

SE3401
-4.2A,-30V P-Channel MOSFET

Revision:B

General Description

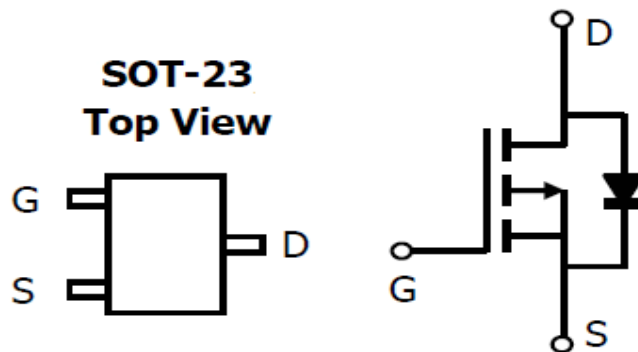
The MOSFETs from SINO-IC provide the best combination of fast switching, low on-resistance and cost-effectiveness.

Features

- V_{DS} (V) =-30V
- I_D =-4.2A (V_{GS} = -10V)
- $R_{DS(ON)}$ <60m Ω (V_{GS} = -10V)
- $R_{DS(ON)}$ <75m Ω (V_{GS} = -4.5V)
- $R_{DS(ON)}$ <120m Ω (V_{GS} = -2.5V)

Pin configurations

See Diagram below



Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	± 12	V
Drain Current (Note 1)	Continuous	I_D	-4.2	A
	70°C		-3.5	
Total Power Dissipation		P_D	1.4	W
Operating Junction Temperature Range		T_J	-50 to 150	°C

Thermal Characteristics

Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient A	Steady-State	$R_{\theta JA}$	65	90	°C/W
Maximum Junction-to-- Case	Steady-State	$R_{\theta JC}$	0.8	-	°C/W

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF/ON CHARACTERISTICS (Note 2)						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250 μ A, V _{GS} =0 V	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24 V, V _{GS} =0 V			-1	μ A
I _{GSS}	Gate-Body leakage current	V _{DS} =0 V, V _{GS} =±12 V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =-250 μ A	-0.7	-1.1	-1.3	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-4.2A	-	53	60	mΩ
		V _{GS} =-4.5V, I _D =-4A		64	75	mΩ
		V _{GS} =-2.5V, I _D =-1A		86	120	mΩ
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _D =-1A	-	-0.7	-1	V
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1MHz		850		pF
C _{oss}	Output Capacitance			105		pF
C _{rss}	Reverse Transfer Capacitance			68		pF
T _{ON}	Turn-On Time	V _{DS} =-15V, R _L = 3.6 Ω , R _{GEN} = 6 Ω , V _{GS} =-10 V	-	9.5		ns
T _{OFF}	Turn-Off Time			36		ns
T _r	Turn-on Rise Time			3.0		ns
T _f	Turn-on Fall Time			5.2		ns
Q _g	Total Gate Charge	V _{DS} =-4.5V, I _D =-4A, V _{GS} =-15V		7.3		nC
Q _{gs}	Gate-Source Charge			2.2		nC
Q _{gd}	Gate-Drain Charge			2		nC
t _{rr}	Body Diode Reverse Recovery Time	I _F =-4A, dI/dt=100A/ μ s		20.2		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-4A, dI/dt=100A/ μ s		11.2		nC

