P-Channel Enhancement MOSFET

Features

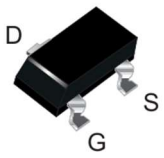
- Low Thermal Resistance
- Low Gate Charge
- Halogen-Free & Lead-Free

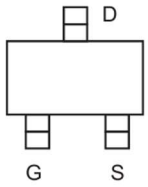
Product Summary			
V_{DS}	$R_{DS(on)}$ (mΩ) Typ	I_D (A)	Qg (Typ)
-20V	33@ -4. 5V	-5. 6	7. 2nc
	39 @ -2. 5V	-4	

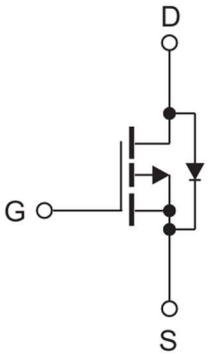
Application

- Load Switch for Portable Devices
- Voltage controlled small signal switch

SOT-23







P-channel MOSFET

Absolute Maximum Ratings (at T_A = 25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_A = 25℃	I_D	-5.4	A
	T_A = 70℃	I_D	-4.4	A
Peak Drain Current, Pulsed [1]		I_{DM}	-22	A
Power Dissipation	T_A = 25°C	P_D	1.2	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~150	°C

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient [2]	$R_{\theta JA}$	104	°C/W

Note:

1) Pulse width ≤300us, duty cycle ≤2%, limited by Tj max.

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

Characteristics at T_J = 25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at V_{GS}=0V, I_D=-250μA	BV_{DSS}	-20			V
Drain-Source Leakage Current at V_{DS}=-20V, V_{GS}=0V	I_{DSS}			-1	μA
Gate Leakage Current at V_{GS}=±10V, V_{DS}=0V	I_{GSS}			±100	nA
Gate-Source Threshold Voltage at V_{DS}=V_{GS}, I_D=-250μA	$V_{GS(th)}$	-0.4	-0.62	-1	V
Drain-Source On-State Resistance at V_{GS} = -4.5V, I_D = -5.4A at V_{GS} = -2.5V, I_D = -4A at V_{GS} = -1.8V, I_D = -3A	$R_{DS(on)}$		33 39 49	42 55 75	mΩ
DYNAMIC PARAMETERS					
Input Capacitance at V_{GS}=0V, V_{DS}=-10V, f=1MHz	C_{iss}		830		pF
Output Capacitance at V_{GS}=0V, V_{DS}=-10V, f=1MHz	C_{oss}		132		
Reverse Transfer Capacitance at V_{GS}=0V, V_{DS}=-10V, f=1MHz	C_{rss}		85		
Gate charge total at V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A	Q_g		7.2		nC
Gate to Source Charge at V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A	Q_{gs}		1.2		
Gate to Drain Charge at V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A	Q_{gd}		1.6		
Turn-On Delay Time at V_{DD}=-10V, V_{GS}=-4.5V, R_{GEN}=3Ω, R_L=2.5Ω	$t_{d(on)}$		15		nS
Turn-On Rise Time at V_{DD}=-10V, V_{GS}=-4.5V, R_{GEN}=3Ω, R_L=2.5Ω	t_r		63		
Turn-Off Delay Time at V_{DD}=-10V, V_{GS}=-4.5V, R_{GEN}=3Ω, R_L=2.5Ω	$t_{d(off)}$		21		
Turn-Off Fall Time at V_{DD}=-10V, V_{GS}=-4.5V, R_{GEN}=3Ω, R_L=2.5Ω	t_f		12		
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at I_S=-1A, V_{GS}=0V	V_{SD}		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S			-5.6	A

