PANJIT SEMICONDUCTOR

PJA3461

## 60V P-Channel Enhancement Mode MOSFET

| **Voltage** | **-60 V** | **Current** | **-1.9A** |

Features

- $R_{DS(ON)}$, V_{GS}@-10V, I_D@-1.9A<190mΩ

- $R_{DS(ON)}$, V_{GS}@-4.5V, I_D@-1.5A<240mΩ

- Advanced Trench Process Technology

- Specially Designed for Switch Load, PWM Application, etc

- 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: A61

SOT-23　　　　　**Unit : inch(mm**
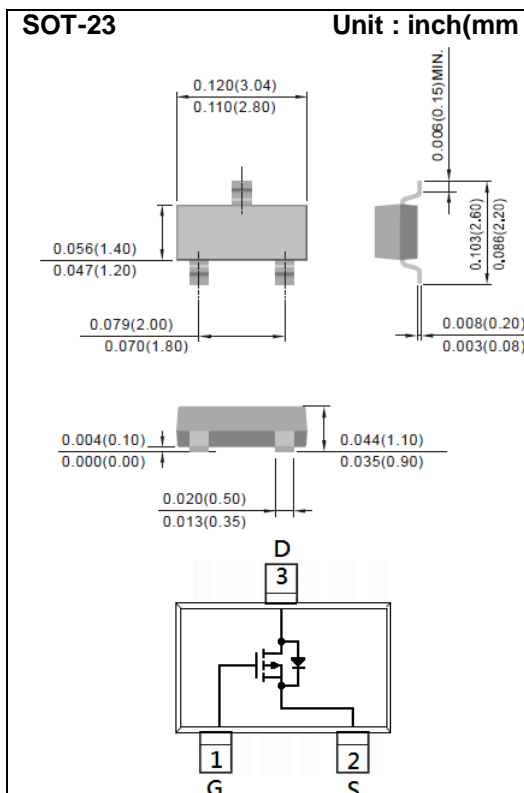
Maximum Ratings and Thermal Characteristics $(T_A=25^oC$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_A=25^oC$	I_D	-1.9	A
	$T_A=70^oC$		-1.5	
Pulsed Drain Current (Note 1)		I_{DM}	-7.6	A
Power Dissipation	$T_A=25^oC$	P_D	1.25	W
	$T_A=70^oC$		0.8	
Single Pulse Avalanche Energy (Note 5)		E_{AS}	32	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	^oC
Typical Thermal resistance - Junction to Ambient (Note 6)		$R_{\theta JA}$	100	$^oC/W$

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Electrical Characteristics $(T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=-250uA$	-60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$, $I_D=-250uA$	-1.0	-1.88	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V$, $I_D=-1.9A$	-	140	190	mΩ
		$V_{GS}=-4.5V$, $I_D=-1.5A$	-	190	240	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V$, $V_{GS}=0V$	-	-	-1	uA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm20V$, $V_{DS}=0V$	-	-	±100	nA
Dynamic [Note 7]						
Total Gate Charge	Q_g	$V_{DS}=-30V$, $I_D=-1.9A$, $V_{GS}=-10V$ [Note 1,2]	-	8.3	-	nC
Gate-Source Charge	Q_{gs}		-	1.8	-	
Gate-Drain Charge	Q_{gd}		-	1.6	-	
Input Capacitance	Ciss	$V_{DS}=-30V$, $V_{GS}=0V$, f=1.0MHZ	-	430	-	pF
Output Capacitance	Coss		-	33	-	
Reverse Transfer Capacitance	Crss		-	29	-	
Turn-On Delay Time	$td_{(on)}$	$V_{DD}=-30V$, $I_D=-1.0A$, $V_{GS}=-10V$, $R_G=6Ω$ [Note 1,2]	-	5.1	-	ns
Turn-On Rise Time	tr		-	20	-	
Turn-Off Delay Time	$td_{(off)}$		-	36	-	
Turn-Off Fall Time	tf		-	11	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	-1.5	A
Diode Forward Voltage	V_{SD}	$I_S=-1.0A$, $V_{GS}=0V$	-	-0.78	-1.0	V

NOTES :

