



PJA3461

60V P-Channel Enhancement Mode MOSFET

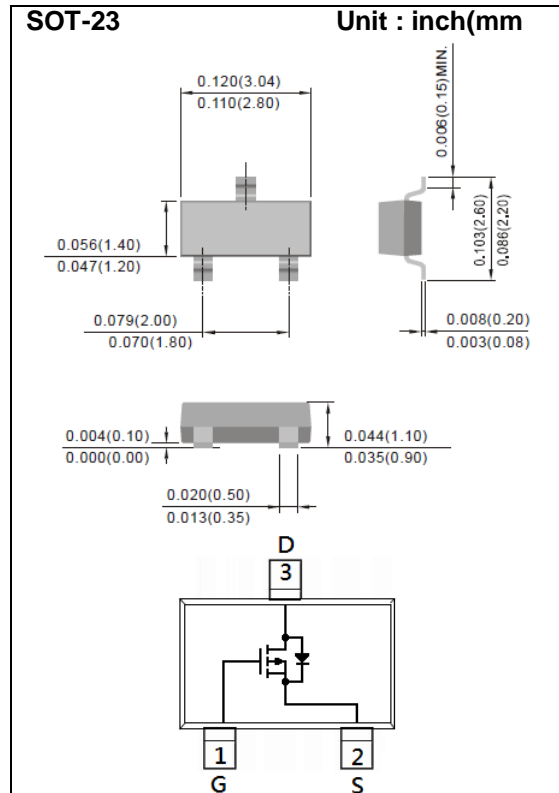
Voltage **-60 V** **Current** **-1.9A**

Features

- $R_{DS(ON)}$, $V_{GS}@-10V$, $I_D@-1.9A < 190m\Omega$
- $R_{DS(ON)}$, $V_{GS}@-4.5V$, $I_D@-1.5A < 240m\Omega$
- 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



Maximum Ratings and Thermal Characteristics ($T_A=25^\circ C$ unless otherwise noted)

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



PJA3461

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.88	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1.9A$	-	140	190	m Ω
		$V_{GS}=-4.5V, I_D=-1.5A$	-	190	240	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 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	C_{iss}	$V_{DS}=-30V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	430	-	pF
Output Capacitance	C_{oss}		-	33	-	
Reverse Transfer Capacitance	C_{rss}		-	29	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-30V, I_D=-1.0A,$ $V_{GS}=-10V,$ $R_G=6\Omega$ (Note 1,2)	-	5.1	-	ns
Turn-On Rise Time	t_r		-	20	-	
Turn-Off Delay Time	$t_{d(off)}$		-	36	-	
Turn-Off Fall Time	t_f		-	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 $\leq 300\mu s$, 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 $T_J(\text{MAX})=150^\circ\text{C}$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ\text{C}$.
5. The test condition is $L=1\text{mH}, I_{AS}=8A, V_{DD}=25V, V_{GS}=10V$
6. $R_{\theta JA}$ 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 inch² with 2oz.square pad of copper.
7. Guaranteed by design, not subject to production testing.



