GOOD-ARK SEMICONDUCTOR

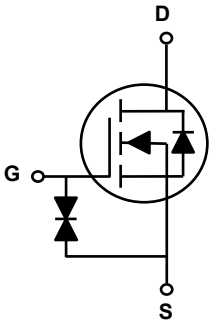
S3134K

20V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(on)}$MAX	380mΩ@4.5V
	450mΩ@2.5V
	800mΩ@1.8V
I_D	0.75A

SOT-723



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for battery operated systems, load switching, power converters and other general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

Description

The S3134K utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Typical Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1]	I_D	0.75	A
Pulsed Drain Current (t_p=10μs)	I_{DM}	1.8	A
Power Dissipation[1]	P_D	150	mW
Thermal Resistance from Junction to Ambient[1]	$R_{\theta JA}$	833	°C /W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T_L	260	°C

Electrical Characteristics (T_A=25°C unless otherwise specified)

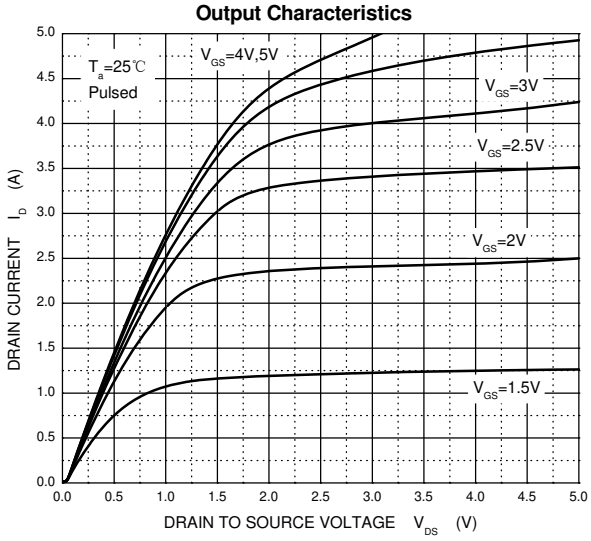
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20	---	---	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V	---	---	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} =±10V, V_{DS} = 0V	---	±4	±8	μA
Gate Threshold Voltage[2]	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.35	0.54	1.1	V
Drain-Source On-Resistance[2]	$R_{DS(on)}$	V_{GS} =4.5V, I_D =0.65A	---	270	380	mΩ
		V_{GS} =2.5V, I_D =0.55A	---	320	450	mΩ
		V_{GS} =1.8V, I_D =0.45A	---	390	800	mΩ
Forward Transconductance[2]	g_{FS}	V_{DS} =10V, I_D =0.8A	---	1.6	---	S
Diode Forward Voltage	V_{SD}	I_S=0.15A, V_{GS} = 0V	---	---	1.2	V
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} =16V,V_{GS} =0V,f =1MHz	---	79	120	pF
Output Capacitance	C_{oss}		---	13	20	pF
Reverse Transfer Capacitance	C_{rss}		---	9	15	pF
Switching Characteristics						
Turn-On Delay Time[3]	$t_{d(on)}$	V_{GS}=4.5V,V_{DS}=10V, I_D =500mA,R_{GEN}=10Ω	---	6.7	---	ns
Turn-On Rise Time[3]	t_r		---	4.8	---	ns
Turn-Off Delay Time[3]	$t_{d(off)}$		---	17.3	---	ns
Turn-Off Fall Time[3]	t_f		---	7.4	---	ns

Notes :

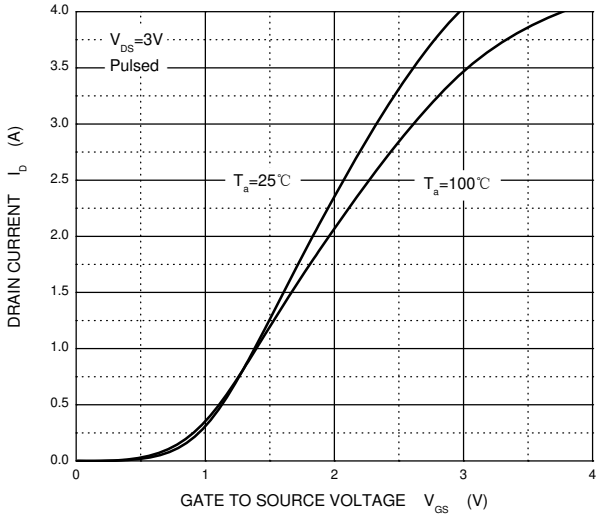
1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300μs, Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.

