

PRIMARY CHARACTERISTICS

BV _{DSS}	R _{DS(ON)} MAX	I _D
-20V	30mΩ @V _{GS} =-4.5V	-6
	40mΩ @V _{GS} =-2.5V	

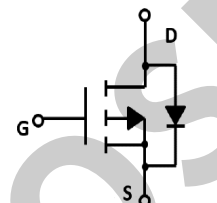
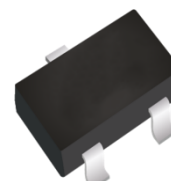
Features

- P-Channel MOSFET for Power Management
- -20V / -6A, R_{DS(on)} < 30mΩ @ V_{GS}=-4.5V
- R_{DS(on)} < 40mΩ @ V_{GS}=-2.5V
- Trench Power LV MOSFET technology
- High density cell design for low R_{DS(on)}
- High speed switching
- RoHS compliant, halogen free

Mechanical Data

- Package: SOT-23
- Surface mount package
- Pin configuration: G/S/D
- Marking: S5A

SOT-23



Schematic diagram

Applications

- Battery protection
- Load switch
- Power management
- Portable electronics

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DC06P20T23	SOT-23	S5A	7" Tape&Reel	3,000

Maximum Ratings (@ T_A = 25°C, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V _{DS}	-20	V
Gate - Source Voltage	V _{GS}	±10	V
Continuous Drain Current (V _{GS} = 4.5V) ⁽¹⁾	I _D	-6	A
Pulsed Drain Current ⁽²⁾	I _{DM}	-22	A
Power Dissipation	P _D	1.2	W
Junction & Storage Temperature Range	T _J , T _{STG}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽³⁾	R _{θJA}	-	105	°C/W

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics ⁽⁴⁾						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	VGS=0V, ID=-250μA	-	-20	-	V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=-15V, VGS = 0V,TJ=25°C	-	-	-1	μA
Gate-Source Leakage Current	I _{GSS}	VGS=±10V, VDS = 0V	-	-	100	nA
On Characteristics ⁽⁴⁾						
Gate Threshold Voltage	V _{GS(th)}	VDS=VGS, ID=-250μA	-0.4	-0.7	-1.0	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS=-1.8V, ID=-1A	-	40	75	mΩ
		VGS=-2.5V, ID=-2A	-	29	40	mΩ
		VGS=-4.5V, ID=-4A	-	21	30	mΩ
Diodes Forward Voltage	V _{SD}	IS=-6A, VGS=0V	-	-	-1.2	V
Dynamic Characteristics ⁽⁴⁾						
Input Capacitance	C _{iss}	VDS=-9V, VGS=0V, f=1MHz	-	1015	-	pF
Output Capacitance	C _{oss}		-	138	-	pF
Reverse Transfer Capacitance	C _{rss}		-	105	-	pF
Switching Characteristics ⁽⁵⁾						
Turn-On DelayTime	t _{d(on)}	VGS=-4.5V, VDD=-9V, ID=-1A, RGEN=2.5Ω	-	8.5	-	ns
Rise Time	t _r		-	35.5	-	ns
Turn-Off DelayTime	t _{d(off)}		-	78	-	ns
Fall Time	t _f		-	58	-	ns
Gate Charge Characteristics ⁽⁵⁾						
Total Gate Charge	Q _g	VDS=-9V,ID=-6A, VGS=-4.5V	-	11.3	-	nC
Gate-Source Charge	Q _{gs}		-	2.3	-	nC
Gate-Drain Charge	Q _{gd}		-	2.4	-	nC
Drain-Source Diode Characteristics ⁽⁵⁾						
Diode Forward Current	I _s	TA = 25°C	-	-	-6	A
Drain to Source Diode Forward Voltage	V _{SD}	VGS=0V	-	-	-1.2	V
Notes:						
1. This current is chip limited, which is calculated based on Rthja.						
2. This current is calculated on single pulse with 10μs Single Pulse .						
3. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.						
4. Short duration pulse test used to minimize self-heating effect.						
5. Defined by design, not subject to production.						

