



PJC7404

20V N-Channel Enhancement Mode MOSFET – ESD Protected

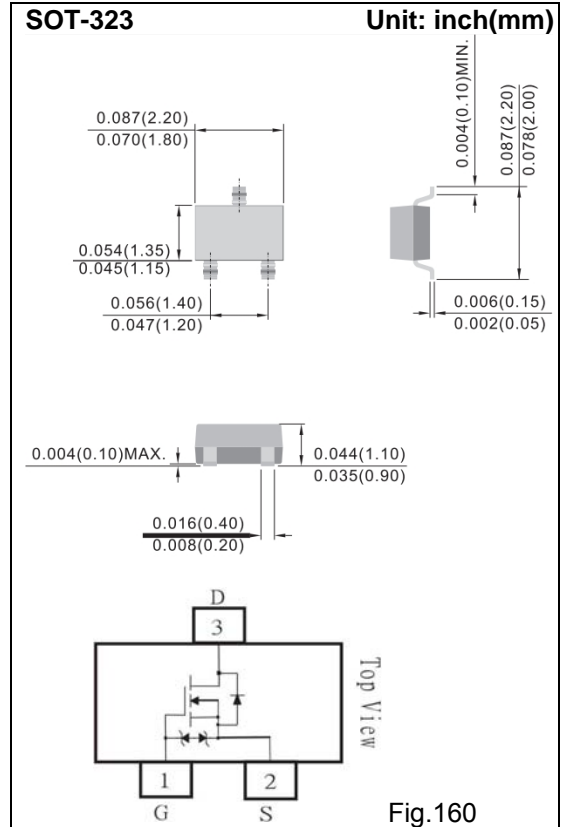
Voltage	20 V	Current	1A
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Features

- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@1.0A < 150m\Omega$
- $R_{DS(ON)}$, $V_{GS}@2.5V$, $I_D@0.7A < 215m\Omega$
- $R_{DS(ON)}$, $V_{GS}@1.8V$, $I_D@0.3A < 400m\Omega$
- Advanced Trench Process Technology
- Specially Designed for Switch Load, PWM Application, etc.
- ESD Protected
- Lead free in comply with EU RoHS 2011/65/EU directives.
- 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 : 0.0002 ounces, 0.005 grams
- Marking : C04



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

PARAMETER	SYMBOL	LIMIT	UNITS	
Drain-Source Voltage	V_{DS}	20	V	
Gate-Source Voltage	V_{GS}	± 8	V	
Continuous Drain Current	I_D	1	A	
Pulsed Drain Current (Note 4)	I_{DM}	4	A	
Power Dissipation	P_D	$T_a=25^\circ C$	350	mW
		Derate above $25^\circ C$	2.8	mW/ $^\circ C$
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$	
Thermal resistance	$R_{\theta JA}$	357	$^\circ C/W$	
- Junction to Ambient (Note 3)				



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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}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	0.8	1.1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=1A$	-	116	150	m Ω
		$V_{GS}=2.5V, I_D=0.7A$	-	160	215	
		$V_{GS}=1.8V, I_D=0.3A$	-	280	400	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	0.01	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$	-	± 2	± 10	μA
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=10V, I_D=1A,$ $V_{GS}=4.5V$ (Note 1,2)	-	1.6	-	nC
Gate-Source Charge	Q_{gs}		-	0.31	-	
Gate-Drain Charge	Q_{gd}		-	0.41	-	
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V,$ $f=1.0MHz$	-	105	-	pF
Output Capacitance	C_{oss}		-	25	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=10V, I_D=1A,$ $V_{GS}=4.5V,$ $R_G=6\Omega$ (Note 1,2)	-	5.8	-	ns
Turn-On Rise Time	t_r		-	25.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	42	-	
Turn-Off Fall Time	t_f		-	32	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	1	A
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$		0.92	1.2	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



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TYPICAL CHARACTERISTIC CURVES

