



PJ2301

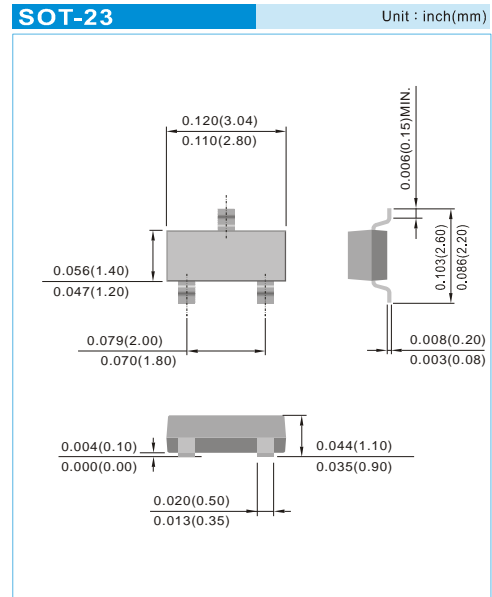
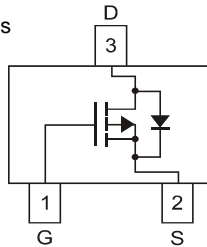
20V P-Channel Enhancement Mode MOSFET

FEATURES

- $R_{DS(ON)}$, V_{GS} @ -1.8V, I_D @ -1.5A=200m Ω
- $R_{DS(ON)}$, V_{GS} @ -4.5V, I_D @ -2.2A=105m Ω
- 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 ($T_A=25^\circ\text{C}$ 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	I_D	$T_A=25^\circ\text{C}$	-1.75
	Steady-State		$T_A=70^\circ\text{C}$	-1.4
	$t \leq 5\text{s}$		$T_A=25^\circ\text{C}$	-2
Pulsed Drain Current (Notes 1)		I_{DM}	10	A
Power Dissipation (Notes 2)		P_D	$T_A=25^\circ\text{C}$	700
			$T_A=70^\circ\text{C}$	450
Typical Thermal Resistance (Notes 1)		$R_{\theta JA}$	175	$^\circ\text{C/W}$
Typical Thermal Resistance (Notes 1)		$R_{\theta JL}$	65	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to + 150	$^\circ\text{C}$

NOTES:

1. Mounted on minimum pad layout.
2. Mounted on 48cm² FR-4 PCB board.



PJ2301

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D = -250\mu A$	-20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D = -250\mu A$	-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}	$V_{GS} = \pm 8V, V_{DS}=0V$	-	-	±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}	$V_{DD} = -16V,$ $I_D = -2.2A, V_{GS} = -4.5V$ $R_{GEN}=2.5\Omega$	-	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}	$V_{DS} = -10V, V_{GS}=0V$ $f=1.0MHz$	-	200	300	pF
Output Capacitance	C_{oss}		-	90	140	
Reverse Transfer Capacitance	C_{rss}		-	40	60	
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V$ $f=1.0MHz$	-	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}	$I_s = -2.1A, di/dt=100A/\mu s$	-	30	-	ns
Body-Diode Reverse Recovery Charge	Q_{rr}		-	12	-	nC



