

PJC7409

20V P-Channel Enhancement Mode MOSFET

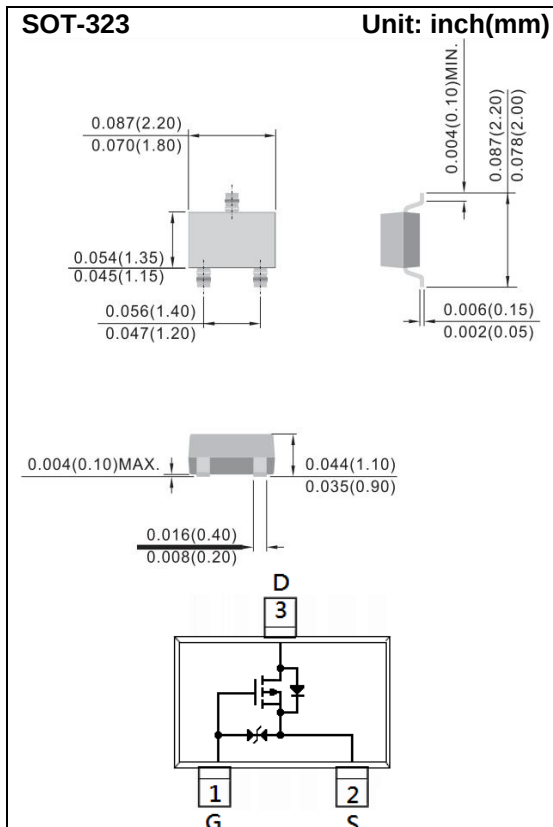
Voltage -20 V **Current** -500mA

Features

- Low Voltage Drive (1.2V).
- Advanced Trench Process Technology
- Specially Designed for Load switch, PWM Application, etc.
- ESD Protected
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Green molding compound as per IEC61249 Std. (Halogen Free)

Mechanical Data

- Case : SOT-323 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.00018 ounces, 0.005 grams
- Marking : C09



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}	±10	V
Continuous Drain Current		I _D	-500	mA
Pulsed Drain Current (Note 4)		I _{DM}	-1000	mA
Power Dissipation	T _a =25°C	P _D	350	mW
	Derate above 25°C		2.8	mW/°C
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Typical Thermal resistance		R _{θJA}	357	°C/W
- Junction to Ambient (Note 3)				



PJC7409

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 =-250uA	-20	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-0.3	-0.59	-1.0	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-500mA	-	0.85	1.2	Ω
		V _{GS} =-2.5V, I _D =-200mA	-	0.99	1.5	
		V _{GS} =-1.8V, I _D =-100mA	-	1.16	2.2	
		V _{GS} =-1.5V, I _D =-50mA	-	1.33	3.6	
		V _{GS} =-1.2V, I _D =-10mA	-	1.5	6.0	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V	-	-	-1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =+8V, V _{DS} =0V	-	+2	+10	uA
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-10V, I _D =-500mA, V _{GS} =-4.5V ^(Note 1,2)	-	1.4	-	nC
Gate-Source Charge	Q _{gs}		-	0.19	-	
Gate-Drain Charge	Q _{gd}		-	0.2	-	
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1.0MHZ	-	38	-	pF
Output Capacitance	C _{oss}		-	15	-	
Reverse Transfer Capacitance	C _{rss}		-	9	-	
Turn-On Delay Time	td _(on)	V _{DD} =-10V, I _D =-500mA, V _{GS} =-4.5V, R _G =6Ω ^(Note 1,2)	-	7.2	-	ns
Turn-On Rise Time	tr		-	21	-	
Turn-Off Delay Time	td _(off)		-	85	-	
Turn-Off Fall Time	tf		-	116	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I _S	---	-	-	-500	mA
Diode Forward Voltage	V _{SD}	I _S =-500mA, V _{GS} =0V	-	-0.93	-1.3	V

NOTES :

1. Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
2. Essentially independent of operating temperature typical characteristics.
3. $R_{\theta JA}$ 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 inch FR-4 with 2oz. square pad of copper.
4. The maximum current rating is package limited.
5. Guaranteed by design, not subject to production testing.

