

P-Channel Enhancement Mode Power MOSFET

PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(ON)MAX}$	I_D
-30V	70m Ω @ $V_{GS} = -4.5V$	-3.8A
	90m Ω @ $V_{GS} = -2.5V$	

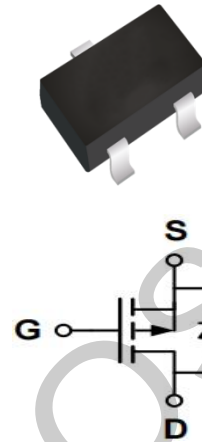
Features

- $V_{DS} = -30V$, $I_D = -3.8A$
- $R_{DS(ON)} < 70m \Omega$ @ $V_{GS} = -4.5V$
- High Power and Current handling capability
- Lead-free and Surface Mount Package

Mechanical Data

- Package: SOT-23
- Packing: Tape & Reel, 3000 units/reel
- Lead-free product

SOT-23



Applications

- PWM Applications
- Load Switch
- Power Management
- Video Monitor

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DC3401S	SOT-23	A19T	7" Tape&Reel	3,000

Maximum Ratings (@ $T_A = 25^\circ C$, unless otherwise specified.)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-30	V
Gate - Source Voltage		V_{GS}	±12	V
Continuous Drain Current ($V_{GS} = 4.5V$) ⁽¹⁾	$T_A = 25^{\circ}C$	I_D	-3.8	A
	$T_A = 70^{\circ}C$		-3.2	A
Pulsed Drain Current ⁽²⁾		I_{DM}	-16	A
Power Dissipation	$T_A = 25^{\circ}C$	P_D	0.72	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⁾	$R_{\theta JA}$	145	175	$^\circ C/W$

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	-30	-	-	V
Zero Gate Voltage Drain Current	IDSS	VDS = -30V, VGS = 0V,TJ=25°C	-	-	-1	μA
Gate-Source Leakage Current	IGSS	VGS = ±12V, VDS = 0V	-	-	±100	nA
On Characteristics ⁽⁴⁾						
Gate Threshold Voltage	VGS(th)	-, VDS = VGS, ID = -250μA	-0.5	-	-1.3	V
Static Drain-Source On-Resistance	RDS(ON)	VGS = -2.5V, ID = -2A	-	75	90	mΩ
		VGS = -4.5V, ID = -3.8A	-	55	70	mΩ
		VGS = -10V, ID = -3.8A	-	47	55	mΩ
Diodes Forward Voltage	VSD	IS = -3A, VGS = 0V	-	-0.8	-1.2	V
Dynamic Characteristics ⁽⁴⁾						
Input Capacitance	Ciss	VDS = -15V, VGS = 0V, f = 1MHz	-	676	-	pF
Output Capacitance	Coss		-	60	-	pF
Reverse Transfer Capacitance	Crss		-	51	-	pF
Gate Resistance	Rg	f = 1MHz	-	1	-	Ω
Switching Characteristics ⁽⁵⁾						
Turn-On DelayTime	td(on)	VGS = -10V, VDD = -15V, ID = -3A, RG = 6Ω	-	8	-	ns
Rise Time	tr		-	5	-	ns
Turn-Off DelayTime	td(off)		-	26	-	ns
Fall Time	tf		-	11	-	ns
Gate Charge Characteristics ⁽⁵⁾						
Total Gate Charge	Qg	VDS = -8V, ID = -3A VGS = -4.5V	-	10	-	nC
Gate-Source Charge	Qgs		-	2.4	-	nC
Gate-Drain Charge	Qgd		-	2.2	-	nC
Drain-Source Diode Characteristics ⁽⁵⁾						
Diode Forward Current	Is	TA = 25°C	-	-	-3.8	A
Drain to Source Diode Forward Voltage	VSD	VGS = 0V	-	-0.8	-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 Electrical and Thermal Characteristics