PJ2301

CHARACTERISTIC CURVES

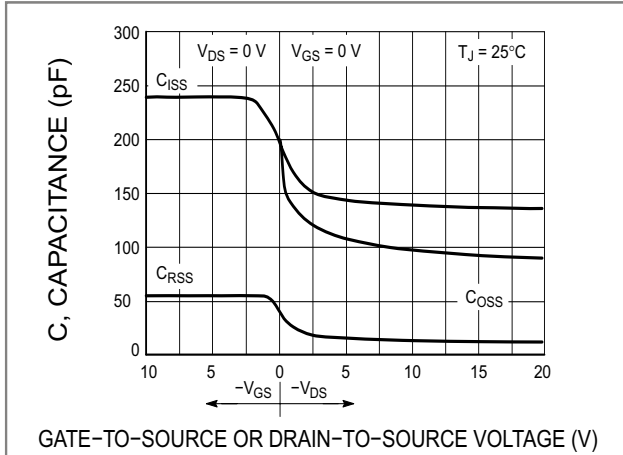


Fig.1 Capacitance Variation

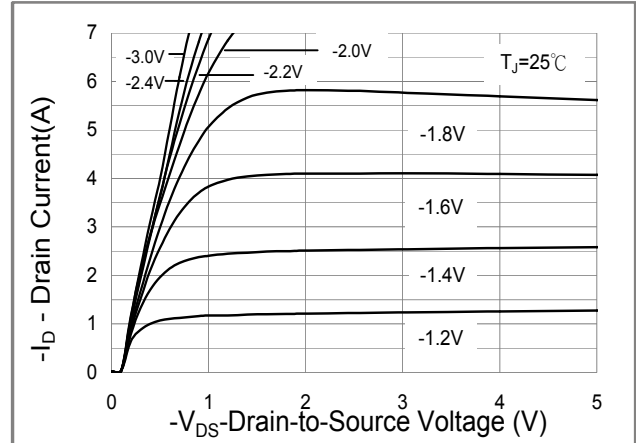


Fig.2 On-Region Characteristics

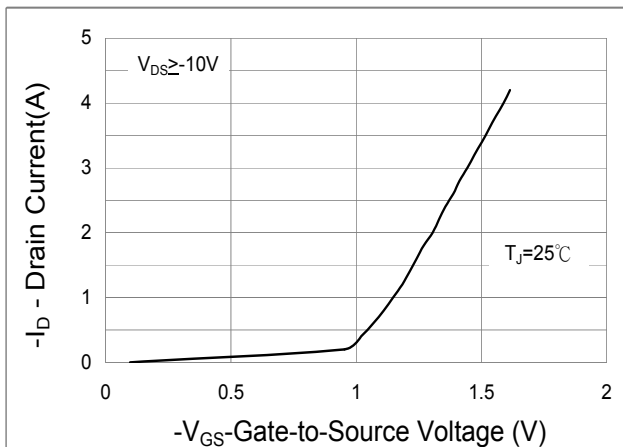


Fig.3 Transfer Characteristics

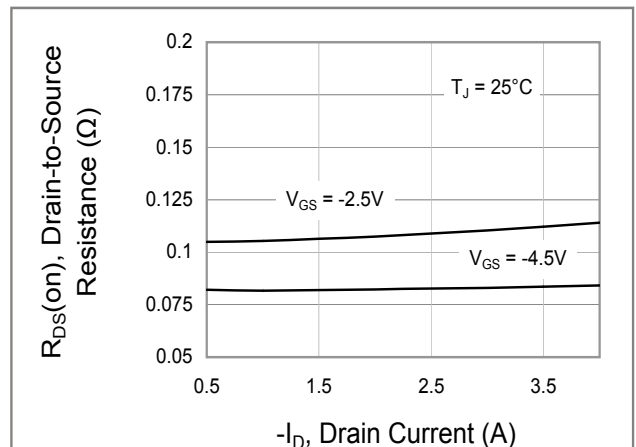


Fig.4 On-Resistance vs. Drain Current and Gate Voltage

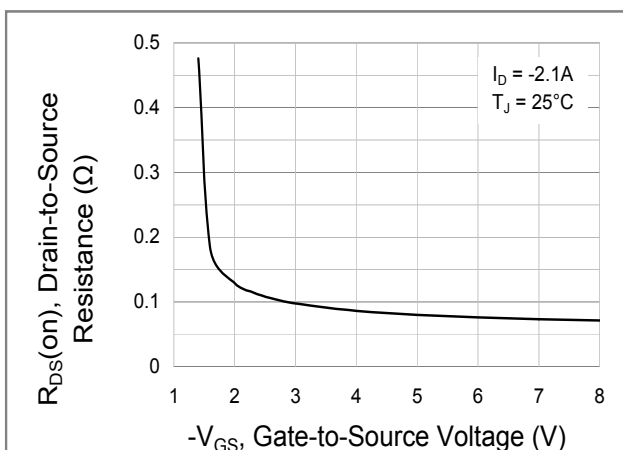


Fig.5 On-Resistance vs. Gate-Source Voltage

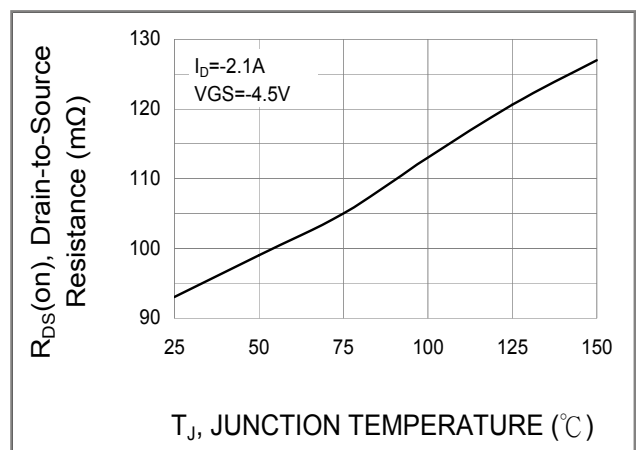


Fig.6 On-Resistance Variation with Temperature



PJ2301

CHARACTERISTIC CURVES

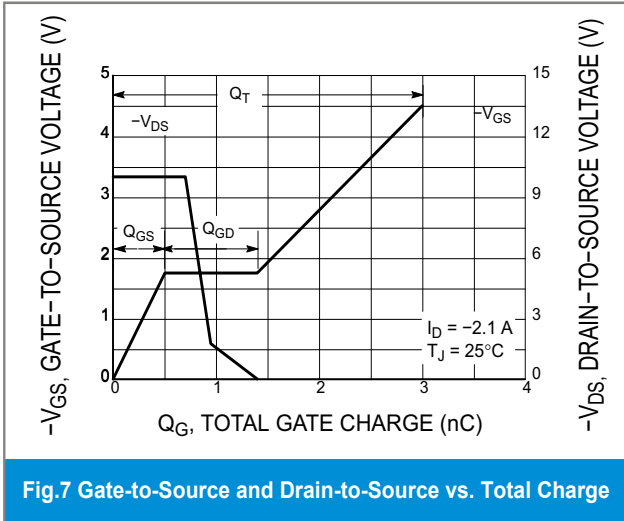