PJC7409

TYPICAL CHARACTERISTIC CURVES

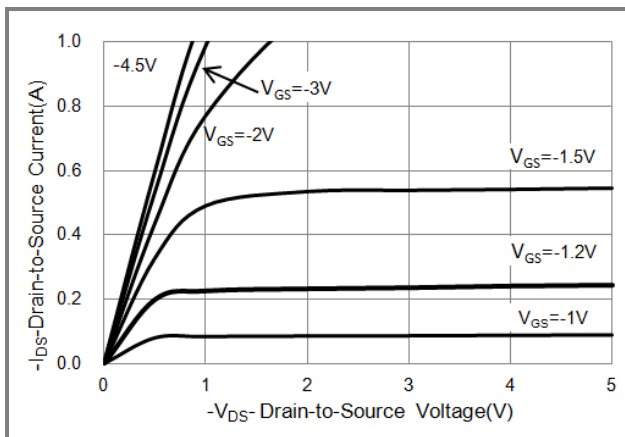


Fig.1 On-Region Characteristics

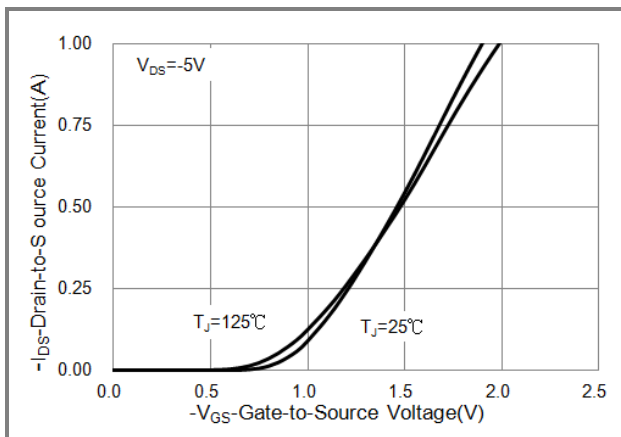


Fig.2 Transfer Characteristics

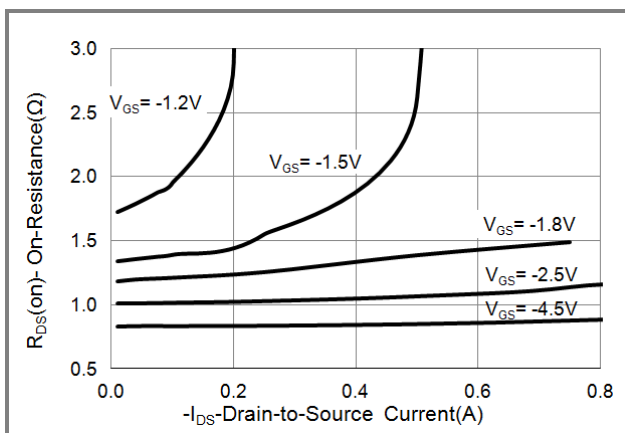


Fig.3 On-Resistance vs. Drain Current

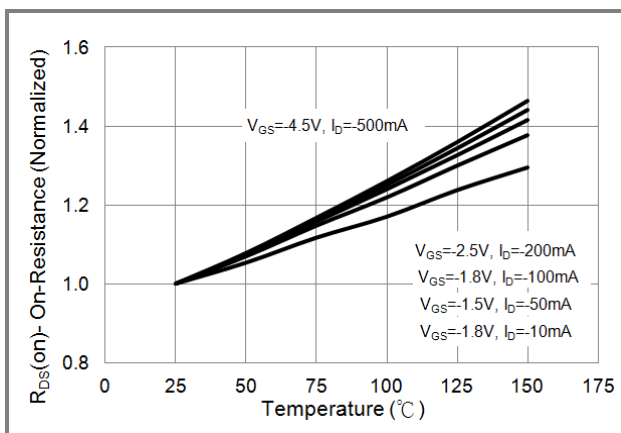


Fig.4 On-Resistance vs. Junction temperature

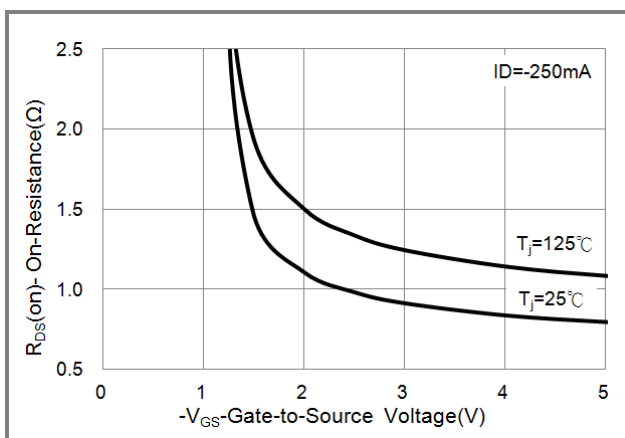


Fig.5 On-Resistance Variation with VGS.