PJA3461

TYPICAL CHARACTERISTIC CURVES

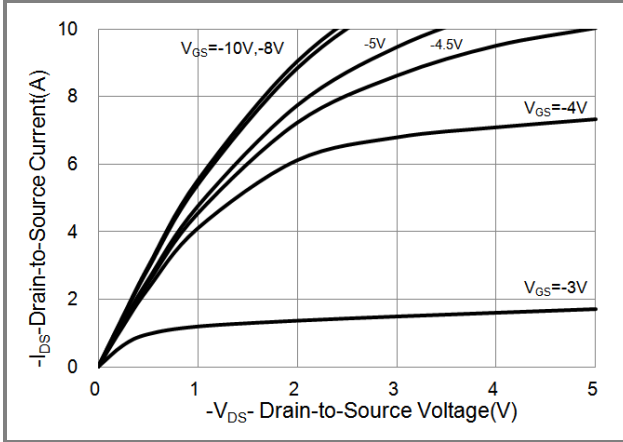


Fig.1 On-Region Characteristics

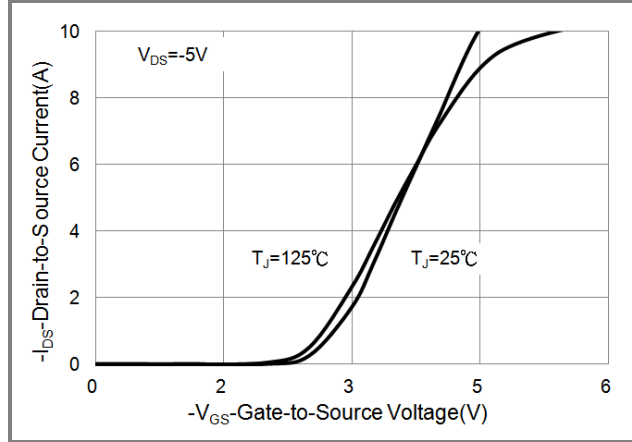


Fig.2 Transfer Characteristics

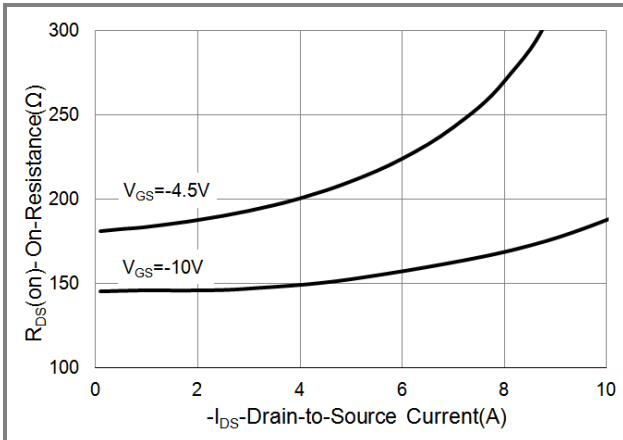


Fig.3 On-Resistance vs. Drain Current

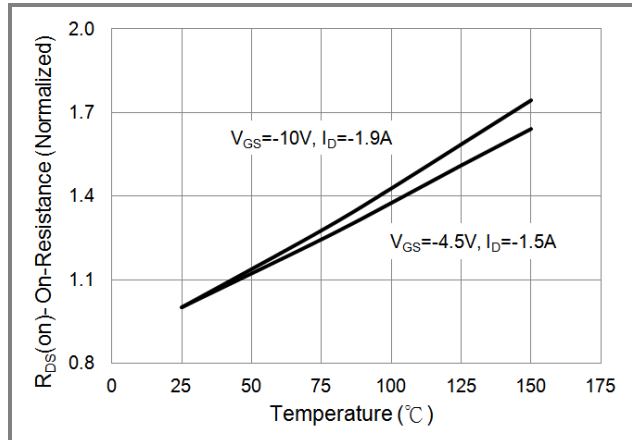


Fig.4 On-Resistance vs. Junction temperature

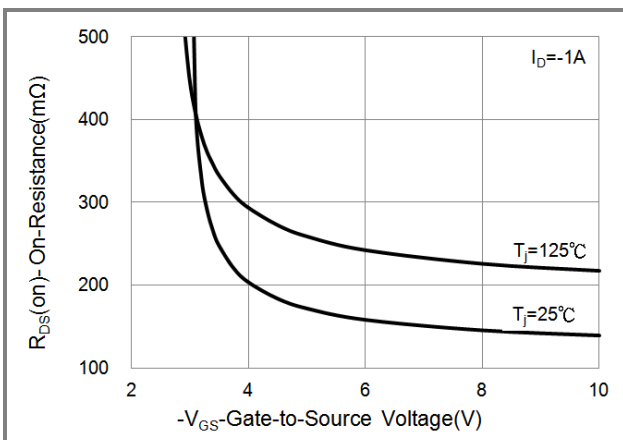


Fig.5 On-Resistance Variation with VGS.

