

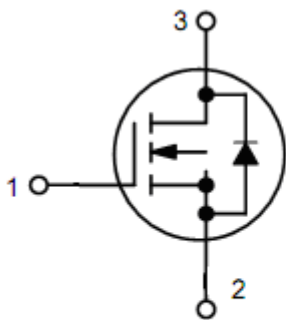
SE2102E
Small Signal MOSFET
20 V, 600 mA, Single N-Channel MOSFET

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

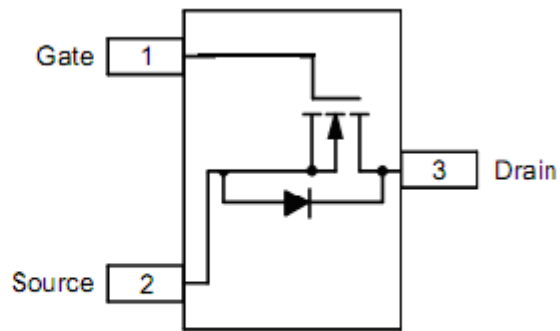
- Features**
- $V_{DS(V)} = 20V$
 - $I_D = 600mA$
 - $R_{DS(ON)} < 350m\Omega$ ($V_{GS} = 4.5V$)
 - $R_{DS(ON)} < 470m\Omega$ ($V_{GS} = 2.5V$)

Pin configurations

See Diagram below



N-Channel MOSFET



SOT-523

MAXIMUM RATINGS ($T_J=25^\circ C$ 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 (Note 1)	Steady State	$T_A = 25^\circ C$	I_D	600	mA
		$T_A = 85^\circ C$		400	
Power Dissipation (Note 1)	Steady State		P_D	170	mW
Pulsed Drain Current	$t_p = 10 \mu s$		I_{DM}	1	A
Operating Junction and Storage Temperature			$T_J,$ T_{STG}	-55 to 150	$^\circ C$
Continuous Source Current (Body Diode)			I_S	250	mA
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)			T_L	260	$^\circ C$

SE2102E

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
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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
			T _J = 125°C		0.58		