Typical Operating Characteristics

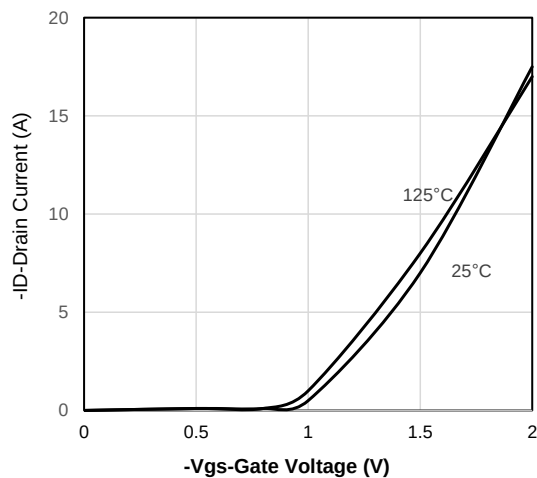


Fig1 Transfer Characteristics

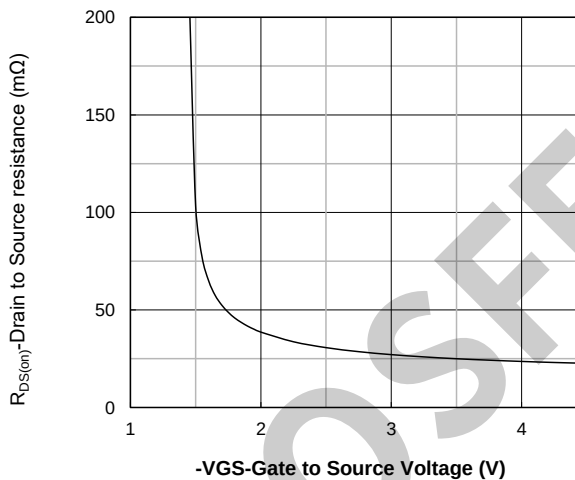


Fig2 Transfer Characteristics

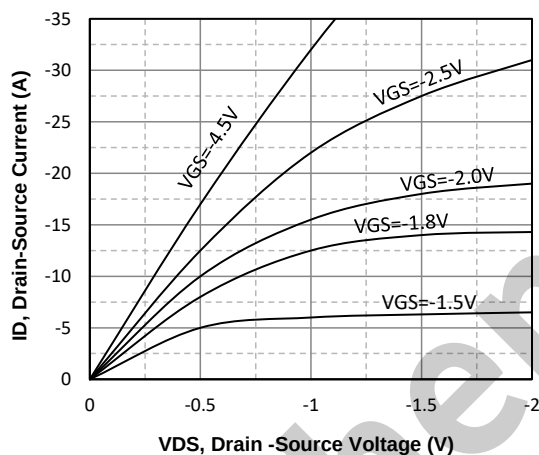


Fig3. Typical Output Characteristics

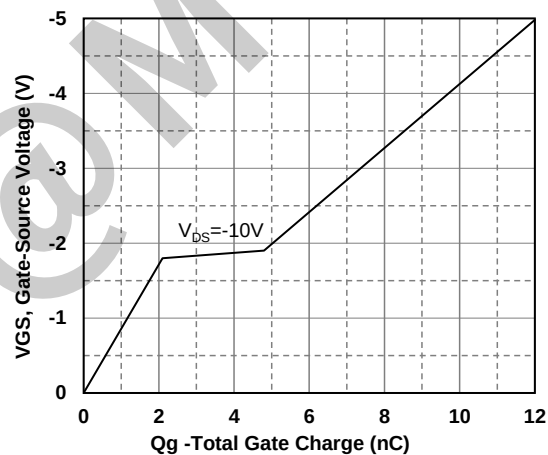


Fig4. Typical Gate Charge Vs. Gate-Source Voltage

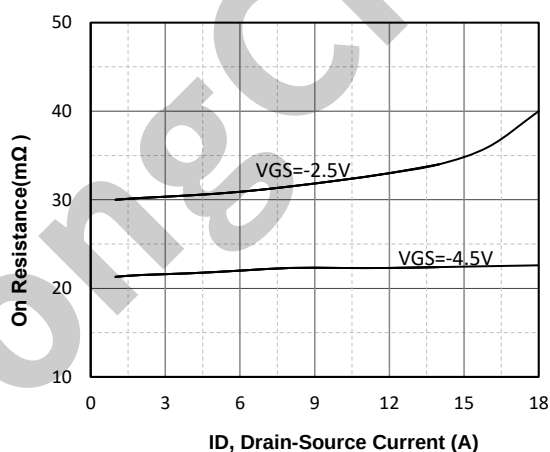


Fig5. Drain-Source on Resistance