1. Pulse width$\leq$300us, Duty cycle$\leq$2%
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ =25°C.
5. The test condition is L=1mH, $I_{AS}=8A$, $V_{DD}=25V$, $V_{GS}=10V$
6. RΘJA is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch^2 with 2oz.square pad of copper.
7. Guaranteed by design, not subject to production testing.
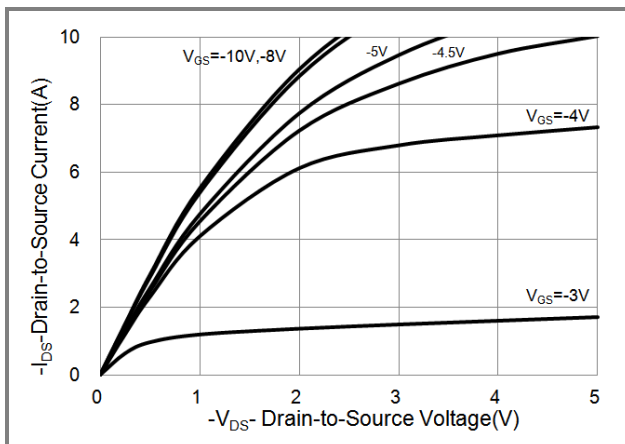
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TYPICAL CHARACTERISTIC CURVES
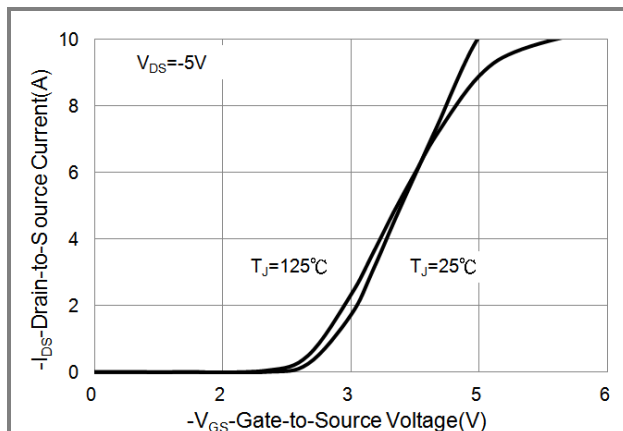
Fig.1 On-Region Characteristics
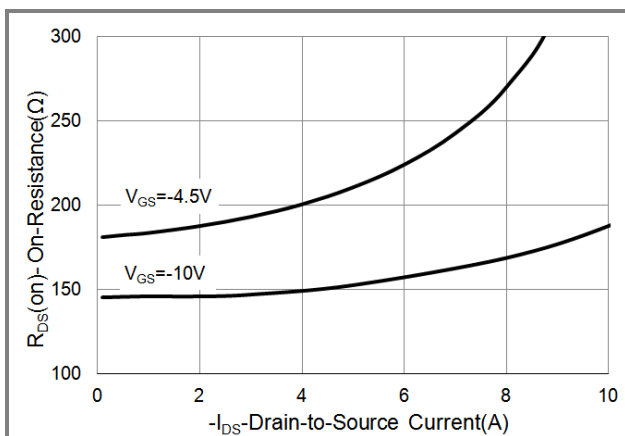
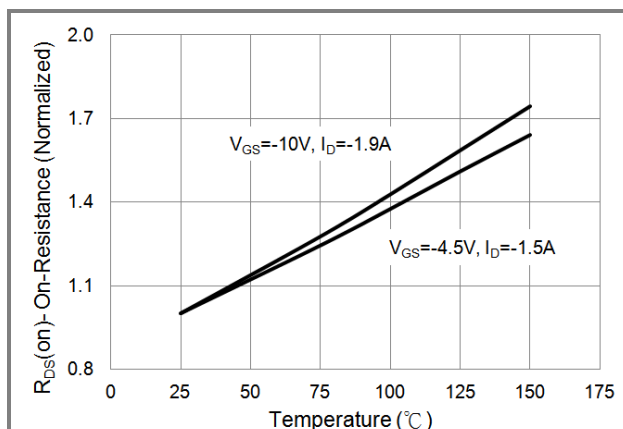**Fig.2 Transfer Characteristics**

Fig.3 On-Resistance vs. Drain Current

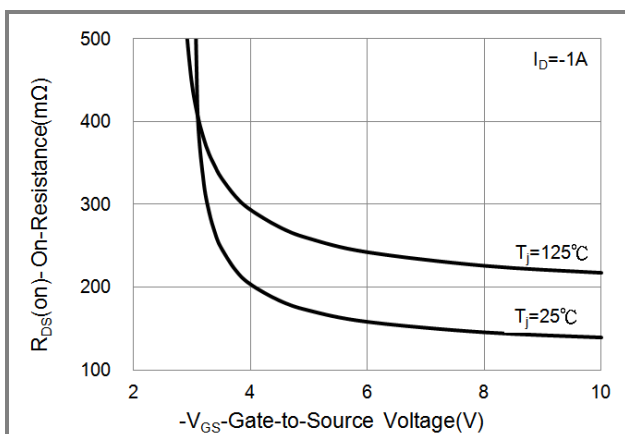**Fig.4 On-Resistance vs. Junction temperature**