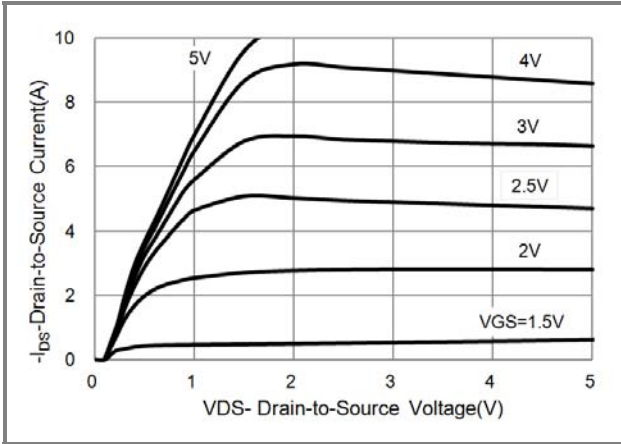


Fig.1 On-Region Characteristics

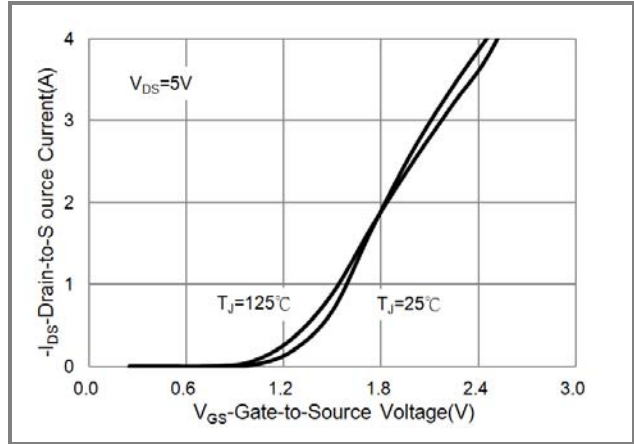


Fig.2 Transfer Characteristics

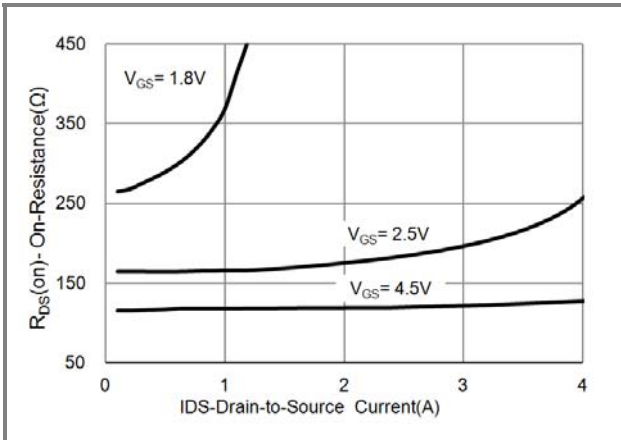


Fig.3 On-Resistance vs. Drain Current

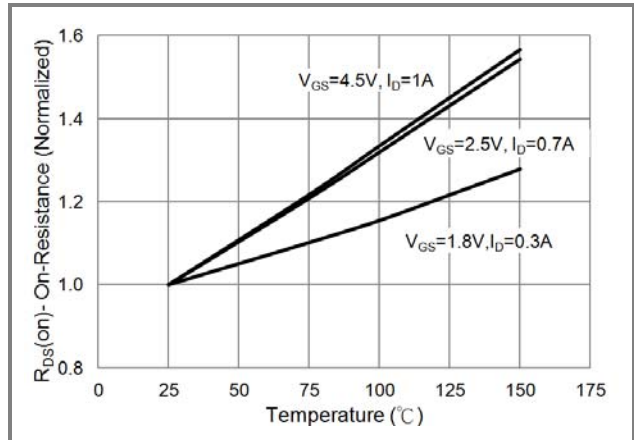


Fig.4 On-Resistance vs. Junction temperature

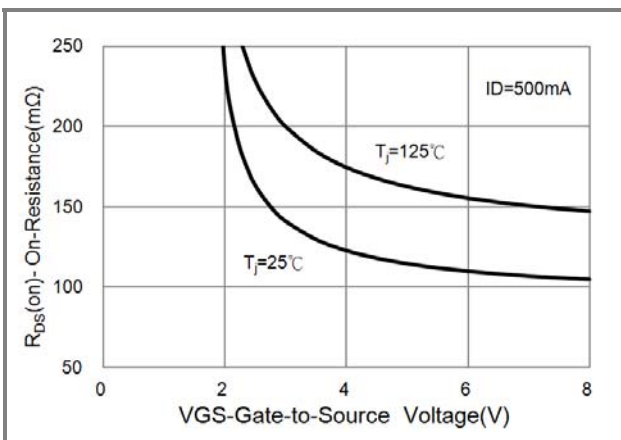


Fig.5 On-Resistance Variation with V_GS.