Electrical Characteristics Curves

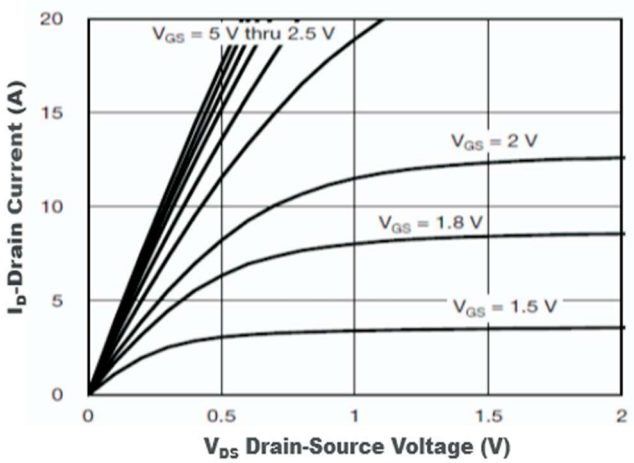


Figure1. Output Characteristics

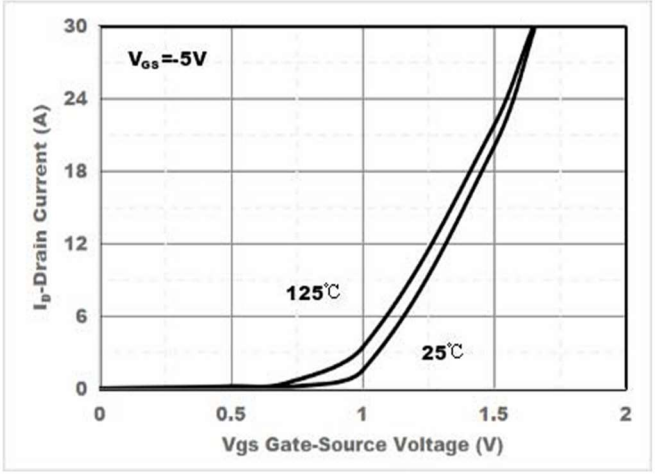


Figure2. Transfer Characteristics

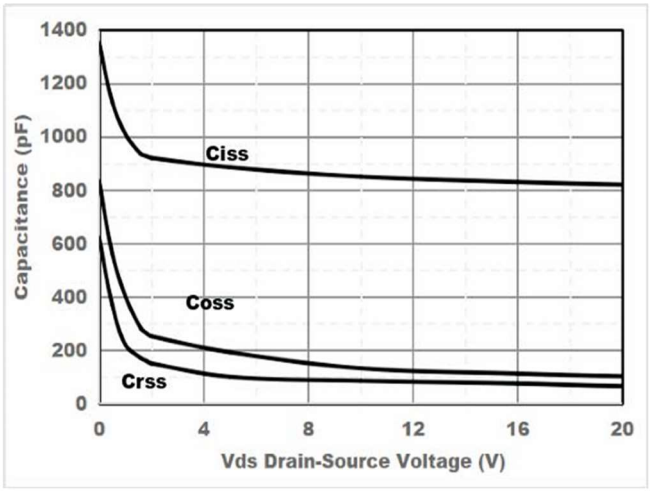


Figure3. Capacitance Characteristics

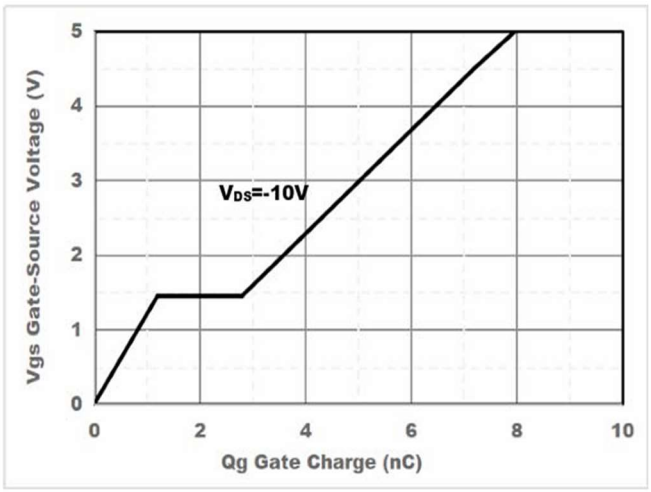


Figure4. Gate Charge

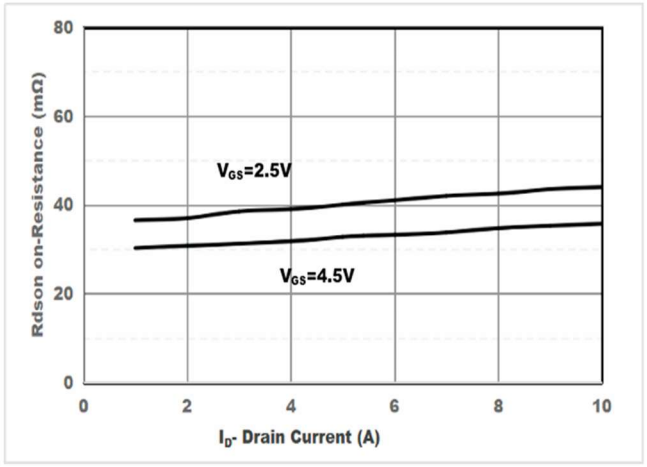


Figure5. Drain-Source on Resistance

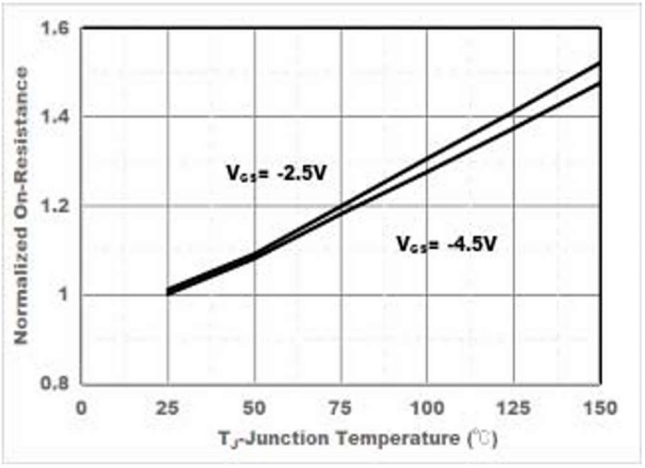


Figure6. Drain-Source on Resistance