Typical Characteristics

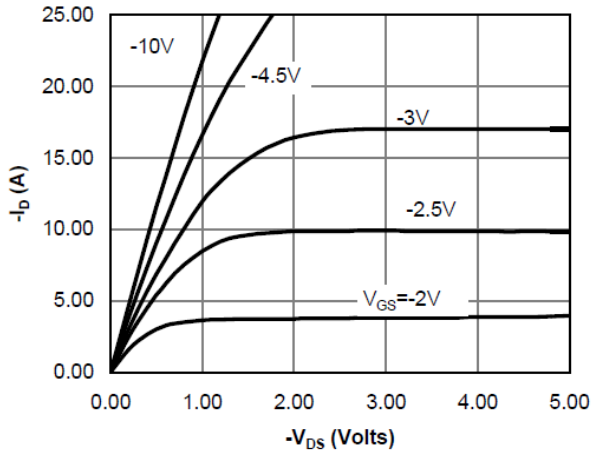


Fig 1: On-Region Characteristics

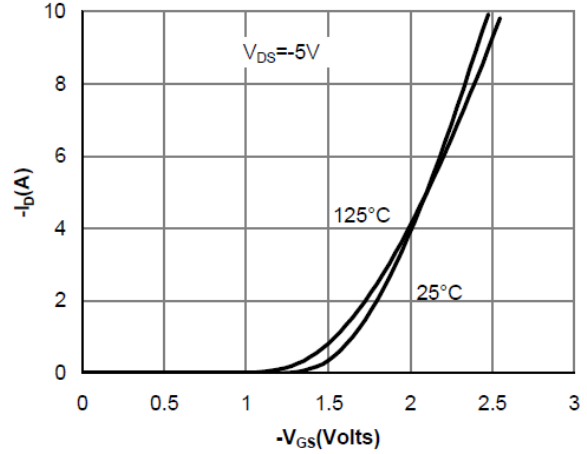


Figure 2: Transfer Characteristics

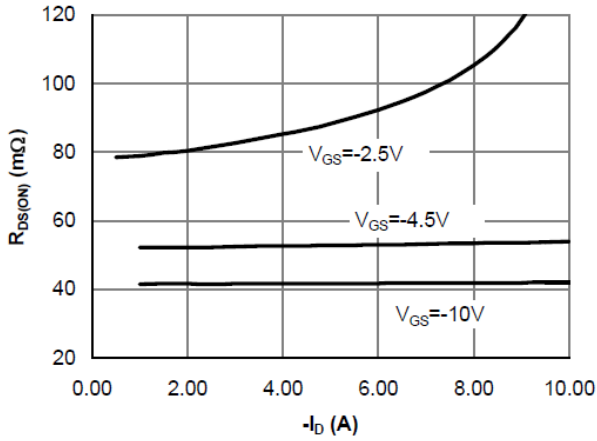


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

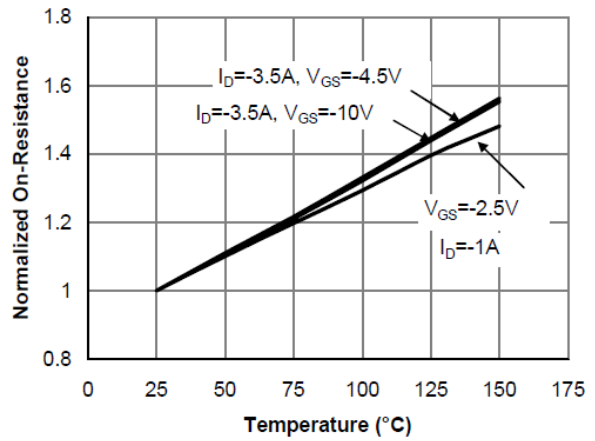


Figure 4: On-Resistance vs. Junction Temperature

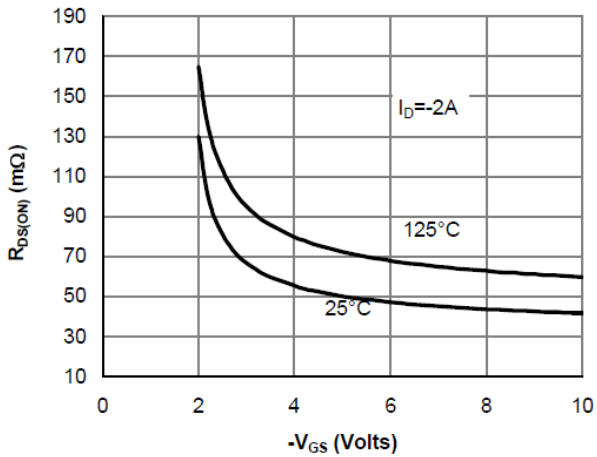


Figure 5: On-Resistance vs. Gate-Source Voltage

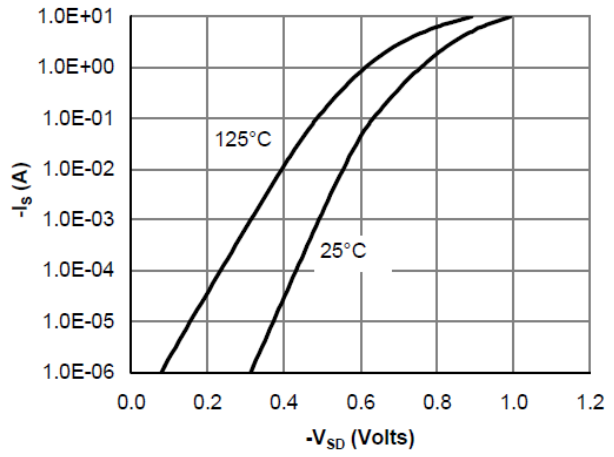


Figure 6: Body-Diode Characteristics

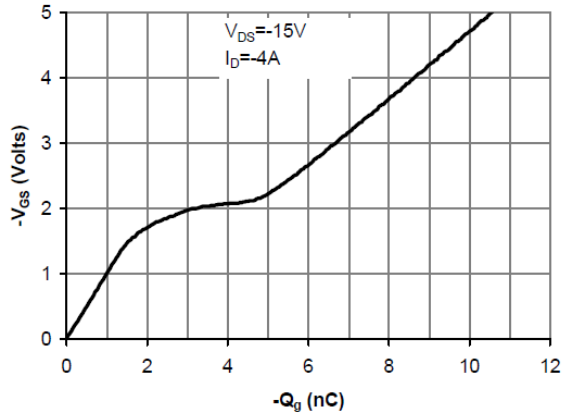


