs}			0.8		
Gate Drain Charge	Q _{gd}			1.1		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V,V _{DD} =-10V, I _D =-1A, R _{GEN} =2.5Ω		12		ns
Turn-on Rise Time	t _r			54		
Turn-off Delay Time	t _{D(off)}			15		
Turn-off Fall Time	t _f			9		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Performance Characteristics

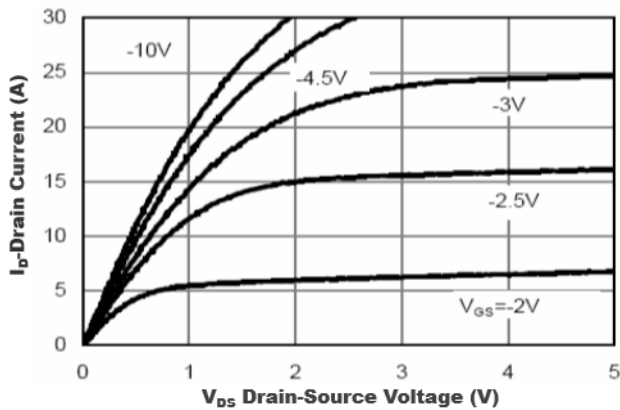


Figure1. Output Characteristics

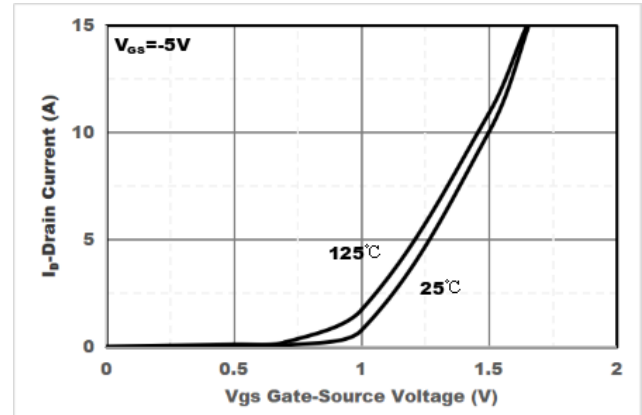


Figure2. Transfer Characteristics

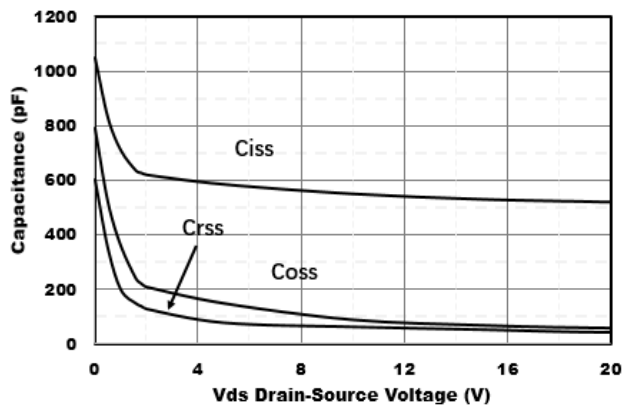


Figure3. Capacitance Characteristics

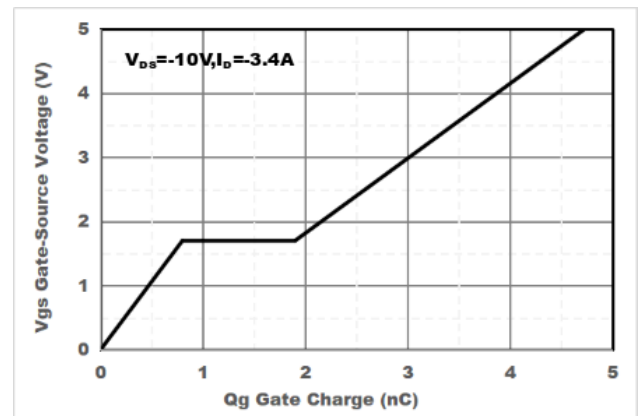


Figure4. Gate Charge

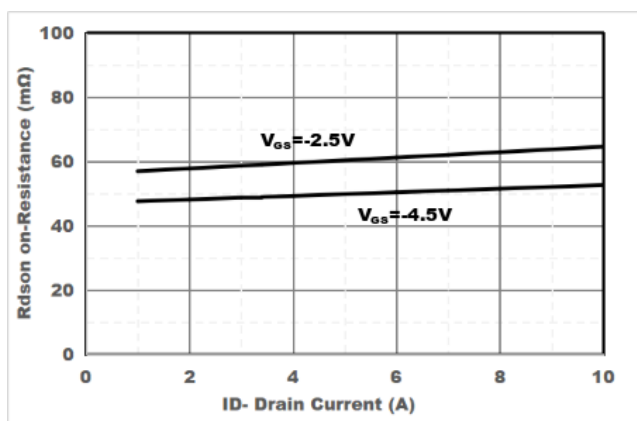


Figure5. Drain-Source on Resistance

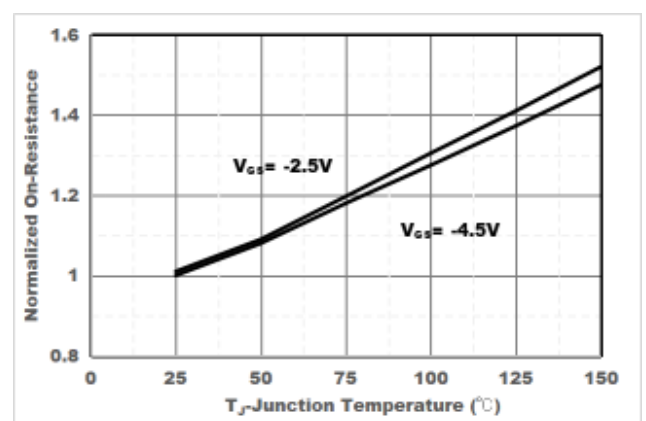


Figure6. Drain-Source on Resistance

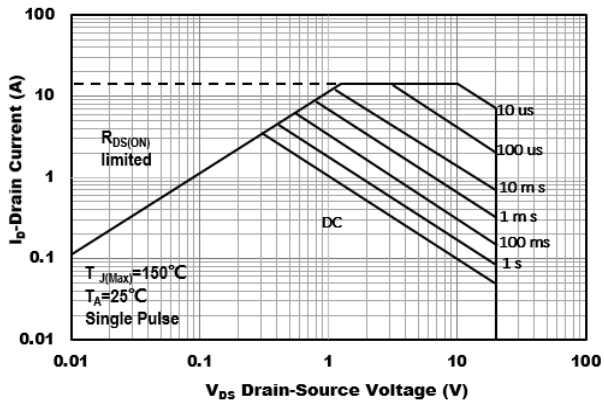


Figure7. Safe Operation Area

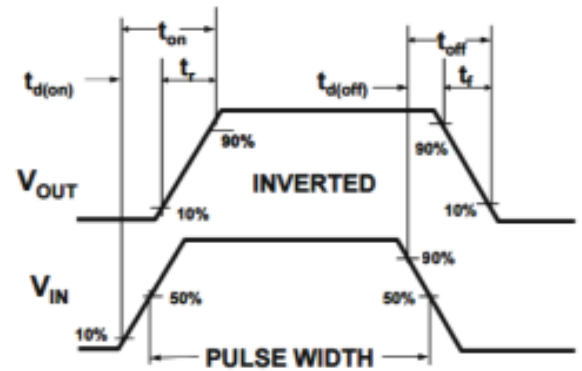


Figure8. Switching wave

Package Outline Dimensions (UNIT: mm)

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