Electrical Characteristics Curves

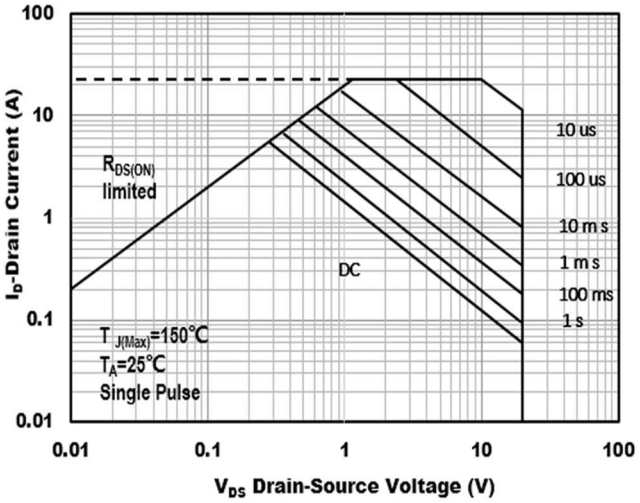


Figure7. Safe Operation Area

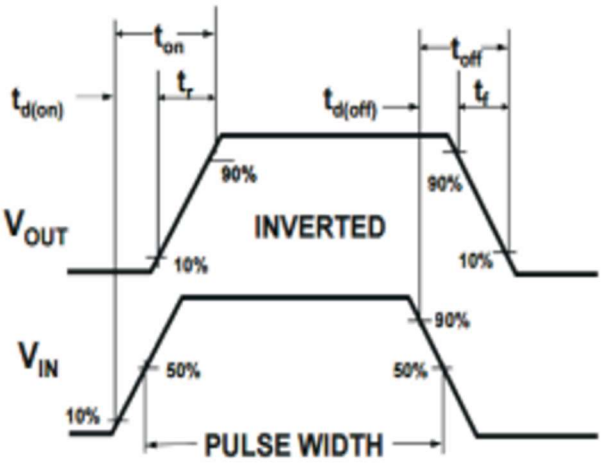
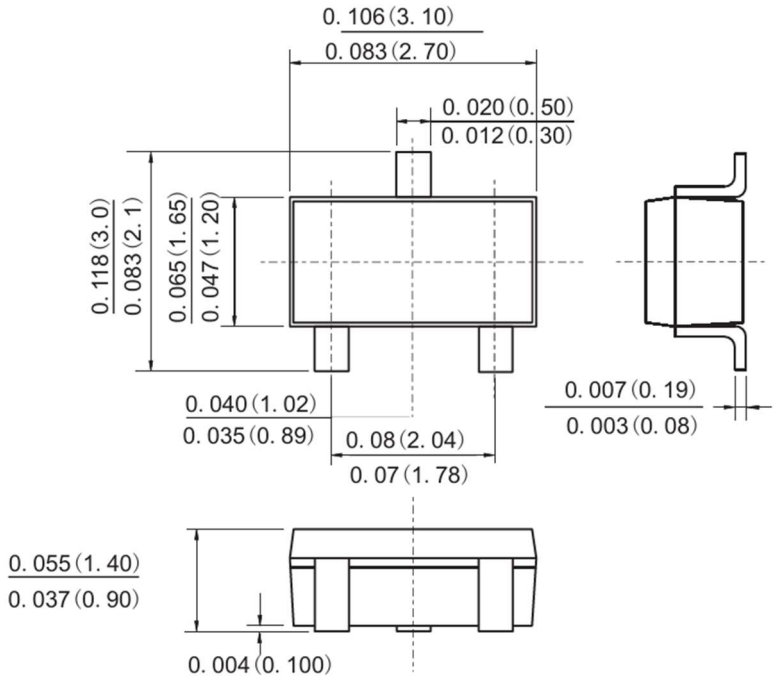


Figure8. Switching wave

Order Information

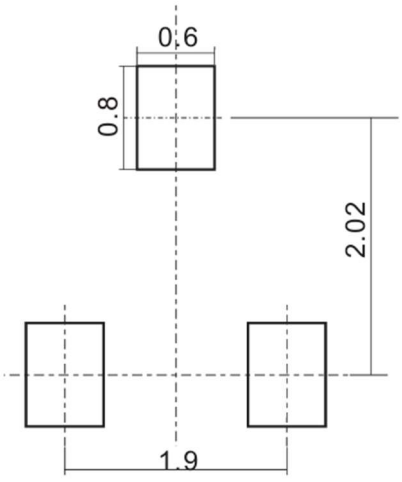
Part Number	Package	Marking	Quantity
Sh2305B	SOT-23	S5B or A5	3000

Package Outline Dimensions (Units: mm) SOT-23



Dimensions in inches and (millimetrers)

Suggested Pad Layout



Dimensions in millimetrers