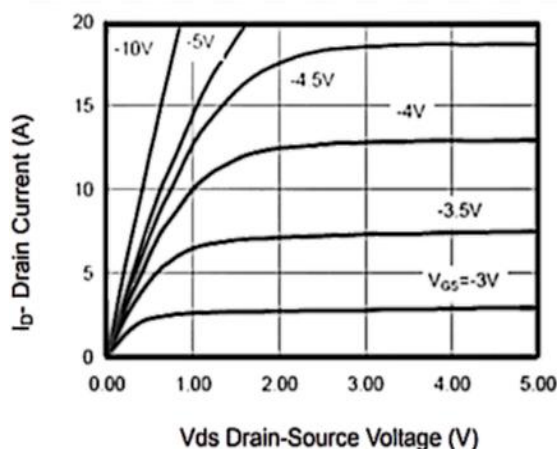


Fig.1 Output Characteristic

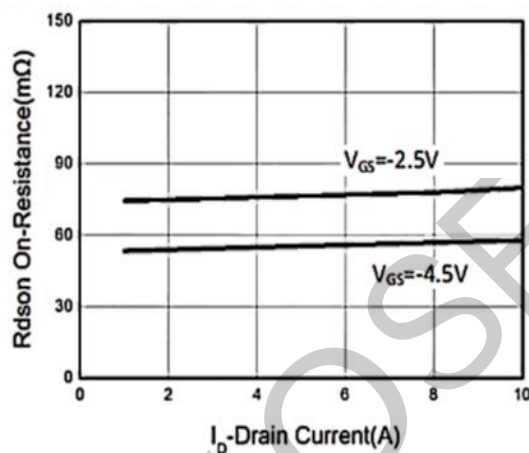


Fig.2 On-Resistance vs. Drain Current

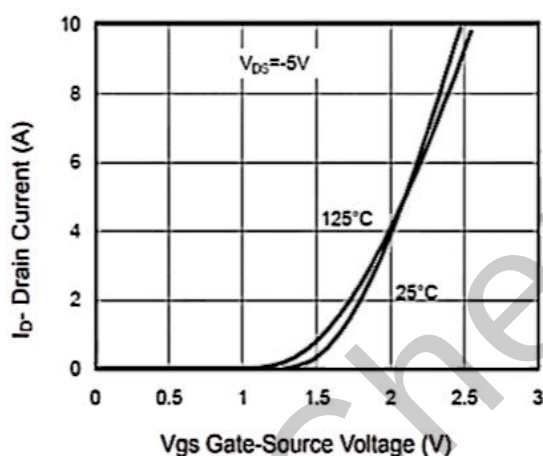


Fig.3 Transfer Characteristic

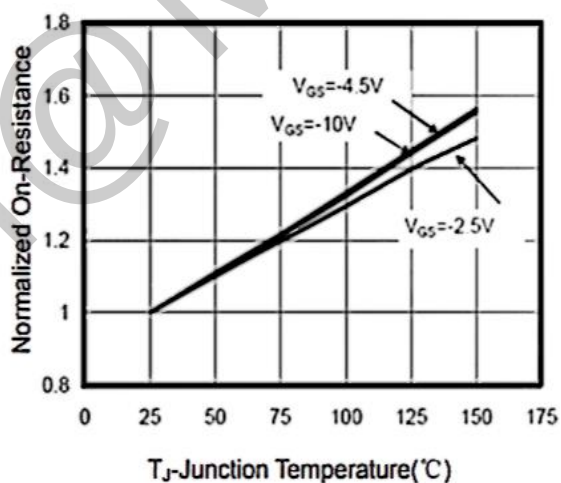


Fig.4 On-Resistance vs. Junction Temperature

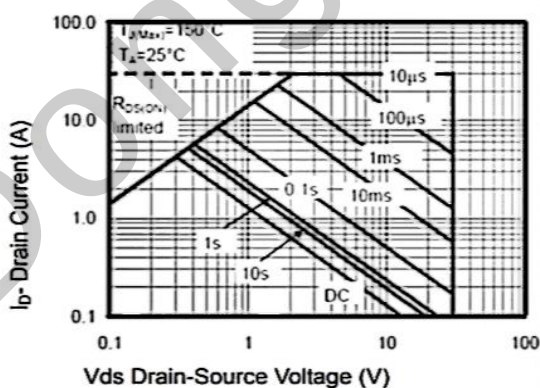