Figure 7: Gate-Charge Characteristics

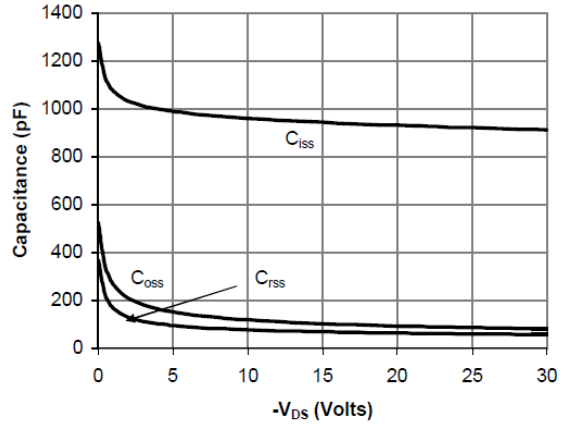


Figure 8: Capacitance Characteristics

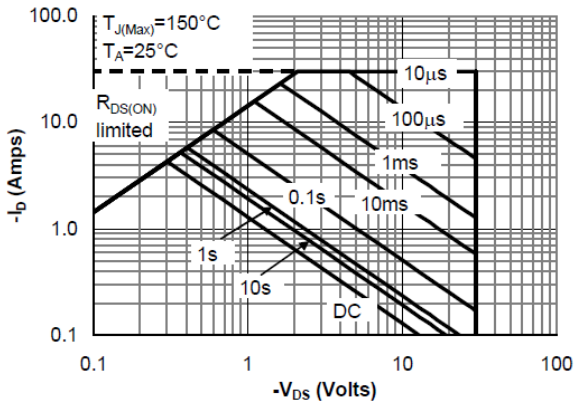


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

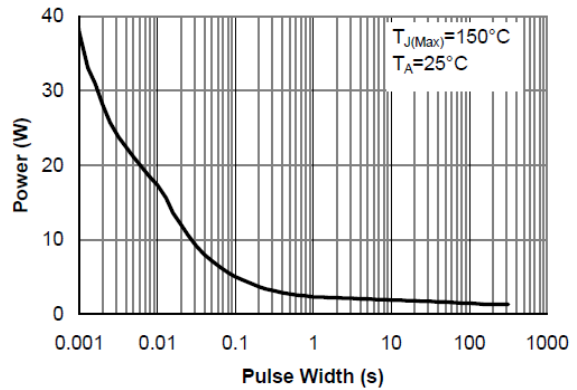


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

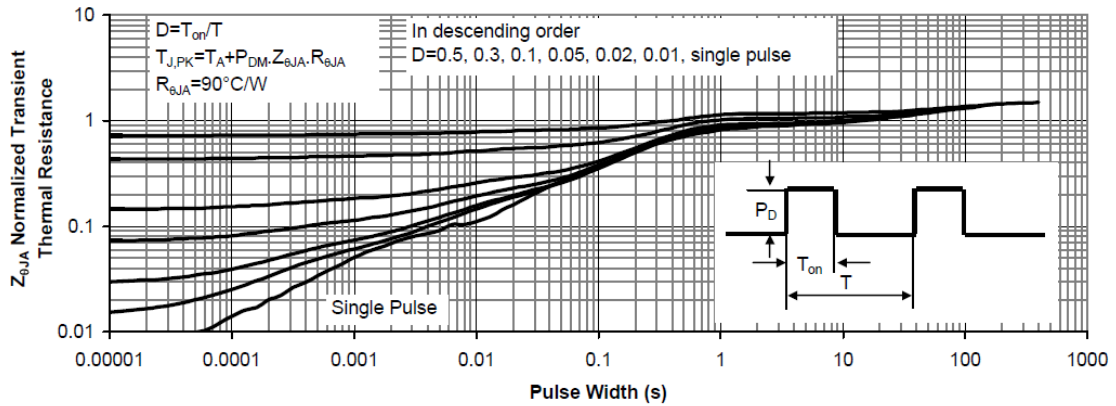
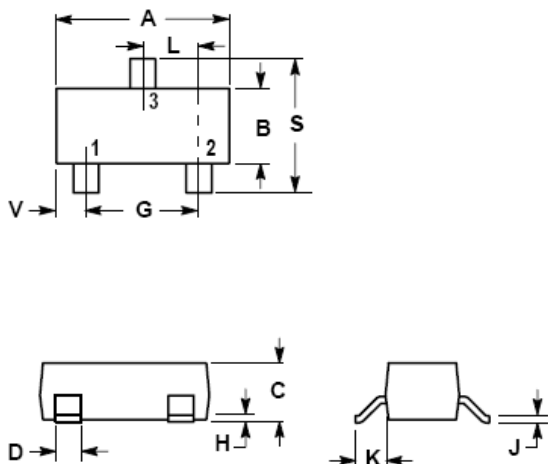


Figure 11: Normalized Maximum Transient Thermal Impedance

SOT-23



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

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