PJ2301

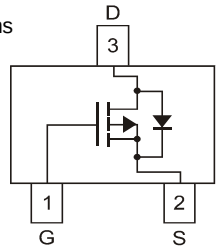
20V P-Channel Enhancement Mode MOSFET

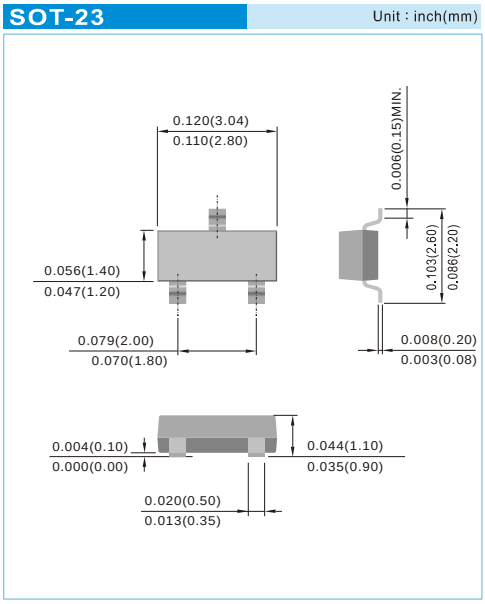
FEATURES

- $R_{DS(ON)}$, V_{GS}@-1.8V,I_D@-1.5A=200mΩ
- $R_{DS(ON)}$, V_{GS}@-4.5V,I_D@-2.2A=105mΩ
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Specially Designed for DC/DC converters
- Low gate charge
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std. . (Halogen Free)

MECHANICAL DATA

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750,Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams
- Marking : 01





Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER			Symbol	Limit	Units
Drain-Source Voltage			V_{DS}	-20	V
Gate-Source Voltage			V_{GS}	±8	V
Continuous Drain Current (Notes 1)	Steady-State Steady-State t ≤ 5s	T_A=25°C T_A=70°C T_A=25°C	I_D	-1.75 -1.4 -2	A
Pulsed Drain Current (Notes 1)			I_{DM}	10	A
Power Dissipation (Notes 2)		T_A=25°C T_A=70°C	P_D	700 450	mW
Typical Thermal Resistance (Notes 1)			$R_{\theta JA}$	175	°C/W
Typical Thermal Resistance (Notes 1)			$R_{\theta JL}$	65	°C/W
Operating Junction and Storage Temperature Range			T_J,T_{STG}	-55 to + 150	°C

NOTES:

1. Mounted on minimum pad layout.

2. Mounted on 48cm^2 FR-4 PCB board.

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ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D= -250μA	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D= -250μA	-0.5	-0.7	-0.9	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}= -4.5V, I_D= -2.2A	-	90	105	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}= -2.5V, I_D= -1.7A	-	120	140	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}= -1.8V, I_D= -1.5A	-	170	200	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -16V, V_{GS}=0V	-	-	-1	μA
Gate Body Leakage	I_{GSS}	V_{GS}= ±8V, V_{DS}=0V	-	-	±100	nA
Dynamic						
Forward Transconductance	g_{FS}	V_{DS}= -10V, I_D= -1.7A	4	6	-	S
Total Gate Charge	Q_g	V_{DS}= -10V, I_D= -2.2A V_{GS}= -4.5V	-	4	-	nC
Gate-Source Charge	Q_{gs}		-	0.5	-	
Gate-Drain Charge	Q_{gd}		-	1	-	
Turn-On Time	t_{on}	V_{DD}= -16V , I_D= -2.2A, V_{GS}= -4.5V R_{GEN}=2.5Ω	-	8	-	ns
Turn-Off Time	t_{off}		-	35	-	
Turn-On Rise Time	t_r		-	15	-	
Turn-Off Fall Time	t_f		-	25	-	
Input Capacitance	C_{iss}	V_{DS}= -10V, V_{GS}=0V f=1.0MH_Z	-	200	300	pF
Output Capacitance	C_{oss}		-	90	140	
Reverse Transfer Capacitance	C_{rss}		-	40	60	
Gate Resistance	R_g	V_{DS}=0V, V_{GS}=0V f=1.0MH_Z	-	12	-	Ω
Source-Drain Diode						
Max. Diode Forward Current	I_s	-	-	-	-2	A
Diode Forward Voltage	V_{SD}	I_S= -1A, V_{GS}=0V	-	-0.79	-1	V
Body-Diode Reverse Recovery Time	t_{rr}	I_S= -2.1A, di/dt=100A/μs	-	30	-	ns
Body-Diode Reverse Recovery Charge	Q_{rr}		-	12	-	nC