Fig.5 Safe Operation Area

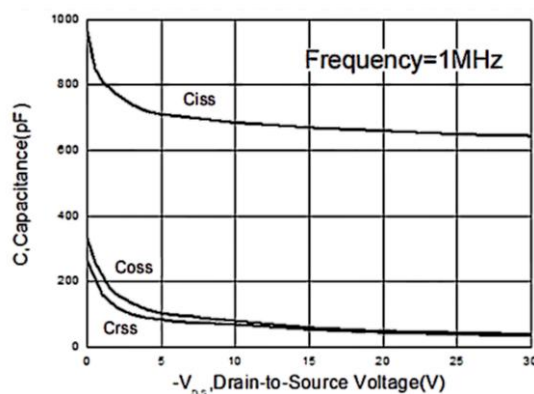


Fig.6 Capacitance Characteristic

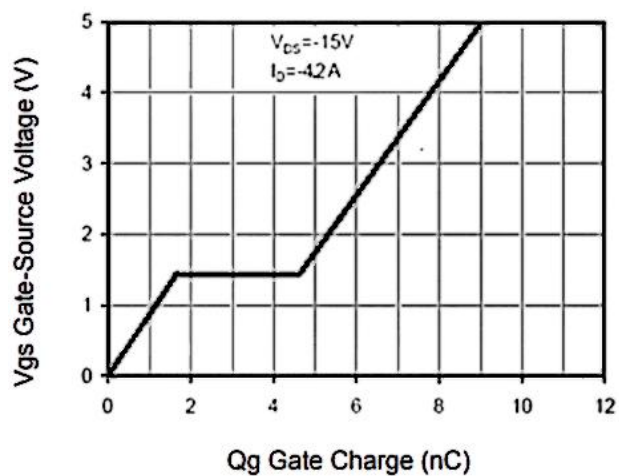


Fig.7 Gate-Charge Characteristic

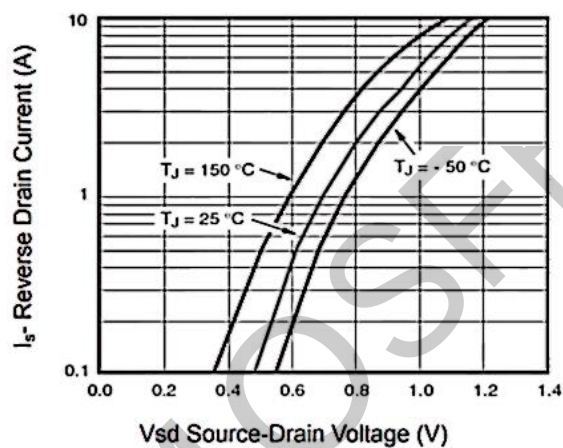
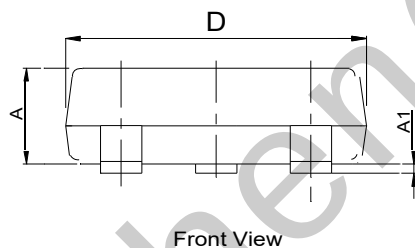
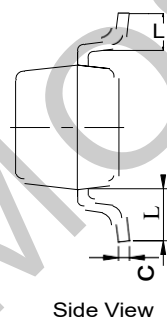
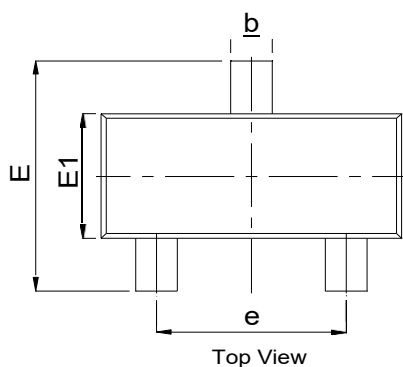


