SHANGHAI SINO-IC
MICROELECTRONICS CO., LTD.

July 2009

SE2102M
Small Signal MOSFET
20 V, 600 mA, Single N-Channel MOSFET

General Description

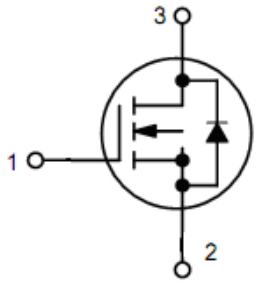
The MOSFETs from SINO-IC provide the best combination of fast switching, low on-resistance and cost-effectiveness.

Features

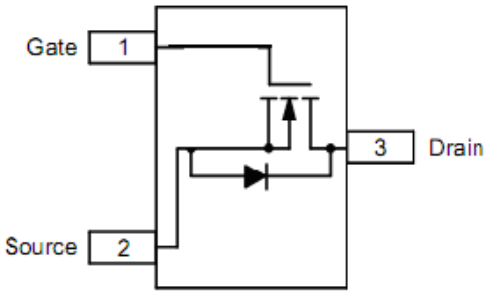
- $V_{DS\ (V)}$ = 20V
- I_D = 600mA
- $R_{DS(ON)}$ < 350mΩ (V_{GS} = 4.5V)
- $R_{DS(ON)}$ < 470mΩ (V_{GS} = 2.5V)

Pin configurations

See Diagram below



N-Channel MOSFET



SOT-723

MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

Parameter			Symbol	Value	Units
Drain−to−Source Voltage			V_{DSS}	20	V
Gate−to−Source Voltage			V_{GS}	±6.0	V
Continuous Drain Current(Note1))	Steady State	TA = 25°C	I_D	600	mA
		TA = 85°C		400	
Power Dissipation (Note 1)	Steady State		P_D	170	mW
Pulsed Drain Current	t_p =10 μs		I_{DM}	1	A
Operating Junction and Storage Temperature			T_J, T_{STG}	−55 to 150	°C
Continuous Source Current (Body Diode)			I_S	250	mA
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)			T_L	260	°C

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain−to−Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 250 μA	20	26		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 0 V, V_{DS} = 16 V			100	nA
Gate−to−Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±4.5 V			±1.0	μA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250 μA	0.45		0.9	V
Drain−to−Source On Resistance	$R_{DS(on)}$	V_{GS} = 4.5 V, I_D = 600 mA		280	350	mΩ
Drain−to−Source On Resistance	$R_{DS(on)}$	V_{GS} = 2.5 V, I_D = 500 mA		370	470	mΩ
		V_{GS} = 1.8 V, I_D = 350 mA		650	900	
Forward Transconductance	g_{FS}	V_{DS} = 10 V, I_D = 400 mA		1.2		S
CHARGES AND CAPACITANCES						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = 16 V		130		pF
Output Capacitance	C_{OSS}			21		
Reverse Transfer Capacitance	C_{RSS}			15		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 10 V, I_D = 0.25 A		1.4		nC
Gate−to−Source Charge	Q_{GS}			0.35		
Gate−to−Drain Charge	Q_{GD}			0.55		
SWITCHING CHARACTERISTICS (Note 3)						
Turn−On Delay Time	$t_{d(ON)}$	V_{GS} = 4.5 V, V_{DD} = 10 V, I_D = 0.2 A, R_G = 10 Ω		6		ns
Rise Time	t_r			6		
Turn−Off Delay Time	$t_{d(OFF)}$			25		
Fall Time	t_f			13		
DRAIN−SOURCE DIODE CHARACTERISTICS						
Forward Diode Voltage	V_{SD}	V_{GS} = 0 V, I_S = 200 mA, T_J = 25°C		0.69	1.1	V
		V_{GS} = 0 V, I_S = 200 mA, T_J = 125°C		0.58		