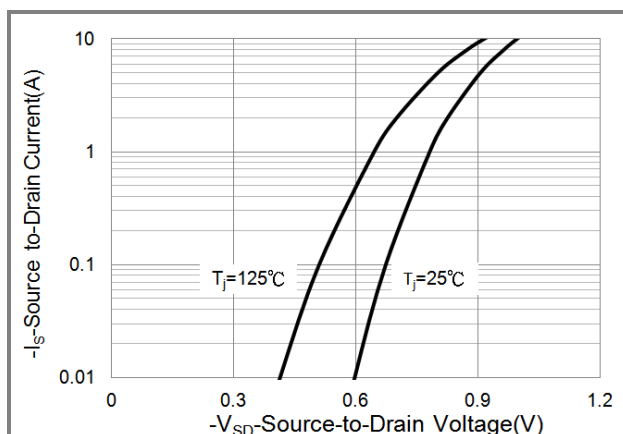**Fig.5 On-Resistance Variation with VGS.**

Fig.6 Body Diode Characteristics
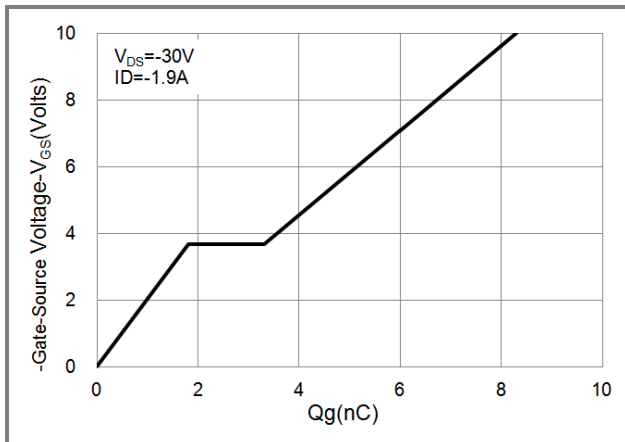
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TYPICAL CHARACTERISTIC CURVES

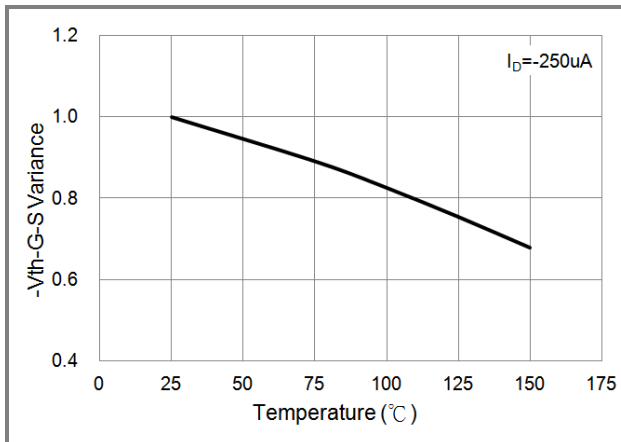**Fig.7 Gate-Charge Characteristics**

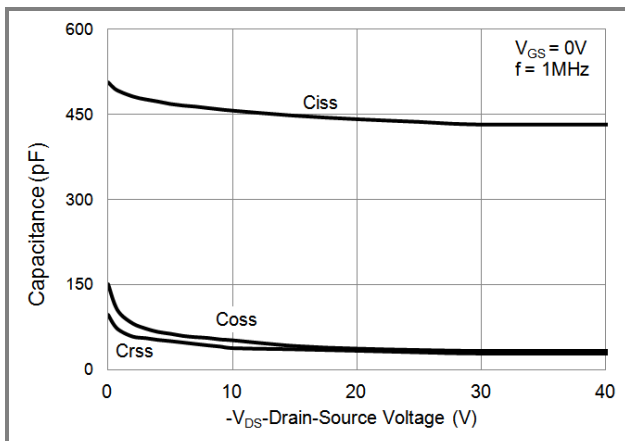**Fig.8 Threshold Voltage Variation with Temperature.**