Fig.8 Body Diode Characteristic

Outline Drawing

SOT-23

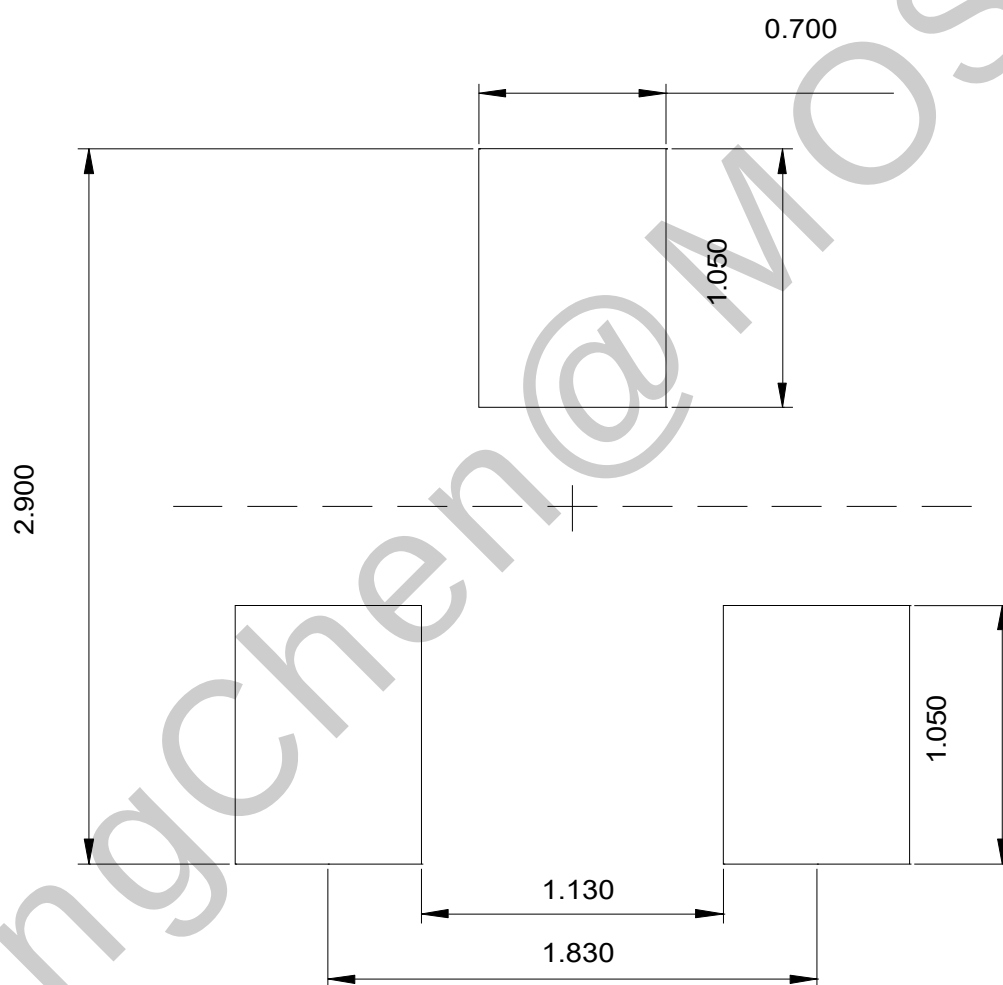


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOT-23



Dimensions in inches and (millimeters)

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