Typical Electrical Characteristics

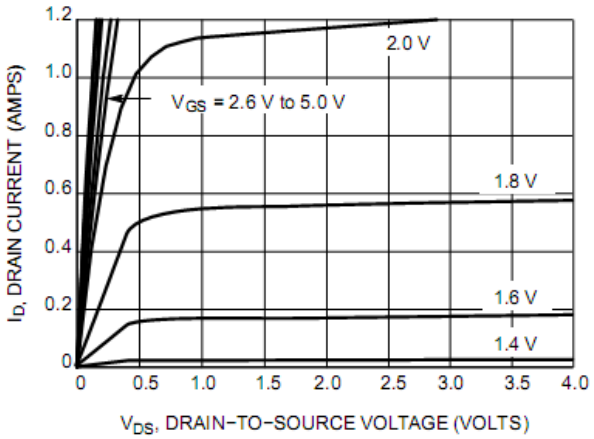


Figure 1. On−Region Characteristics

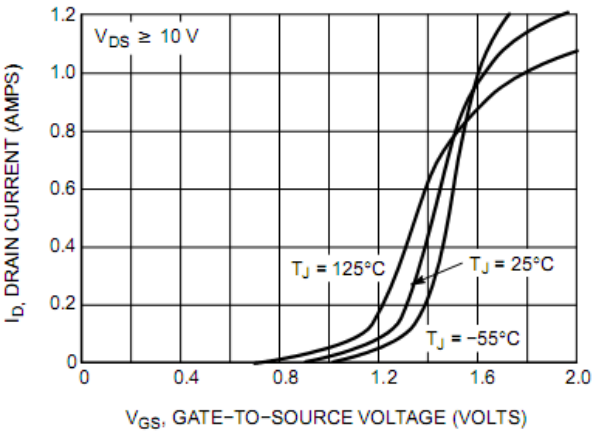


Figure 2. Transfer Characteristics

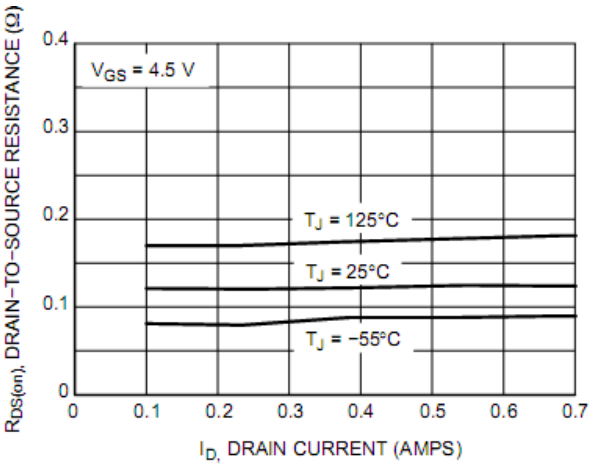


Figure 3. On−Resistance vs. Drain Current and Temperature

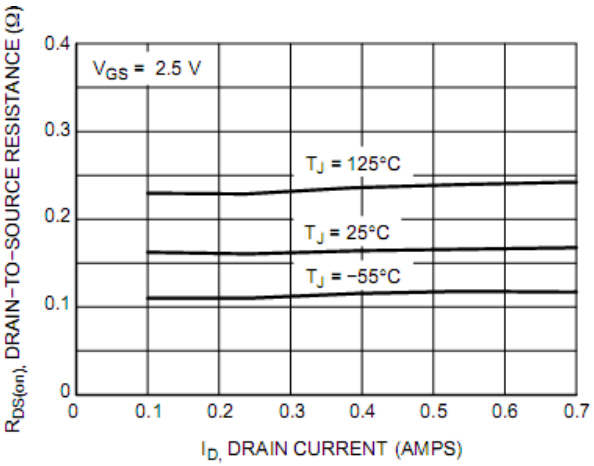


Figure 4. On−Resistance vs. Drain Current and Temperature

Typical Electrical Characteristics

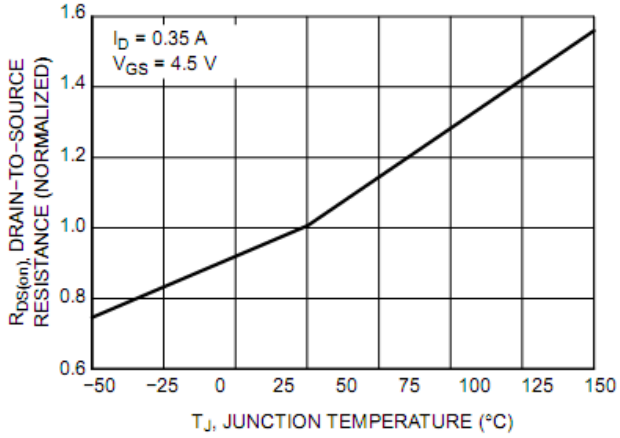