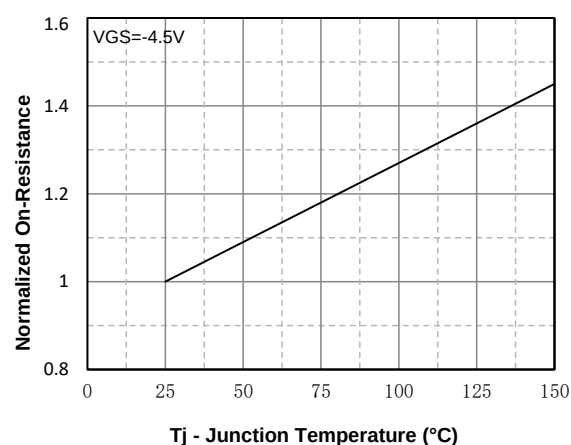


Fig6. Normalized On-Resistance Vs. Temperature

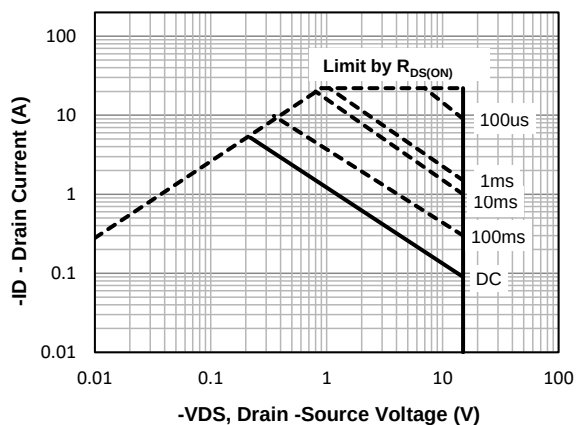


Fig7. Maximum Safe Operating Area

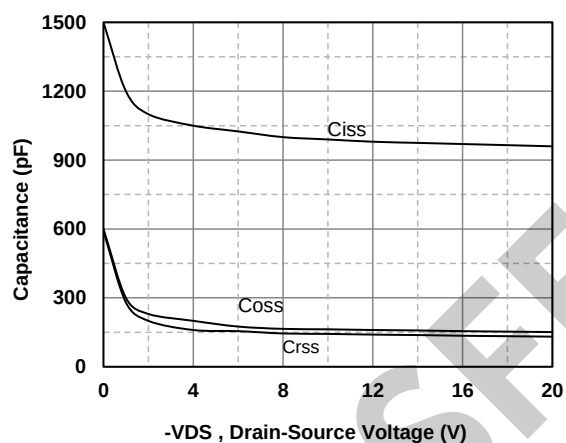


Fig8 Typical Capacitance Vs. Drain-Source Voltage

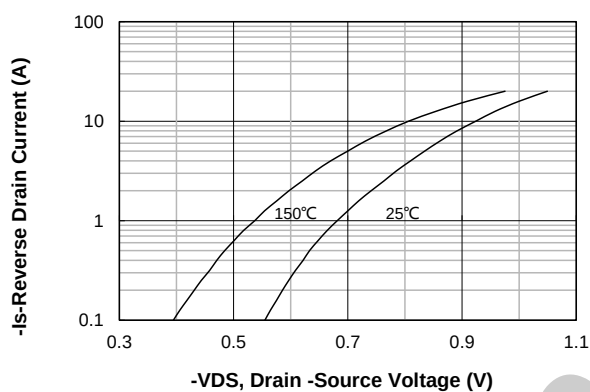
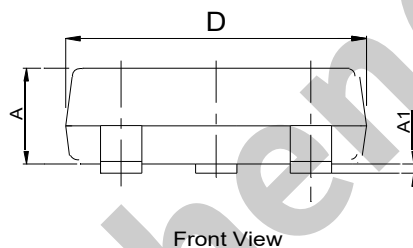
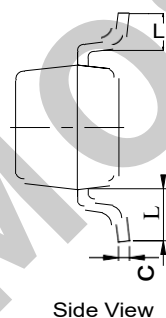
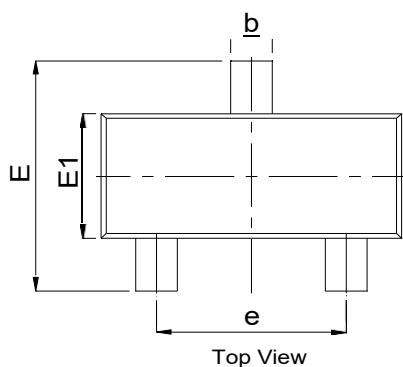