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CHARACTERISTIC CURVES

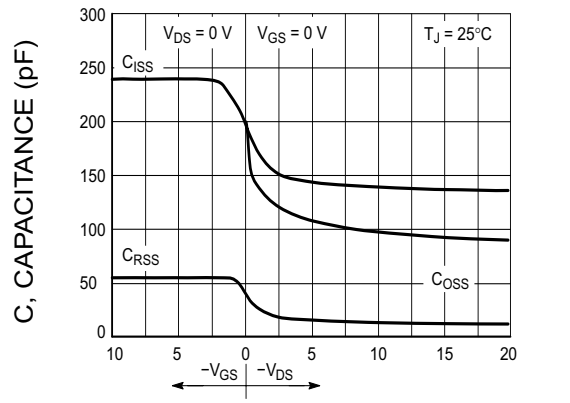

Fig.1 Capacitance Variation

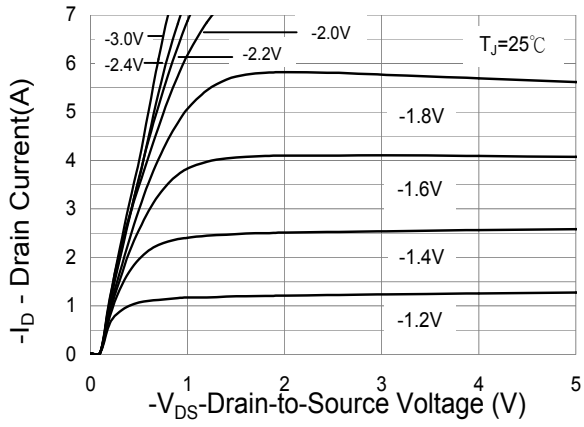

Fig.2 On-Region Characteristics

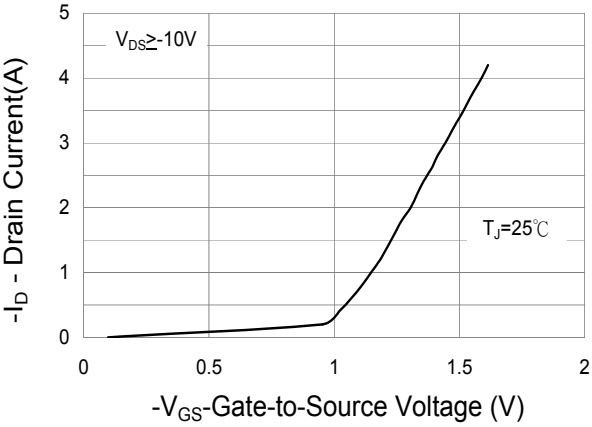

Fig.3 Transfer Characteristics

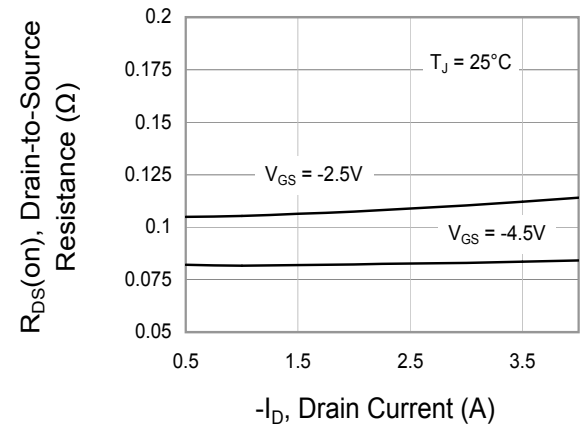

Fig.4 On-Resistance vs. Drain Current and Gate Voltage

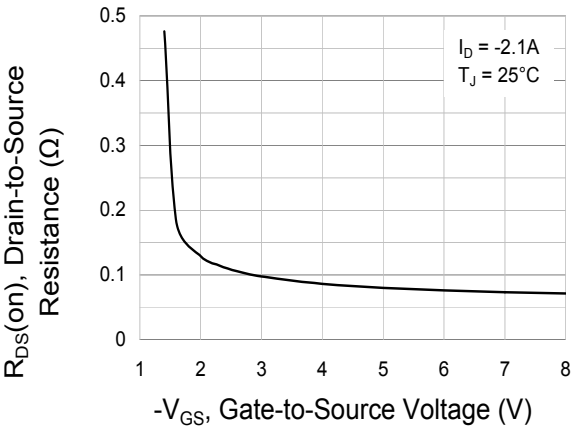

Fig.5 On-Resistance vs. Gate-Source Voltage

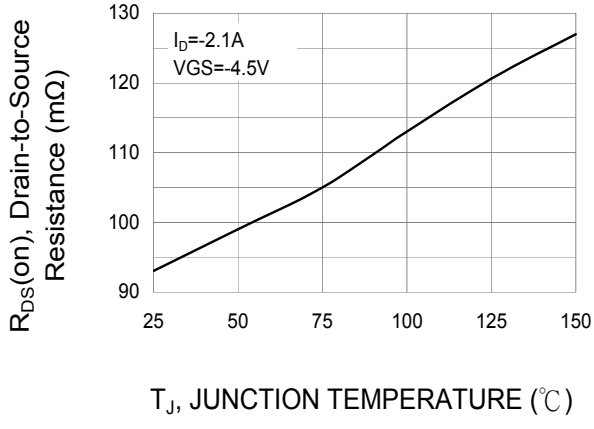

Fig.6 On-Resistance Variation with Temperature

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CHARACTERISTIC CURVES

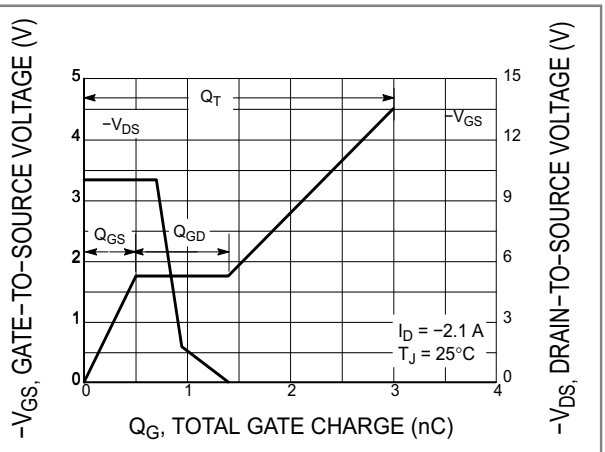

