

SE2102E

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

Revision: A

General Description

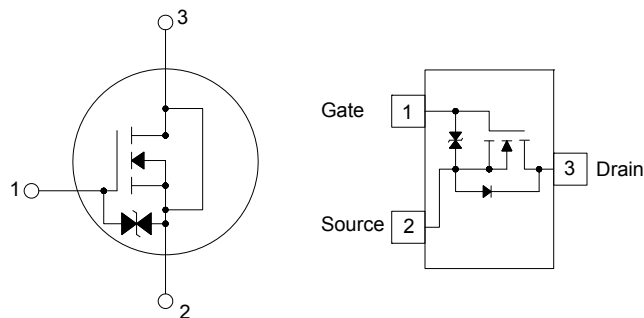
The MOSFETs from SINO-IC provide the best combination of fast switching, low on-resistance and cost-effectiveness

Features

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

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	± 6	V
Drain Current	Continuous	I_D	0.6	A
	Pulsed		1	
Total Power Dissipation	@TA=25°C	P_D	170	mW
Operating Junction Temperature Range		T_J	-55 to 150	°C

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Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0 V	20	26		V
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 16V, V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =4.5 V			10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	0.45		0.9	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =4.5V, I _D =600mA		280	350	mΩ
		V _{GS} =2.5V, I _D =500mA		370	470	
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =16V, f=1MHz		130		pF
C _{oss}	Output Capacitance			21		pF
C _{rss}	Reverse Transfer Capacitance			15		pF
SWITCHING PARAMETERS						
Q _g	Total Gate Charge ²	V _{GS} =4.5V, V _{DS} =10V, I _D =0.25A		1.4		nC
Q _{gs}	Gate Source Charge			0.35		nC
Q _{gd}	Gate Drain Charge			0.55		nC
t _{d(on)}	Turn-On Delay Time	V _{GS} =4.5V, V _{DS} =10V, R _{GEN} =10Ω I _D =0.2A		6		ns
t _{d(off)}	Turn-Off Delay Time			25		ns
t _{d(r)}	Turn-On Rise Time			6		ns
t _{d(f)}	Turn-Off Fall Time			13		ns
Thermal Resistance						
Symbol	Parameter		Typ	Max	Units	
R _{θJA}	Junction to Ambient (t ≤ 10s)		-	140	°C/W	