Typical Electrical Characteristics

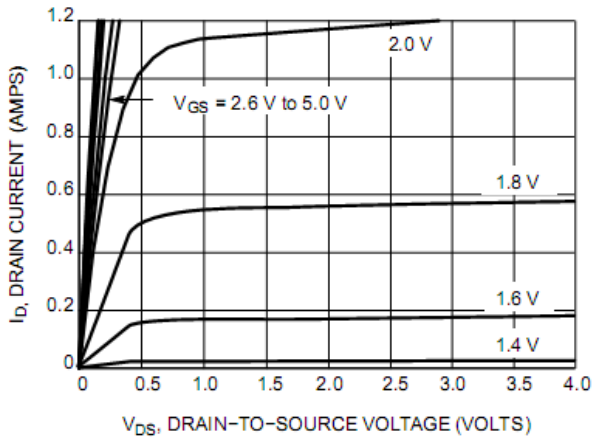


Figure 1. On-Region Characteristics

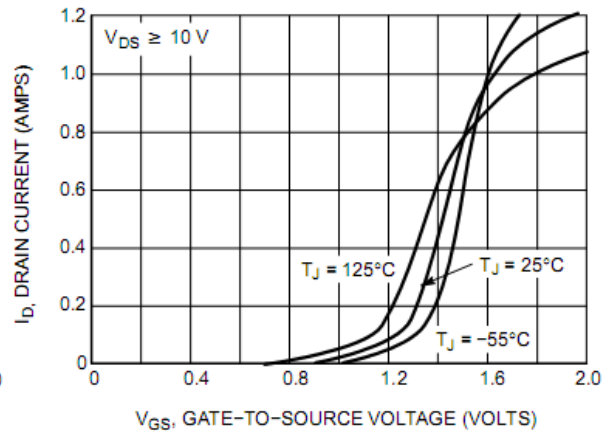


Figure 2. Transfer Characteristics

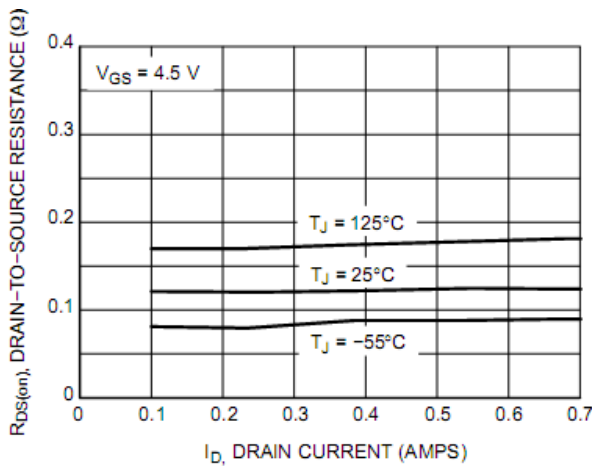


Figure 3. On-Resistance vs. Drain Current and Temperature

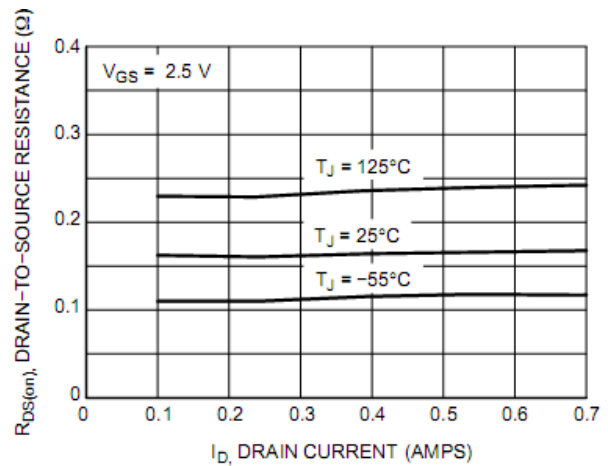


Figure 4. On-Resistance vs. Drain Current and Temperature

Typical Electrical Characteristics

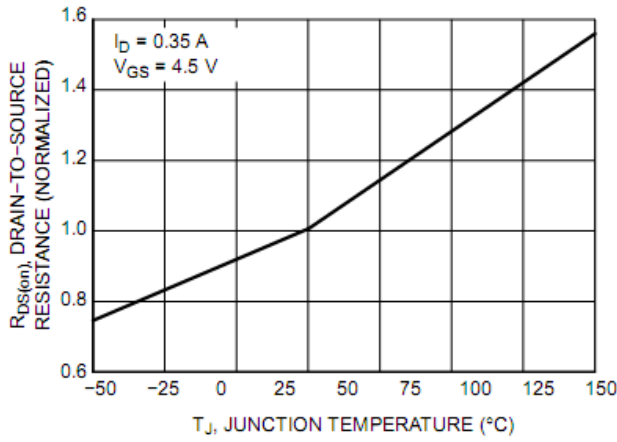


Figure 5. On-Resistance Variation with Temperature