Fig.7 Gate-to-Source and Drain-to-Source vs. Total Charge

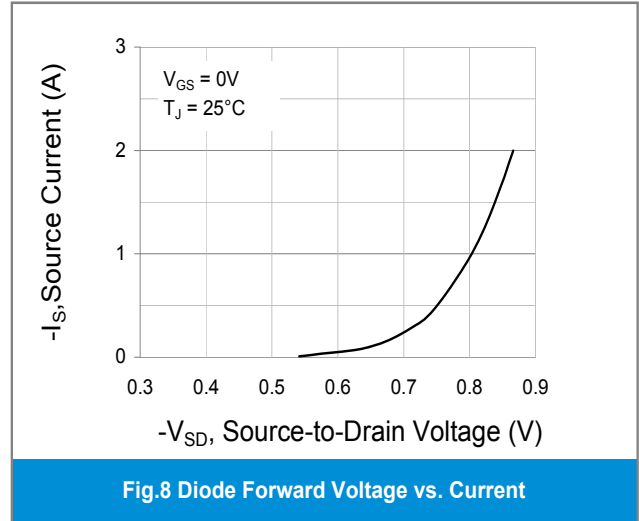


Fig.8 Diode Forward Voltage vs. Current

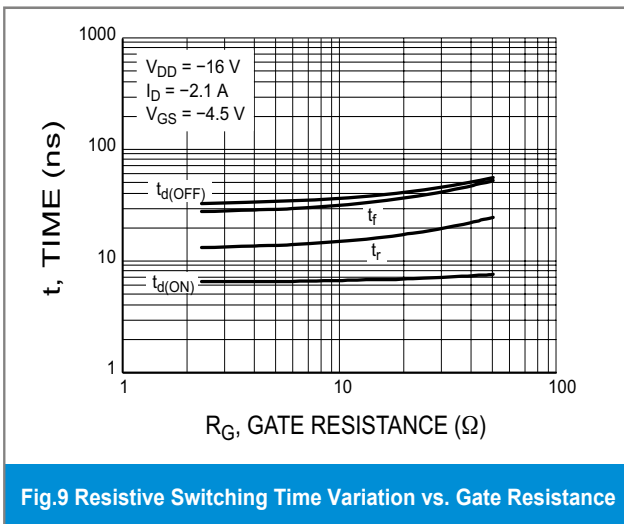


Fig.9 Resistive Switching Time Variation vs. Gate Resistance

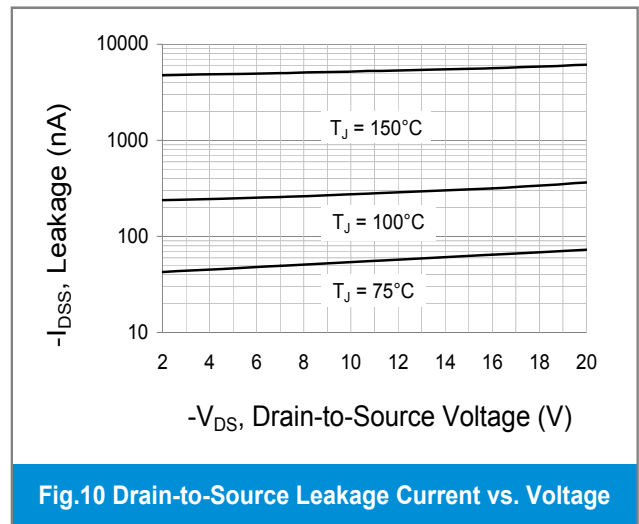


Fig.10 Drain-to-Source Leakage Current vs. Voltage

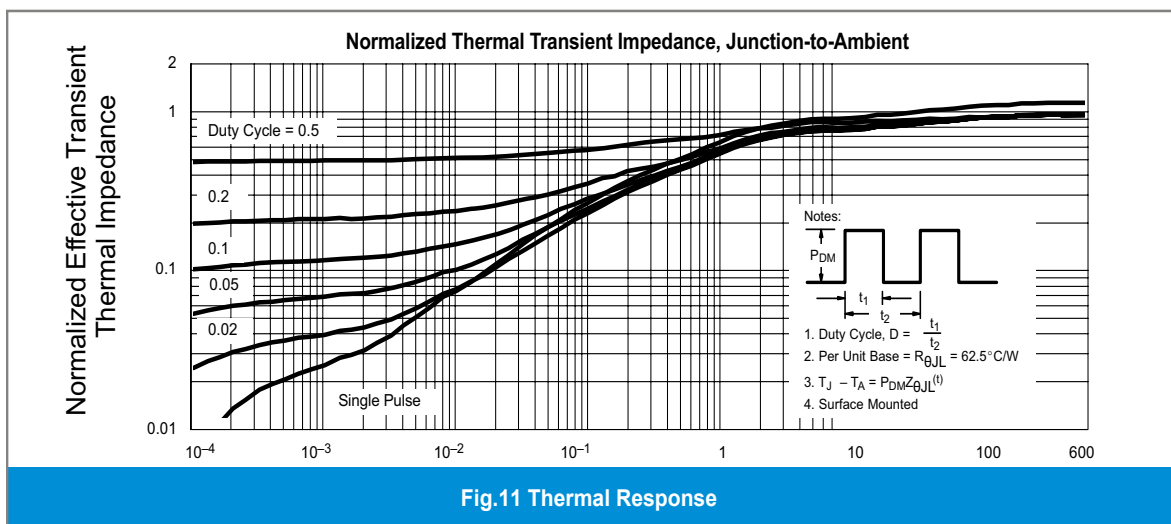


Fig.11 Thermal Response

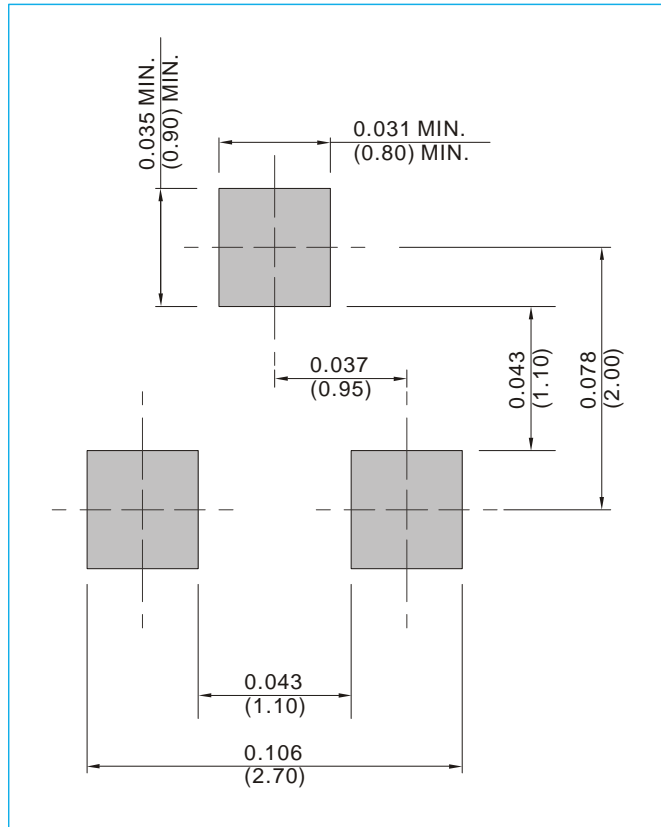


PJ2301

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



PJ2301

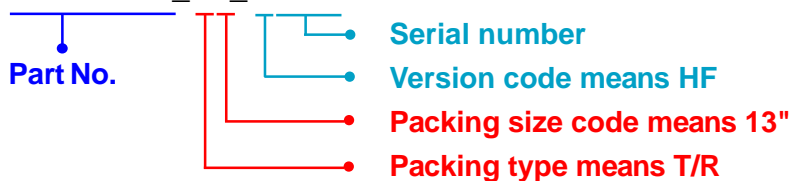
Part No_packing code_Version

PJ2301_R1_00001

PJ2301_R2_00001

For example :

RB500V-40_R2_00001



Packing Code XX				Version Code XXXXX		
Packing type	1 st Code	Packing size code	2 nd Code	HF or RoHS	1 st Code	2 nd ~5 th 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			



PJ2301

Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from Panjit International Inc..
- Panjit International Inc. reserves the rights to make changes of the content herein the document anytime without notification. Please refer to our website for the latest document.
- Panjit International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- Panjit International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. Panjit International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed and authorized for equipments requiring high level of reliability or relating to human life and for any applications concerning life-saving or life-sustaining, such as medical instruments, transportation equipment, aerospace machinery et cetera. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Panjit International Inc. for any damages resulting from such improper use or sale.
- Since Panjit uses lot number as the tracking base, please provide the lot number for tracking when complaining.