Typical Characteristics

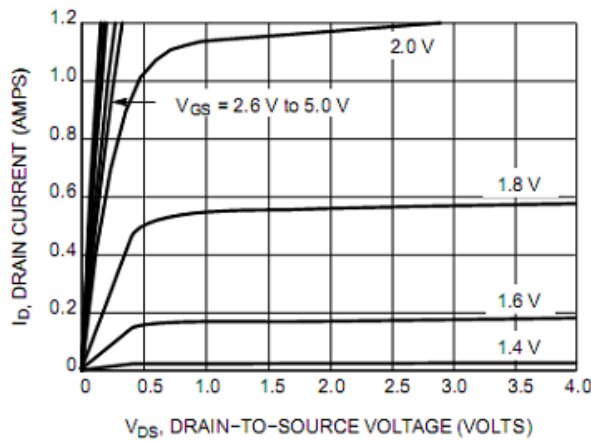


Figure 1. On-Region Characteristics

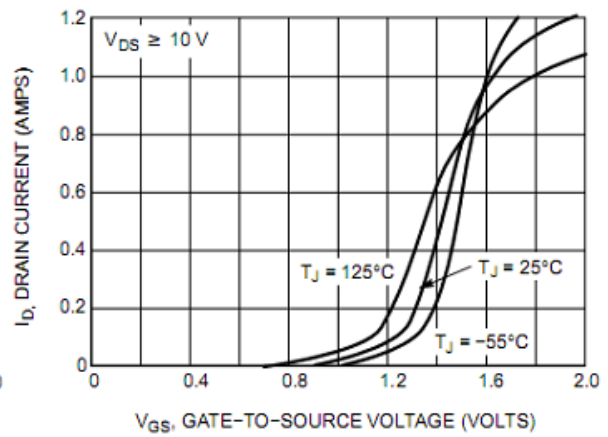


Figure 2. Transfer Characteristics

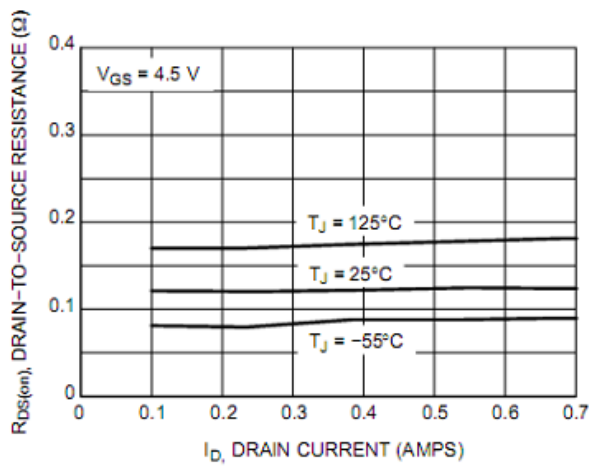


Figure 3. On-Resistance vs. Drain Current and Temperature

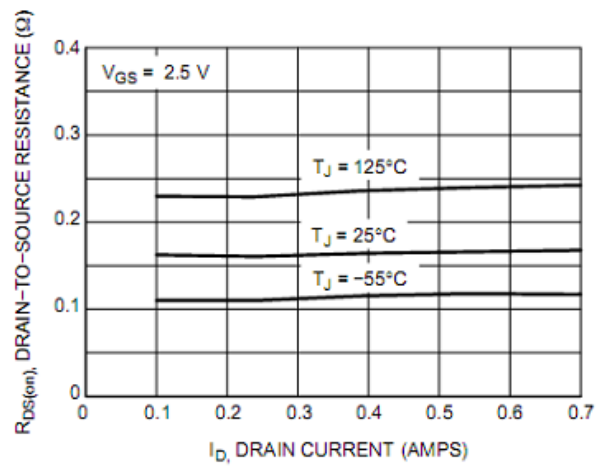


Figure 4. On-Resistance vs. Drain Current and Temperature

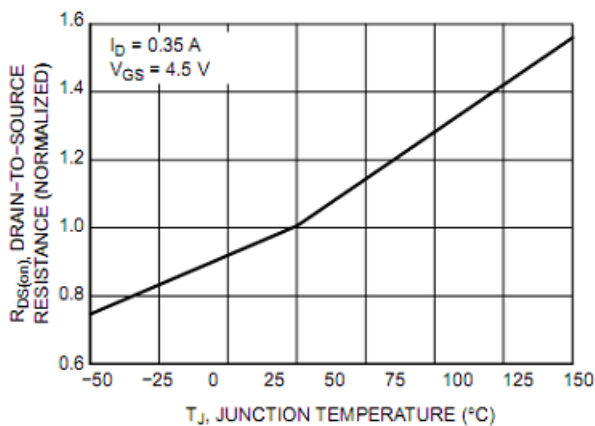


Figure 5. On-Resistance Variation with Temperature

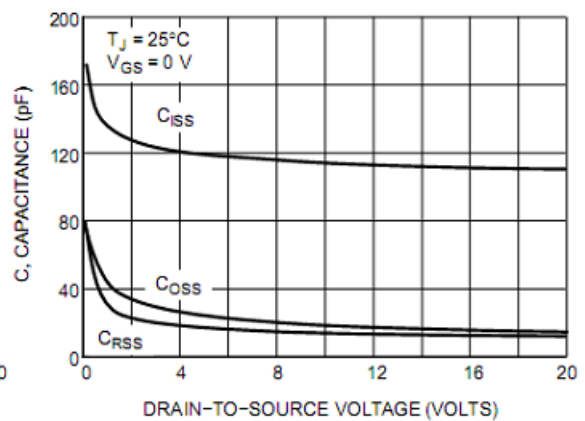