Fig.7 Gate-to-Source and Drain-to-Source vs. Total Charge

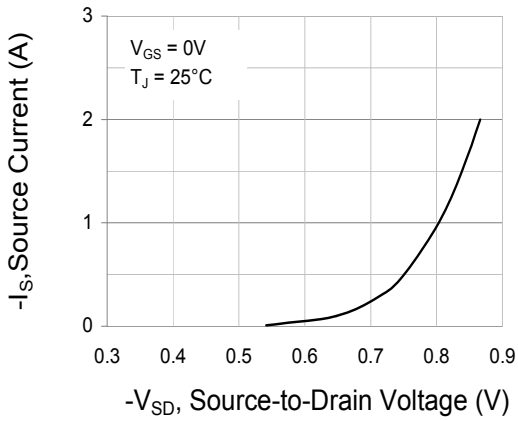

Fig.8 Diode Forward Voltage vs. Current

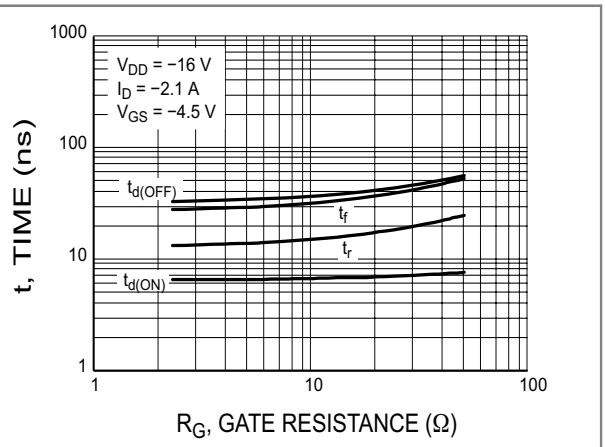

Fig.9 Resistive Switching Time Variation vs. Gate Resistance

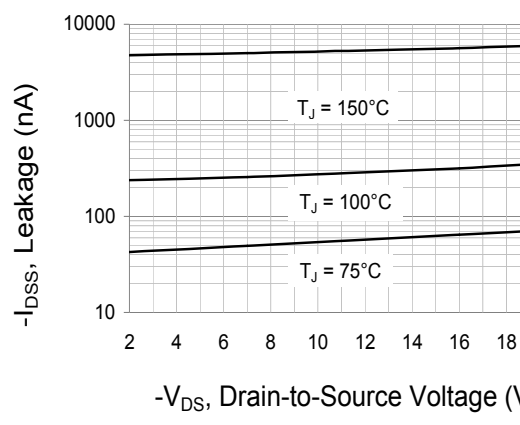

Fig.10 Drain-to-Source Leakage Current vs. Voltage

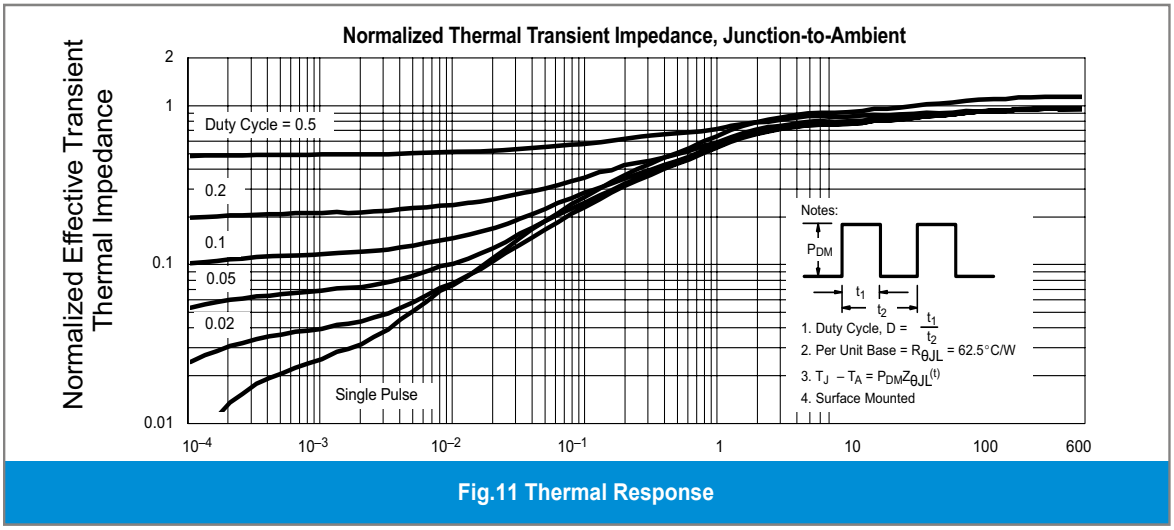

Fig.11 Thermal Response

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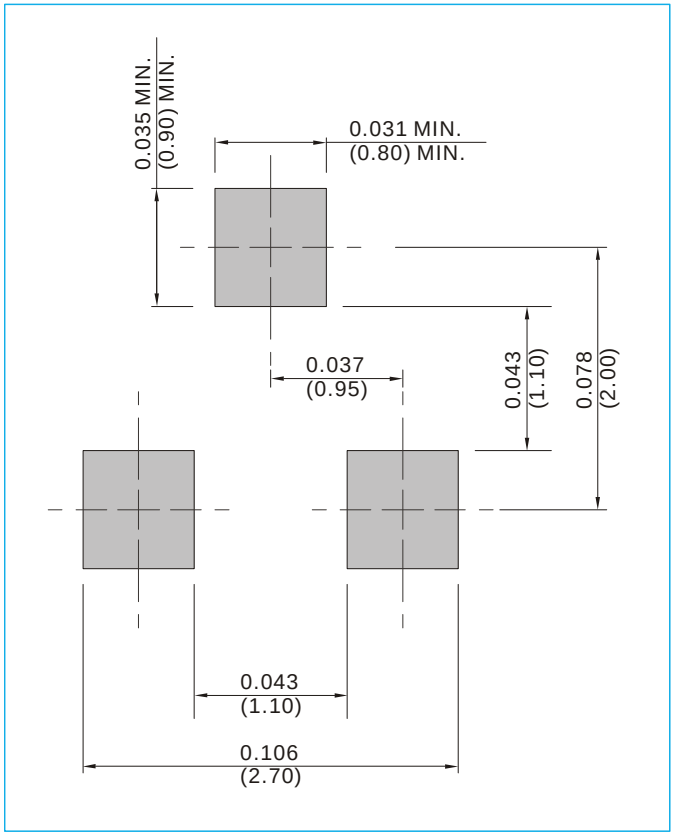
MOUNTING PAD LAYOUT

SOT-23 Unit：inch(mm)



ORDER INFORMATION

- Packing information

  T/R - 12K per 13" plastic Reel

  T/R - 3K per 7" plastic Reel

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Part No_packing code_Version

PJ2301_R1_00001

PJ2301_R2_00001

For example :

RB500V-40_R2_00001

Part No.

Serial number

Version code means HF

Packing size code means 13"

Packing type means T/R

Packing Code XX				Version Code XXXXX		
Packing type	1st Code	Packing size code	2nd Code	HF or RoHS	1st Code	2nd~5th Code
Tape and Ammunition Box (T/B)	A	N/A	0	HF	0	serial number
Tape and Reel (T/R)	R	7"	1	RoHS	1	serial number
Bulk Packing (B/P)	B	13"	2			
Tube Packing (T/P)	T	26mm	X			
Tape and Reel (Right Oriented) (TRR)	S	52mm	Y			
Tape and Reel (Left Oriented) (TRL)	L	PANASERT T/B CATHODE UP (PBCU)	U			
FORMING	F	PANASERT T/B CATHODE DOWN (PBCD)	D			

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