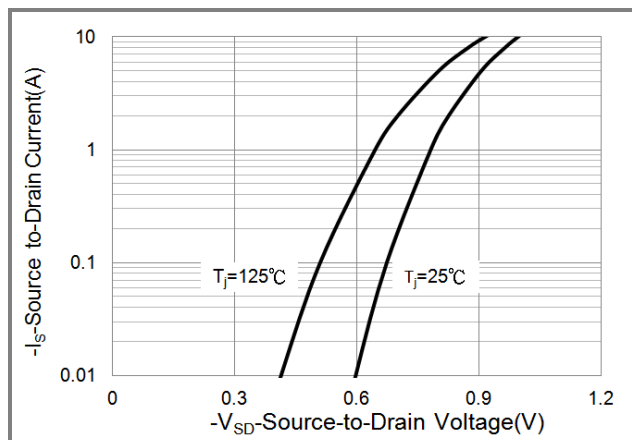


Fig.6 Body Diode Characteristics



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TYPICAL CHARACTERISTIC CURVES

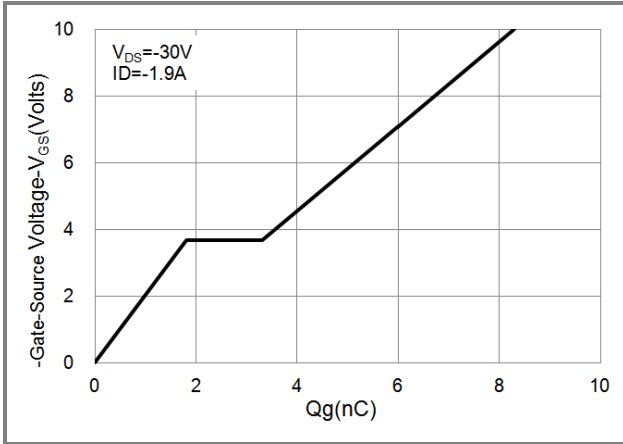


Fig.7 Gate-Charge Characteristics

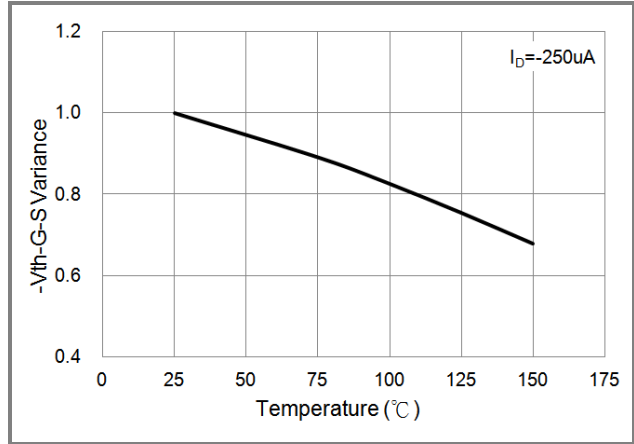


Fig.8 Threshold Voltage Variation with Temperature.

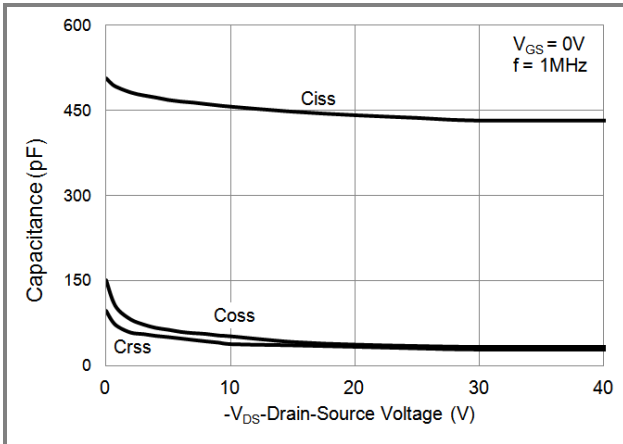


Fig.9 Capacitance vs. Drain-Source Voltage.