Typical Electrical and Thermal Characteristic Curves

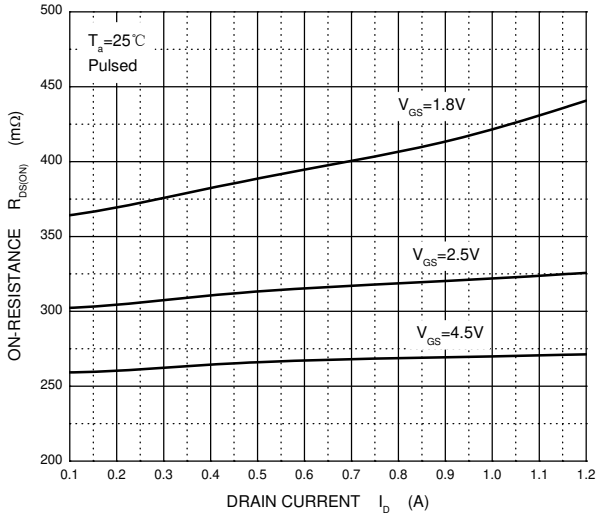
Output Characteristics



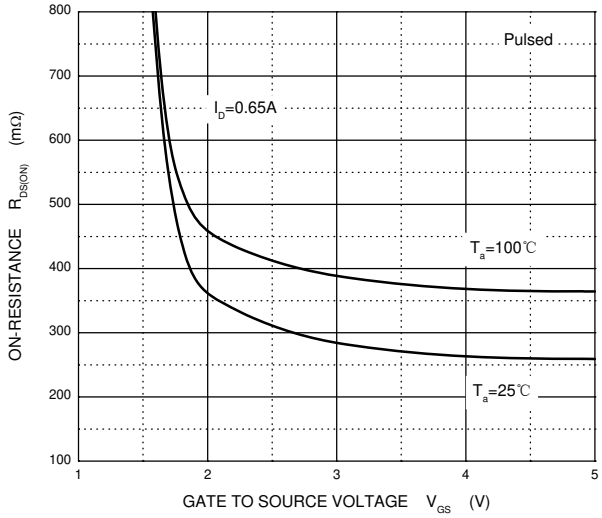
Transfer Characteristics



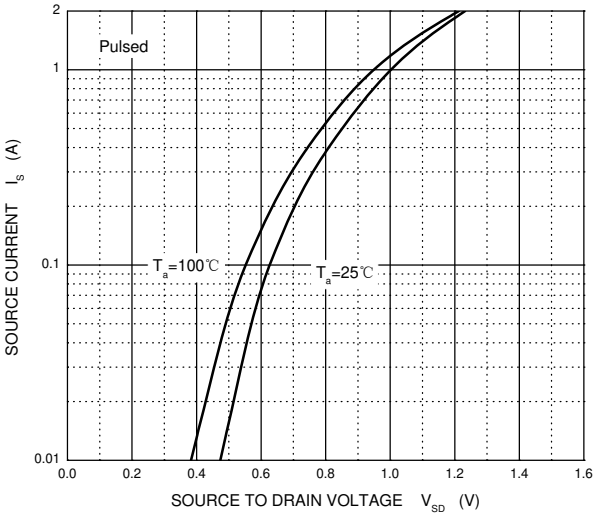
$R_{DS(ON)}$ —— I_D



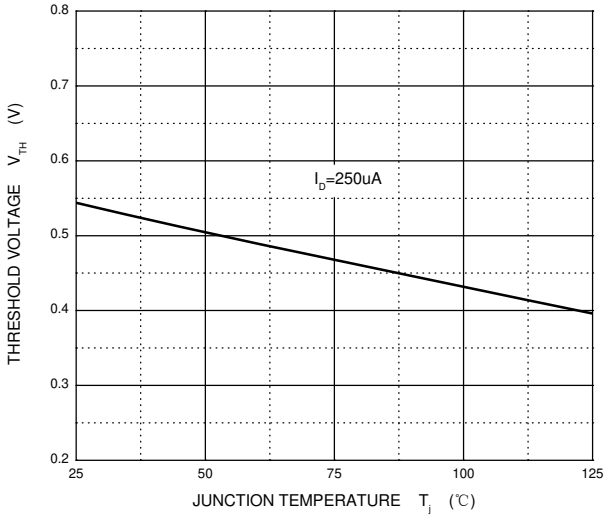
$R_{DS(ON)}$ —— V_{GS}



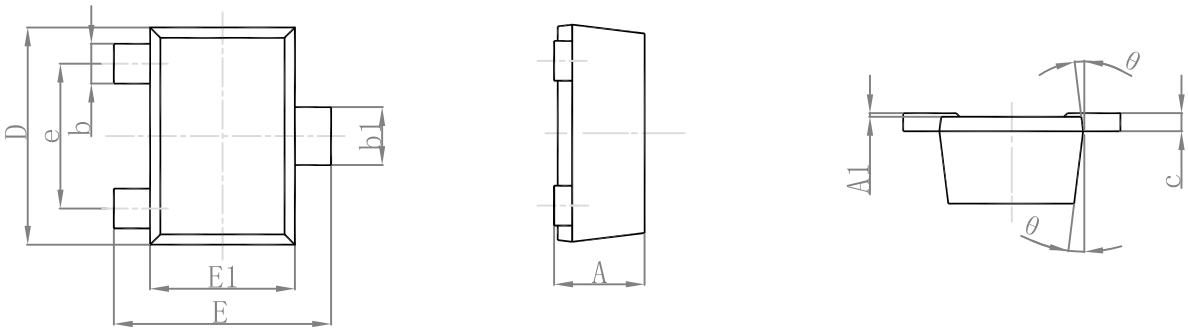
I_S —— V_{SD}



Threshold Voltage

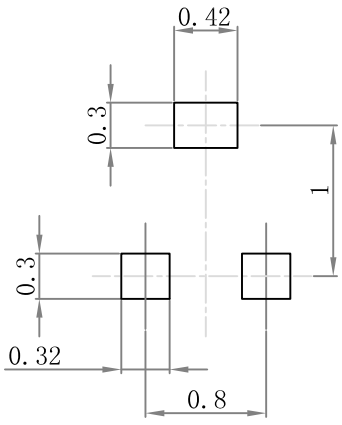


Package Outline Dimensions SOT-723



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.320	0.500	0.012	0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c	0.080	0.150	0.003	0.006
D	1.150	1.250	0.045	0.049
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.