

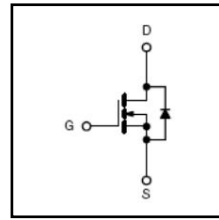
20V N-Channel Enhancement Mode MOSFET

1 Description

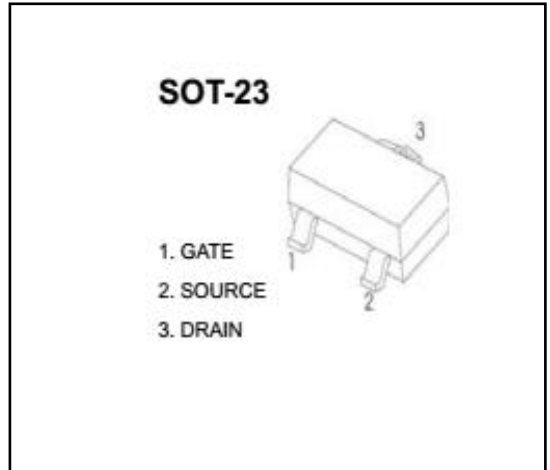
technology with a low resistance package to provide extremely low RDS(ON). This device is suitable for use as a load switch or in PWM applications.

2 Features

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- High Power and Current handling capability
- Ideal for Li ion battery pack applications



BVDSS=20V
RDS(ON)=31mΩ
ID=4.9A



3 Electrical Characteristics

3.1 Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V_{DS}	20	V	
Gate-Source Voltage	V_{GS}	± 8		
Continuous Drain Current	I_D	4.9	A	
Pulsed Drain Current	I_{DM}	15		
Maximum Power Dissipation	P_D	TA = 25°C	0.75	W
		TA = 75°C	0.48	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	°C	

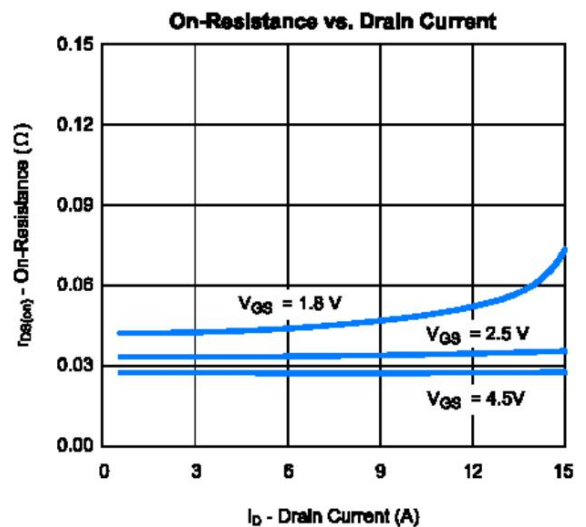
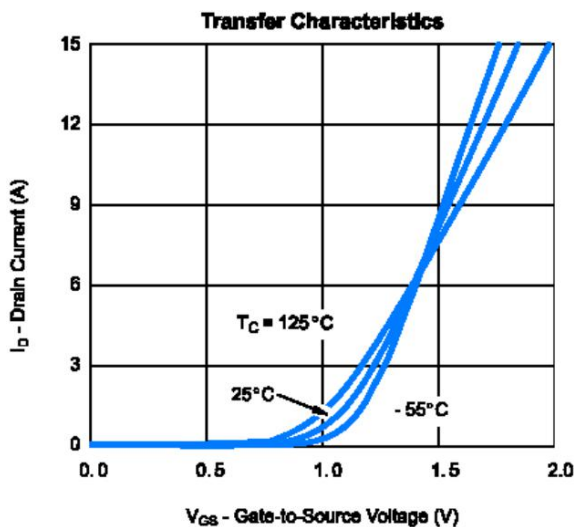
3.2 Thermal Characteristics