Figure 5. On−Resistance Variation with Temperature

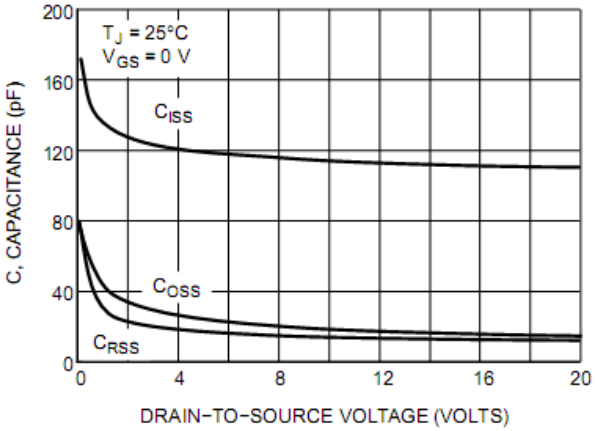


Figure 6. Capacitance Variation

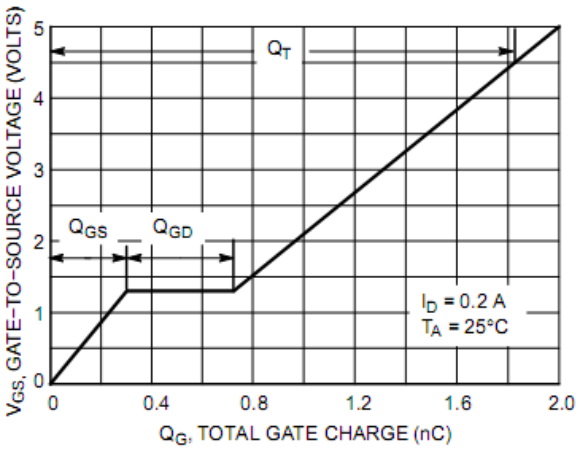


Figure 7. Gate−to−Source Voltage vs. Total Gate Charge

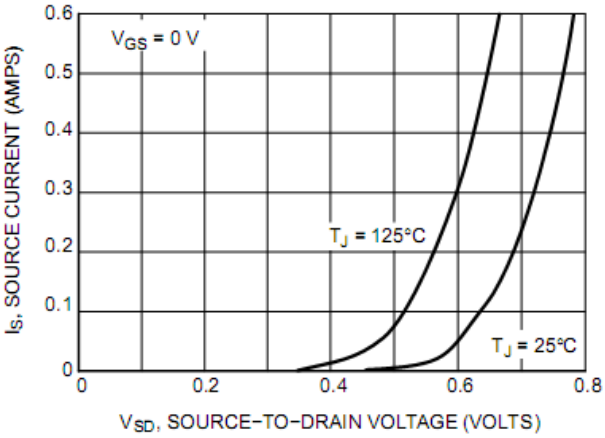


Figure 8. Diode Forward Voltage vs. Current

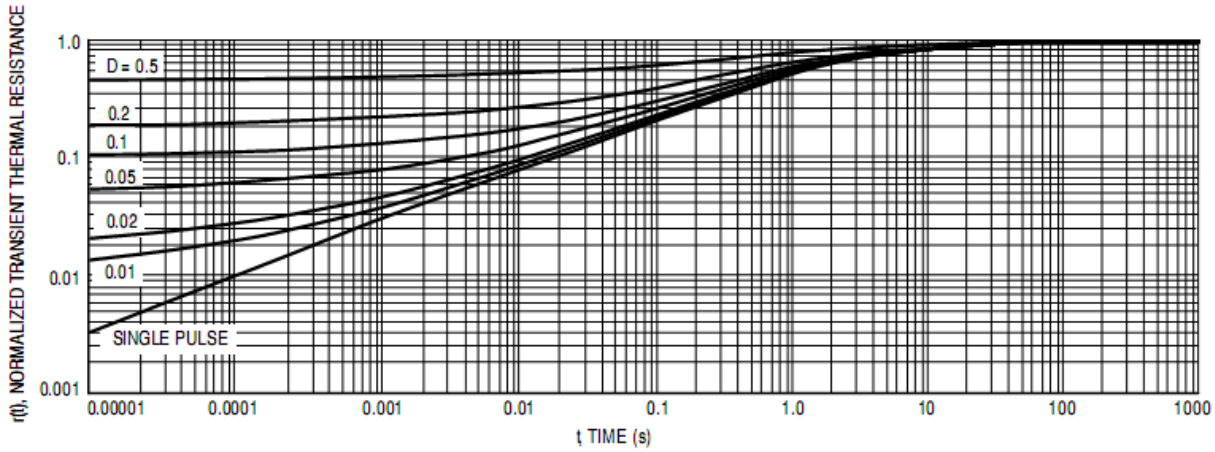
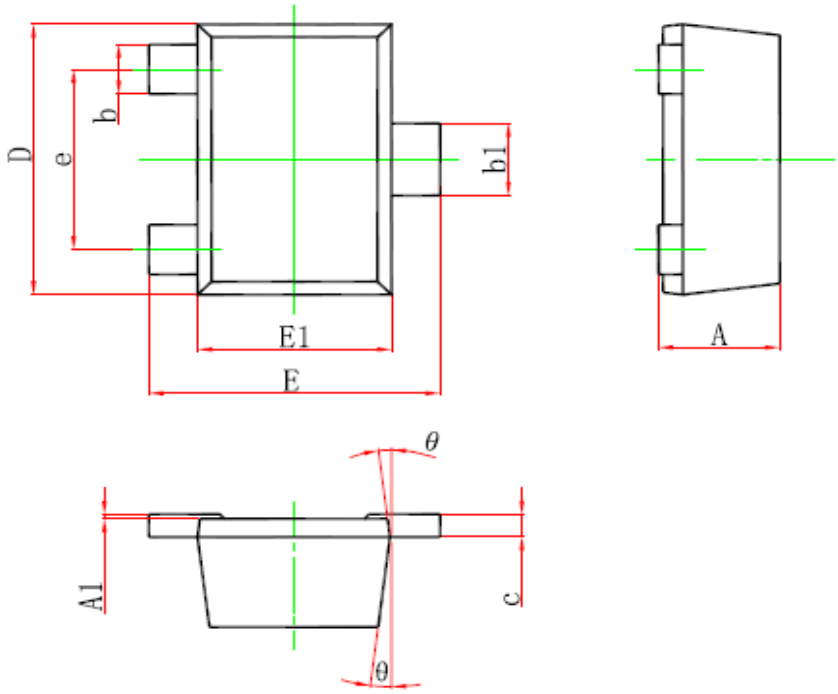


Figure 9. Normalized Thermal Response

Package Dimensions(SOT-723)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A		0.500		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		0.150		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.	

SHANGHAI SINO-IC MICROELECTRONICS CO., LTD

Add: Building 3, Room 3401-03, No.200 Zhangheng Road, ZhangJiang Hi-Tech Park, Pudong, Shanghai 201203, China
Phone: +86-21-33932402 33932403 33932405 33933508 33933608
Fax: +86-21-33932401
Email: webmaster@sino-ic.com
Website: http://www.sino-ic.com