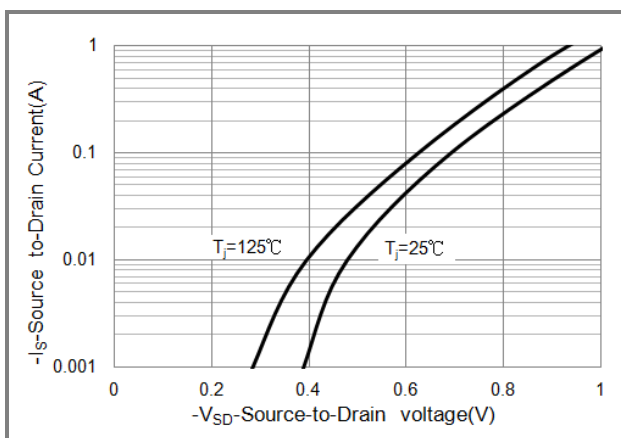


Fig.6 Body Diode Characteristics



PJC7409

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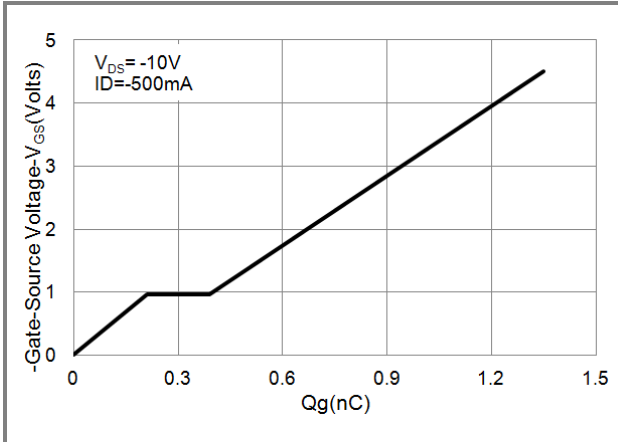


Fig.7 Gate-Charge Characteristics

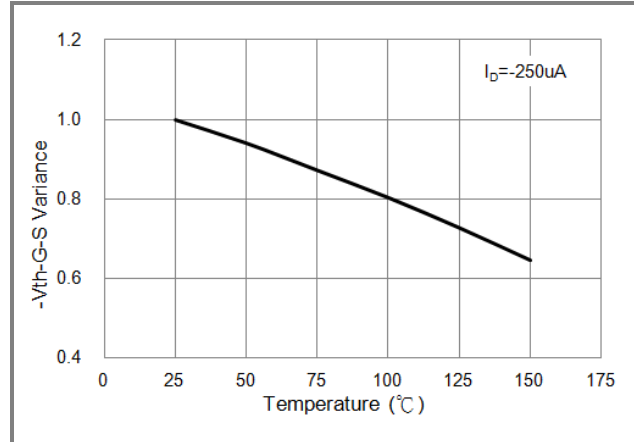


Fig.8 Threshold Voltage Variation with Temperature.

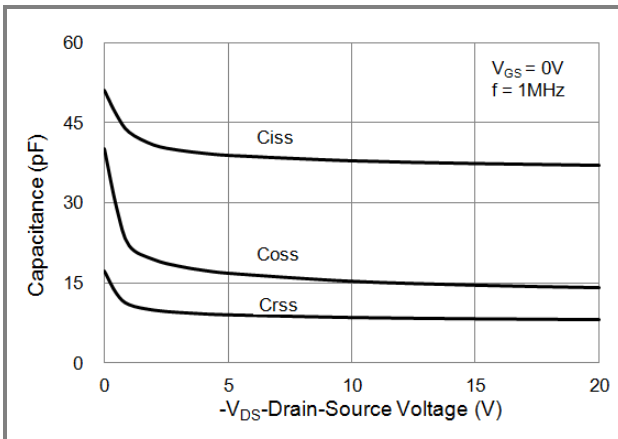


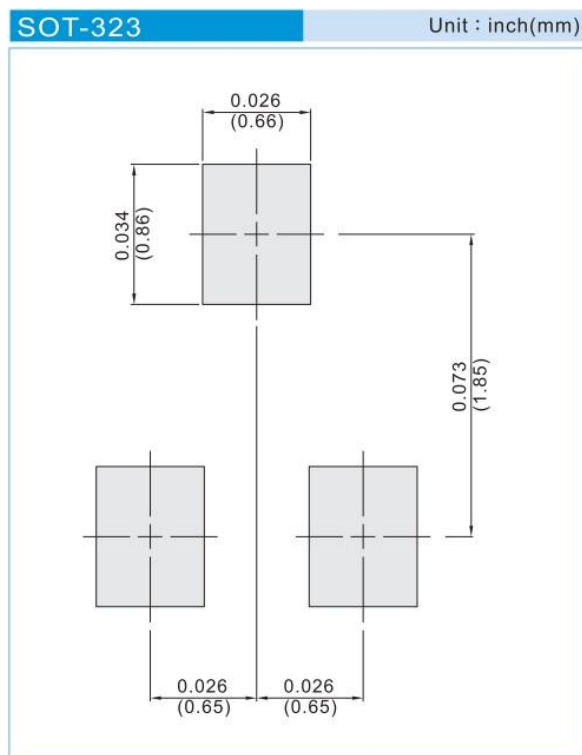
Fig.9 Threshold Voltage Variation with Temperature.

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PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing type	Marking	Version
PJC7409_R1_00001	SOT-323	3K pcs / 7" reel	C09	Halogen free
PJC7409_R2_00001	SOT-323	12K pcs / 13" reel	C09	Halogen free

MOUNTING PAD LAYOUT





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