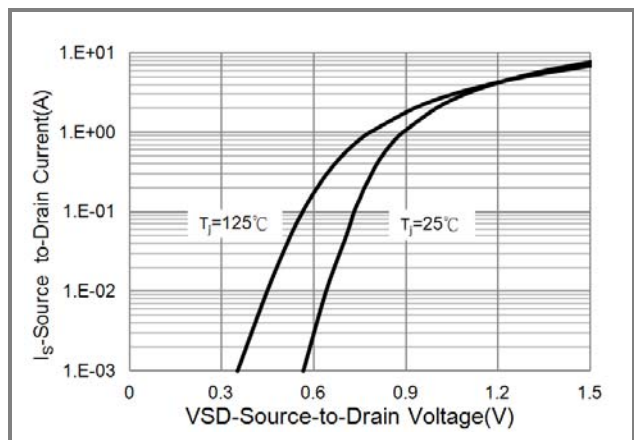


Fig.6 Body Diode Characteristics



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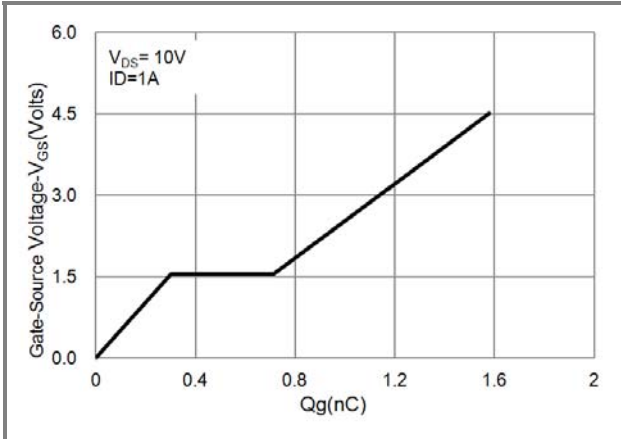


Fig.7 Gate-Charge Characteristics

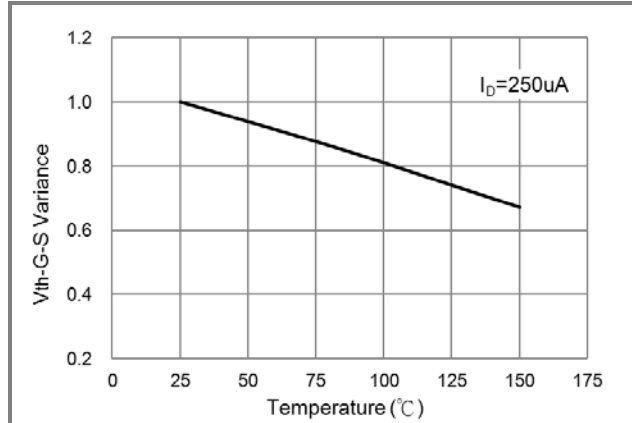


Fig.8 Threshold Voltage Variation with Temperature.

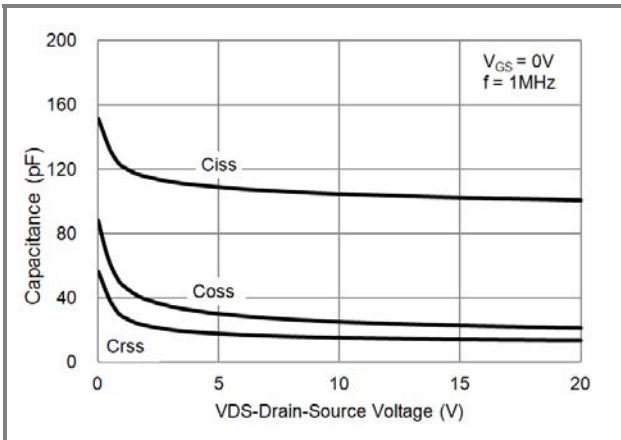


Fig.9 Capacitance vs. Drain-Source Voltage.

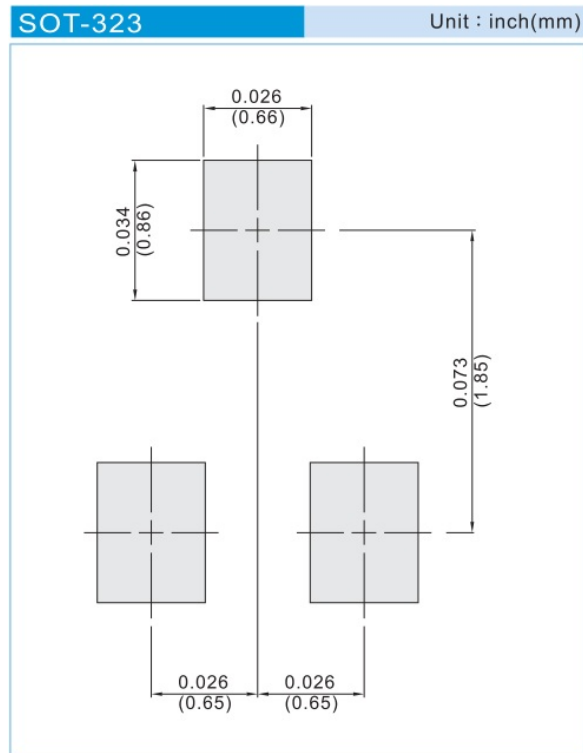


PJC7404

PART NO PACKING CODE VERSION

PART NO PACKING CODE VERSION	Package Type	Packing type	Marking	Version
PJC7404_R1_00001	SOT-323	3K pcs / 7" reel	C04	Halogen free
PJC7404_R2_00001	SOT-323	12K pcs / 13" reel	C04	Halogen free

MOUNTING PAD LAYOUT





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