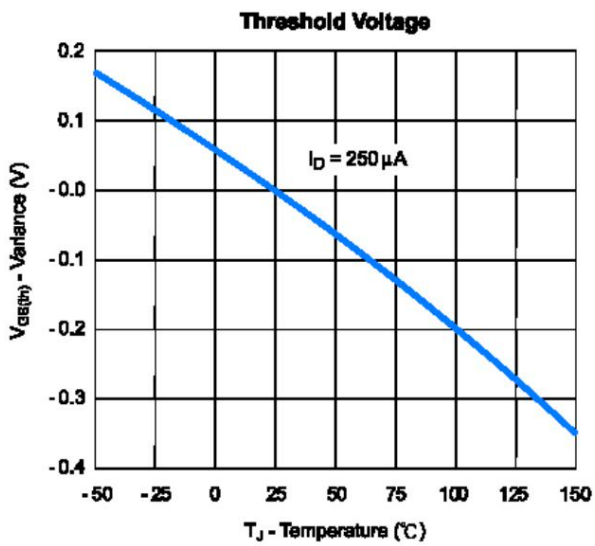
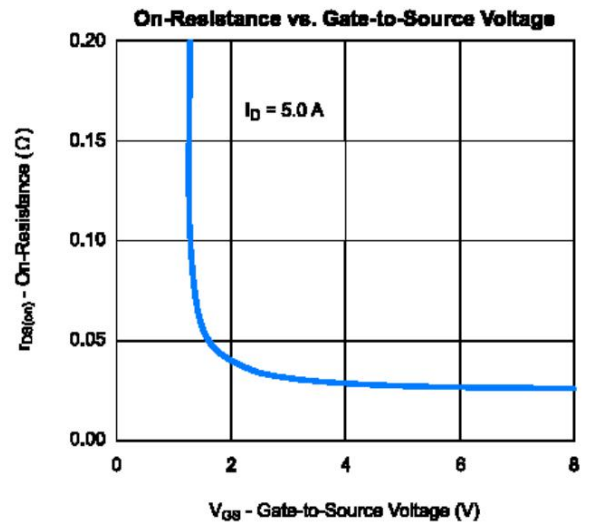
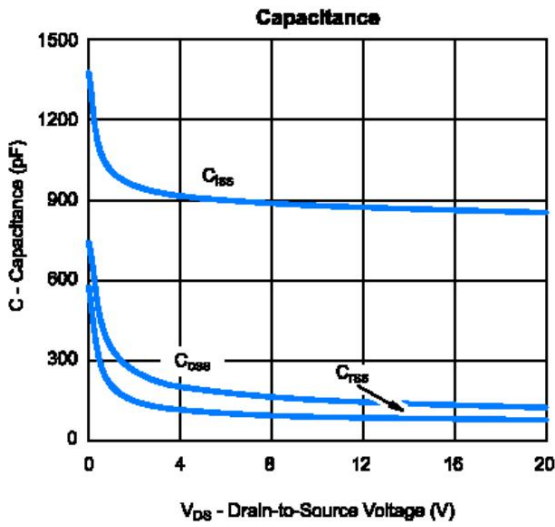
Junction-to-Ambient Thermal Resistance (PCB mounted)	$R_{\theta JA}$	140	°C/W
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3.3 Electrical Characteristics (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 5.0A$		21.0	31.0	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 2.5V, I_D = 4.5A$		24.0	37.0	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 1.8V, I_D = 4.0A$		50.0	85.0	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.4		1	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
Gate Body Leakage	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$			± 100	nA
Forward Transconductance	g_{fs}	$V_{DS} = 15V, I_D = 5.0A$		40	—	S
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = 10V, I_D = 5.0A$ $V_{GS} = 4.5V$		11.2	14	nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			2.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10V, R_L = 10\Omega$ $I_D = 1A, V_{GEN} = 4.5V$ $R_G = 6\Omega$		15	25	ns
Turn-On Rise Time	t_r			40	60	
Turn-Off Delay Time	$t_{d(off)}$			48	70	
Turn-Off Fall Time	t_f			31	45	
Input Capacitance	C_{iss}	$V_{DS} = 8V, V_{GS} = 0V$ $f = 1.0\text{ MHz}$		500		pF
Output Capacitance	C_{oss}			300		
Reverse Transfer Capacitance	C_{rss}			140		
Source-Drain Diode						
Max. Diode Forward Current	I_S				1.7	A
Diode Forward Voltage	V_{SD}	$I_S = 1.8A, V_{GS} = 0V$			1.2	V

Note: Pulse test: pulse width ≤ 300μs, duty cycle ≤ 2%

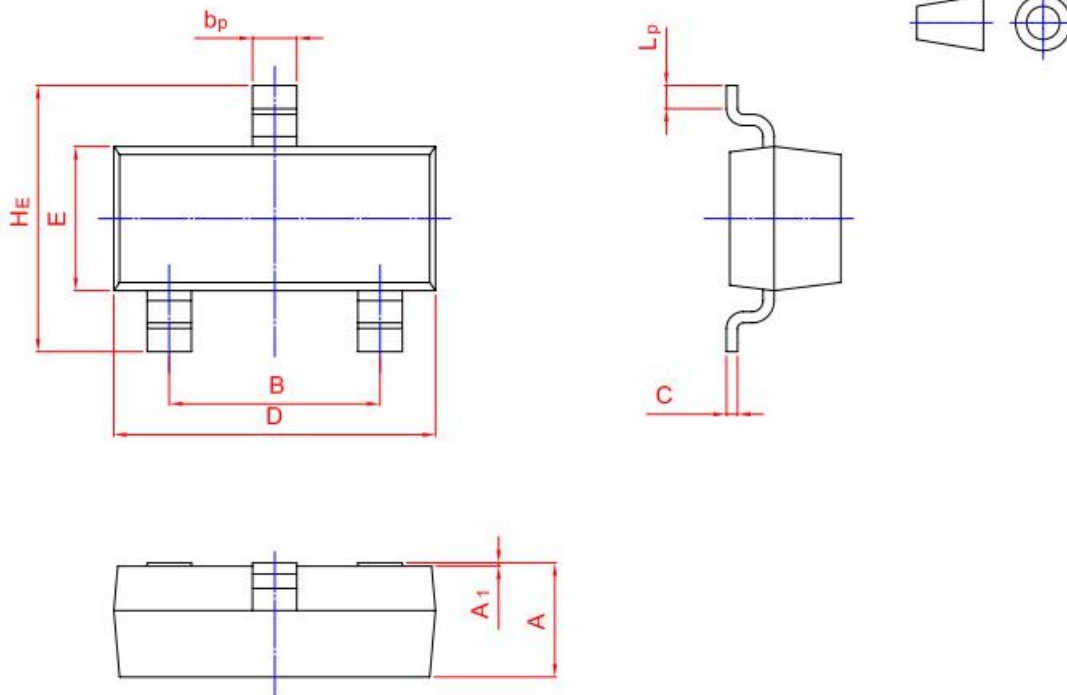
4 Typical characteristics diagrams




5 Dimensions

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

6 Attentions

- ROUM Semiconductor Technology CO.,LTD. reserves the right to change the specification without prior notice! The customer should obtain the latest version of the information before making the order and verify that the information is complete and up to date.
- It is the responsibility of the purchaser for any failure or failure of any semiconductor product under certain conditions. It is the responsibility of the purchaser to comply with safety standards and to take safety measures in the system design and machine manufacturing of Roma products in order to avoid potential risk of failure. Injury or property damage.
- Product promotion is endless, our company will be dedicated to provide customers with better products.

7 Appendix

Revision history:

Date	REV.	Description	Page
2017.03.31	1.0	Original	