Fig9 Diode Forward Current

Outline Drawing

SOT-23

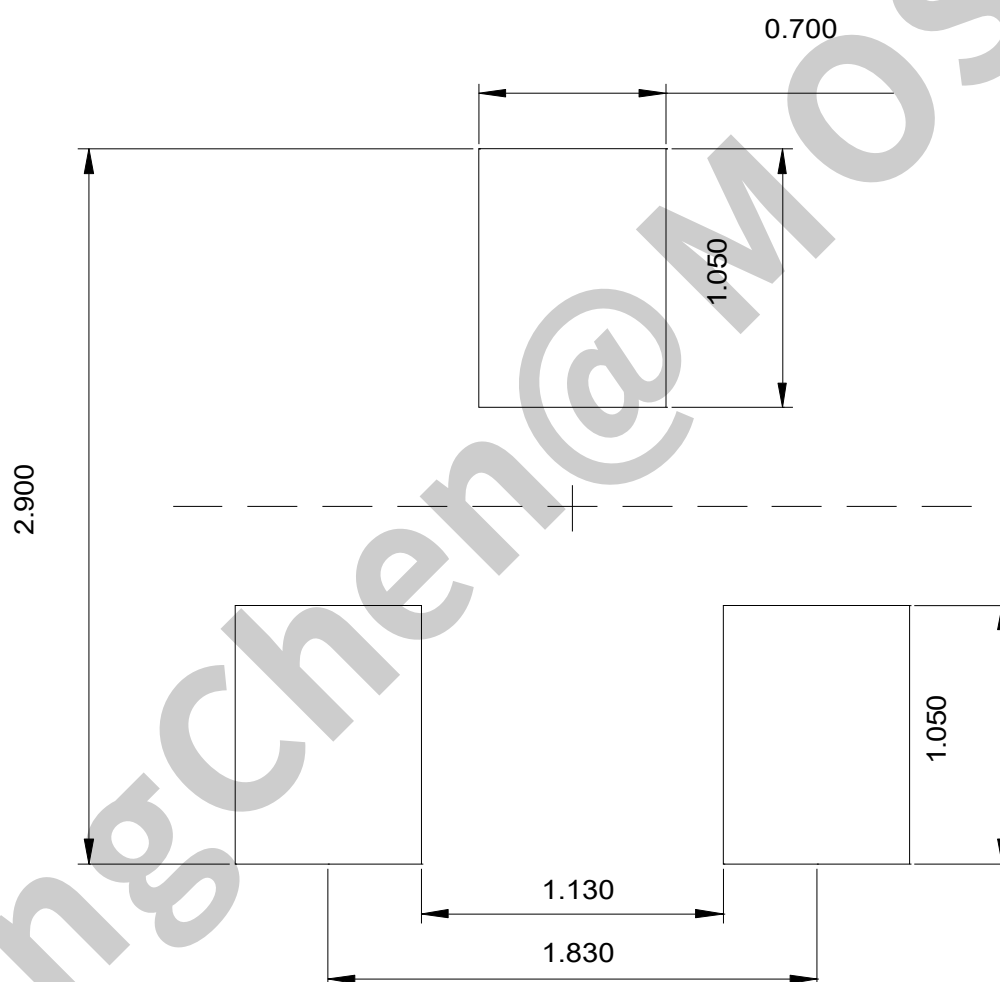


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOT-23



Dimensions in inches and (millimeters)

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