Figure 6. Capacitance Variation

Typical Characteristics

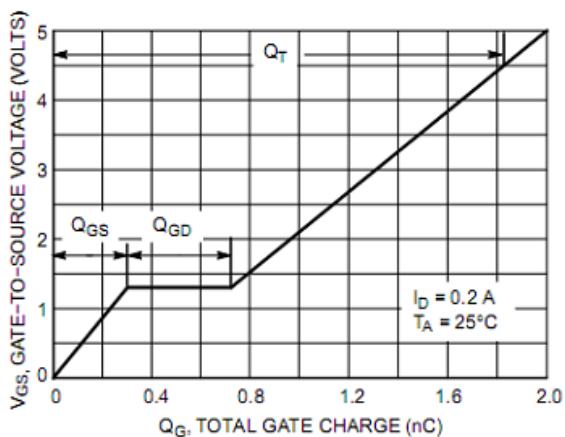


Figure 7. Gate-to-Source Voltage vs. Total Gate Charge

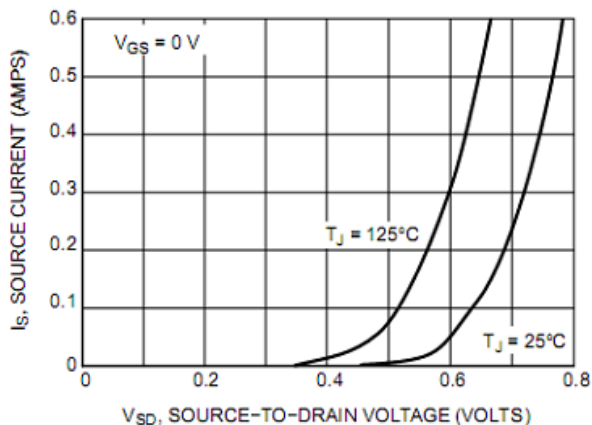


Figure 8. Diode Forward Voltage vs. Current

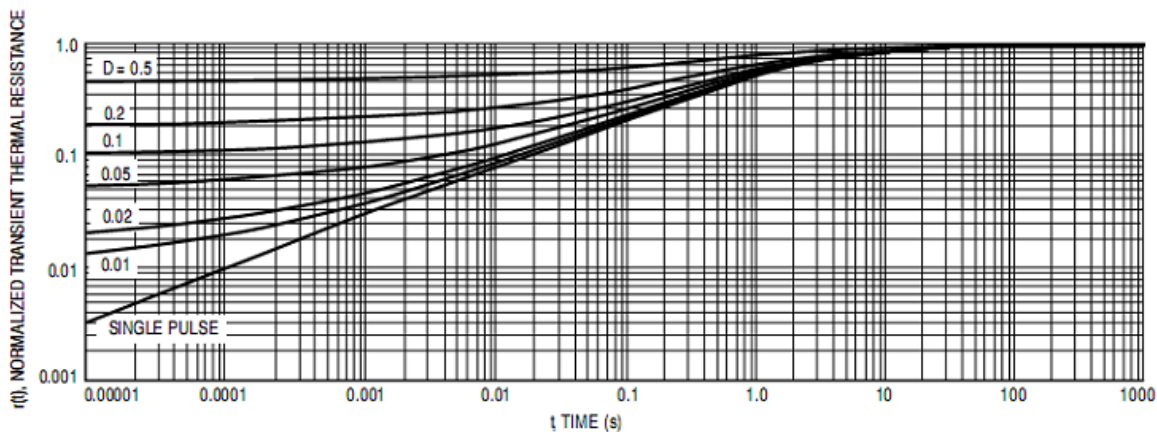
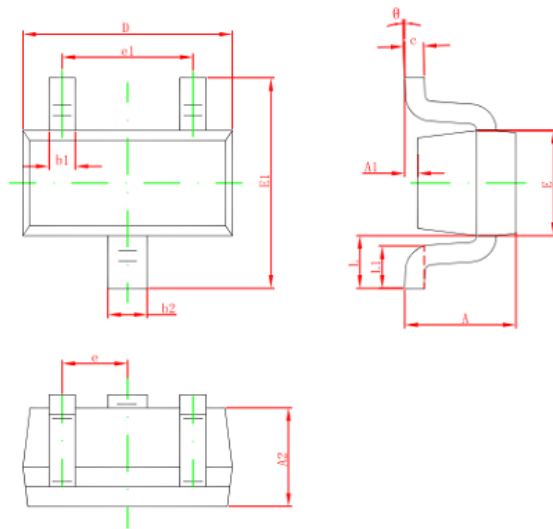


Figure 9. Normalized Thermal Response

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Package Outline Dimension

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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