Fig.9 Capacitance vs. Drain-Source Voltage.
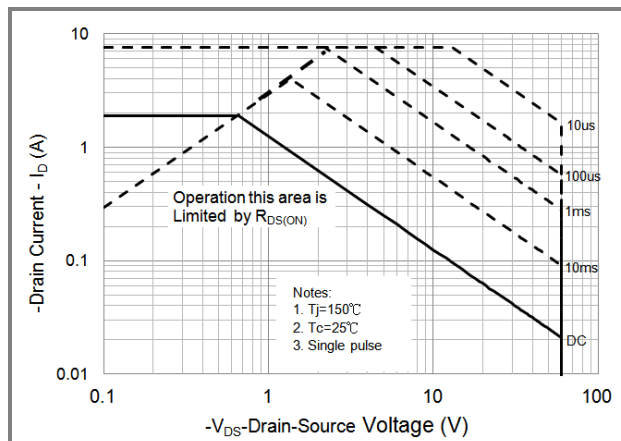

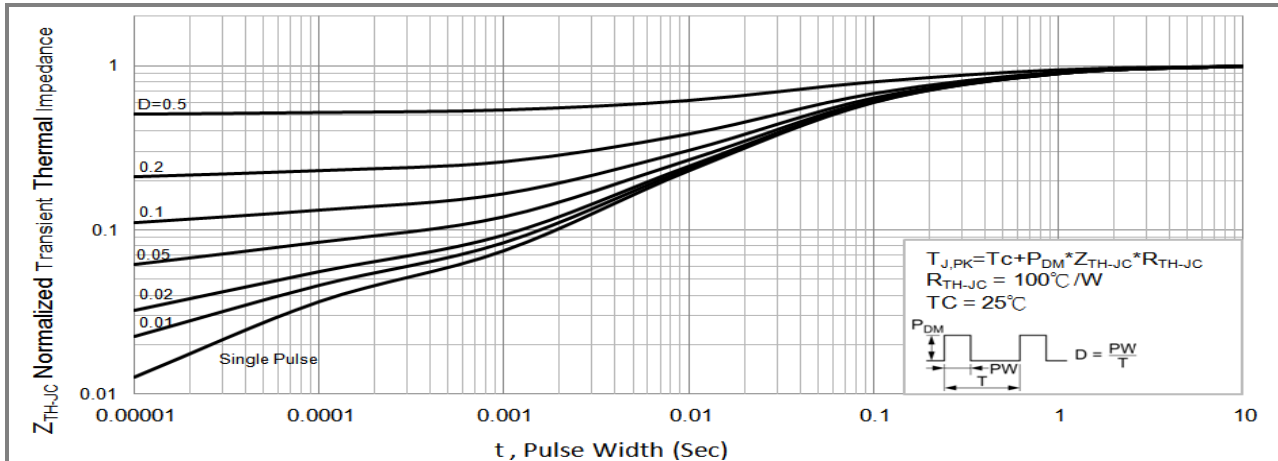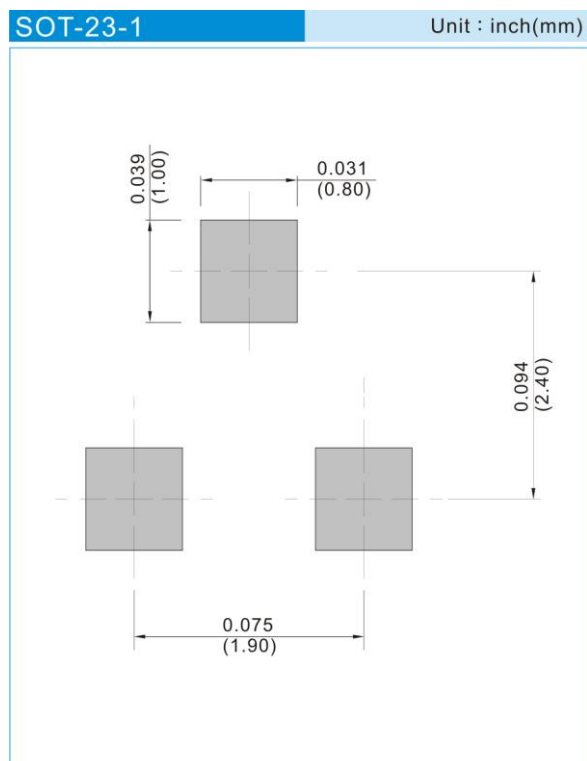**Fig.10 Maximum Safe Operating Area.**

Fig.11 Normalized Transient Thermal Impedance vs. Pulse Width

PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJA3461_R1_00001	SOT-23	3K pcs / 7" reel	A61	Halogen free
PJA3461_R2_00001	SOT-23	12K pcs / 13" reel	A61	Halogen free

MOUNTING PAD LAYOUT

SOT-23-1   Unit : inch(mm)

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