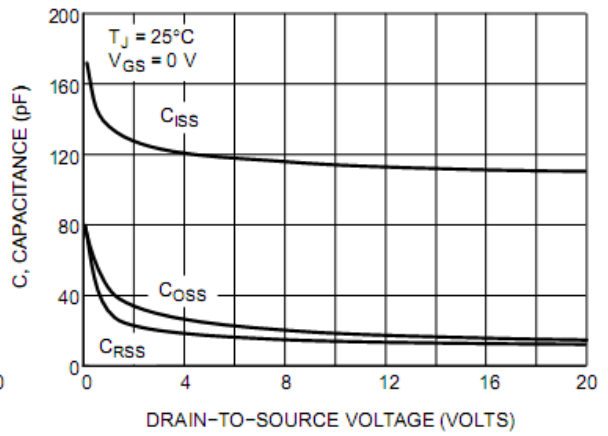


Figure 6. Capacitance Variation

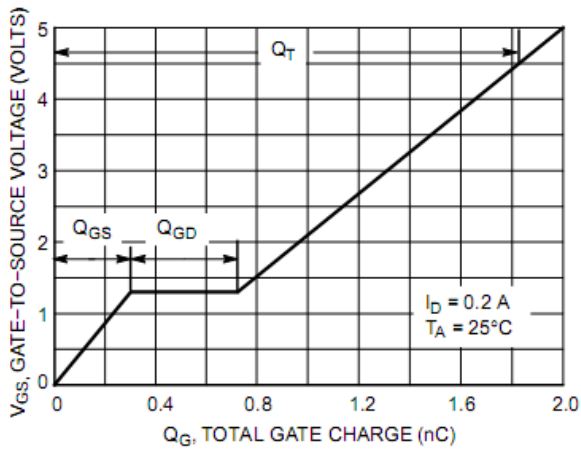


Figure 7. Gate-to-Source Voltage vs. Total Gate Charge

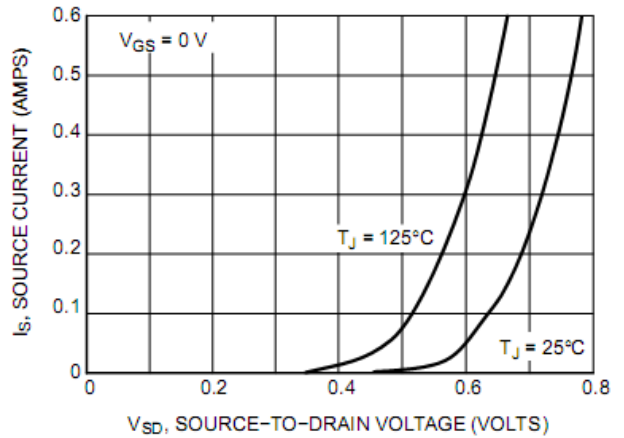


Figure 8. Diode Forward Voltage vs. Current

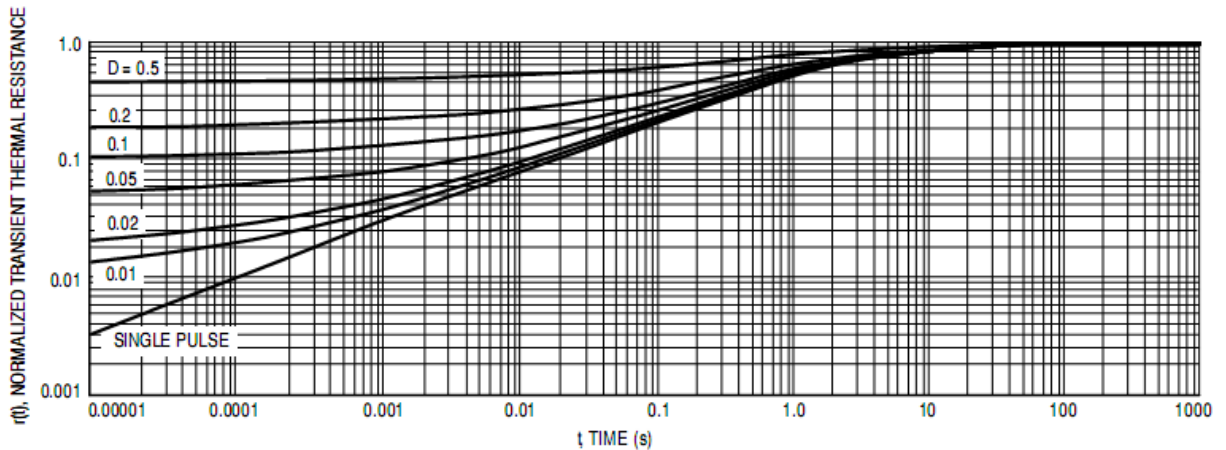
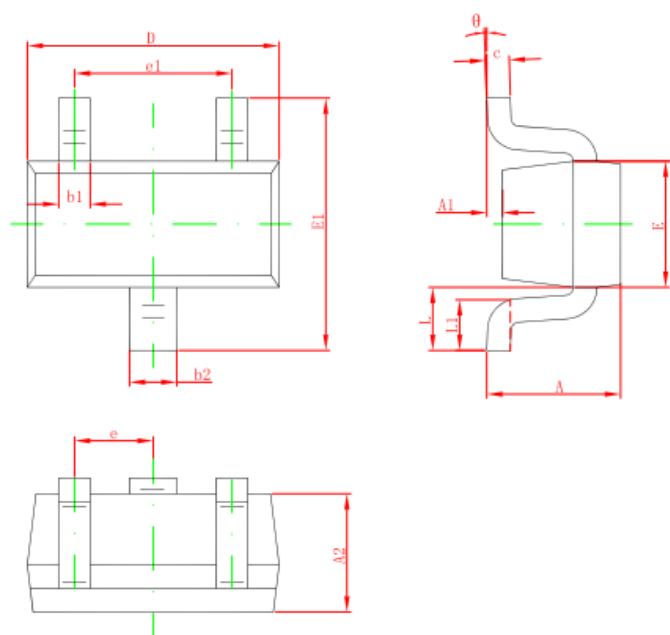


Figure 9. Normalized Thermal Response

Package Dimensions(SOT-523)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

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