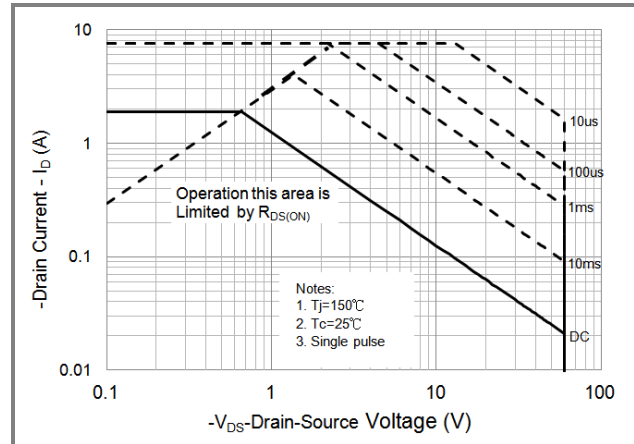


Fig.10 Maximum Safe Operating Area.

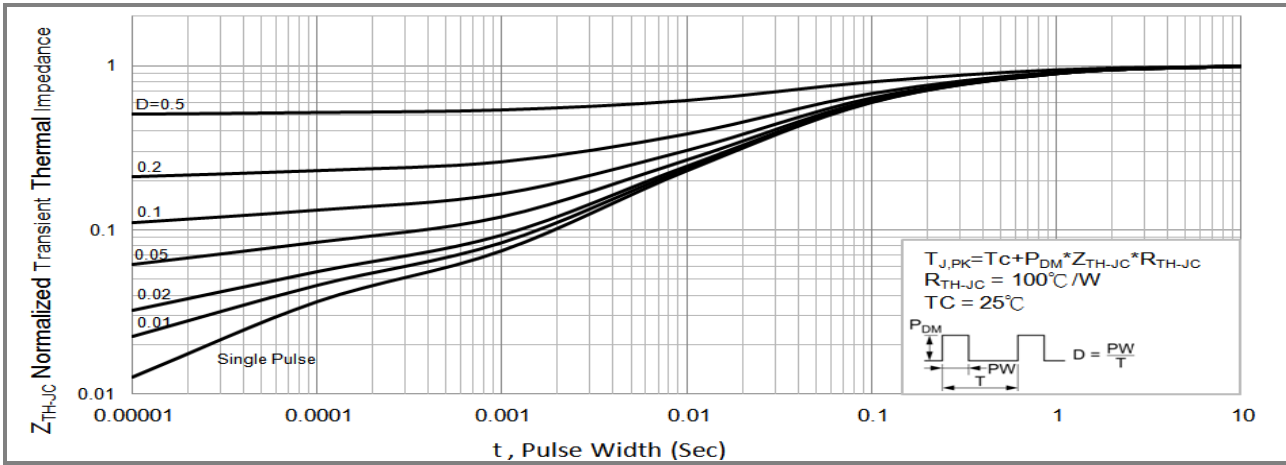


Fig.11 Normalized Transient Thermal Impedance vs. Pulse Width

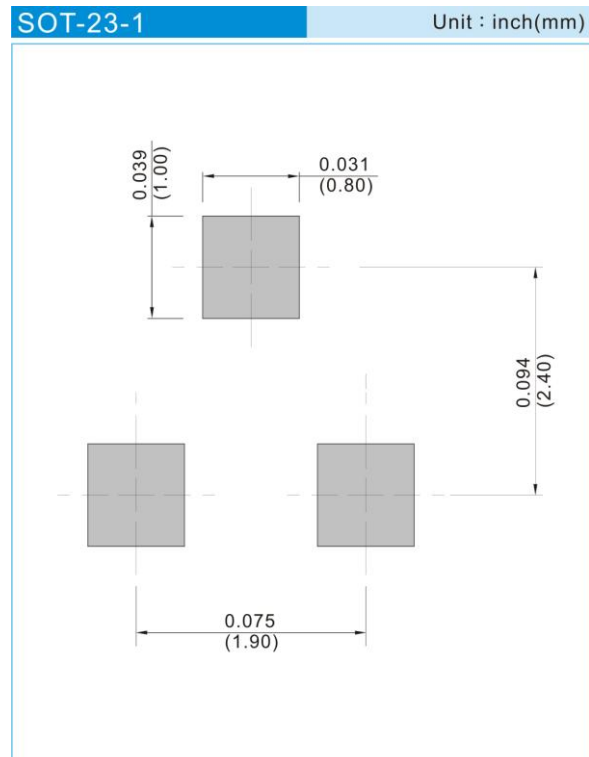


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PART NO PACKING CODE VERSION

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





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